Arctic Ocean
Ellesmere Island
Thule
GREENLAND
Devon I.
Baffin Bay
East Siberian Sea
Beaufort Sea
Wrangel I.
Point Barrow
Victoria Island
Baffin I.
Davis Strait
Godthaab
U.S.S.R. (SIBERIA)
Bering Strait
Nome
ALASKA
Bering Sea
Anchorage
Hudson Bay
Juneau
Kamchatka Peninsula
Aleutian Is.
CANADA
Vancouver
Winnipeg
Seattle
Quebec
St. John's
Montreal
Ottawa
Toronto
Detroit
Boston
Denver
Chicago
New York
Cleveland
Philadelphia
San Francisco
UNITED STATES
Washington
North Pacific Ocean
Los Angeles
Azores
Bermuda
North Atlantic Ocean
Houston
New Orleans
Midway Is.
Gulf of Mexico
Miami
Bahamas
Honolulu
MEXICO
Havana
CUBA
DOM. REP.
Puerto Rico
Virgin Is.
Wake I.
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HAITI
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São Paulo
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N
Tasman Sea
Auckland
URUGUAY
Montevideo
Santiago
Buenos Aires
Wellington
NEW ZEALAND
CHILE
ARGENTINA
Falkland Is.
Tierra del Fuego
S. Georgia
S. Shetland Is.
S. Orkney Is.
Palmer Peninsula
Bellingshausen Sea
Weddell Sea
Victoria Land
Alexander I Island
ANTARCTICA

Arctic Ocean
Franz Josef Land
Severnaya Zemlya
Svalbard
New Siberian Islands
Kara Sea
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UNION OF SOVIET SOCIALIST REPUBLICS
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North Sea
Baltic Sea
DENMARK
Moscow
Dublin
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Queen Maud Land
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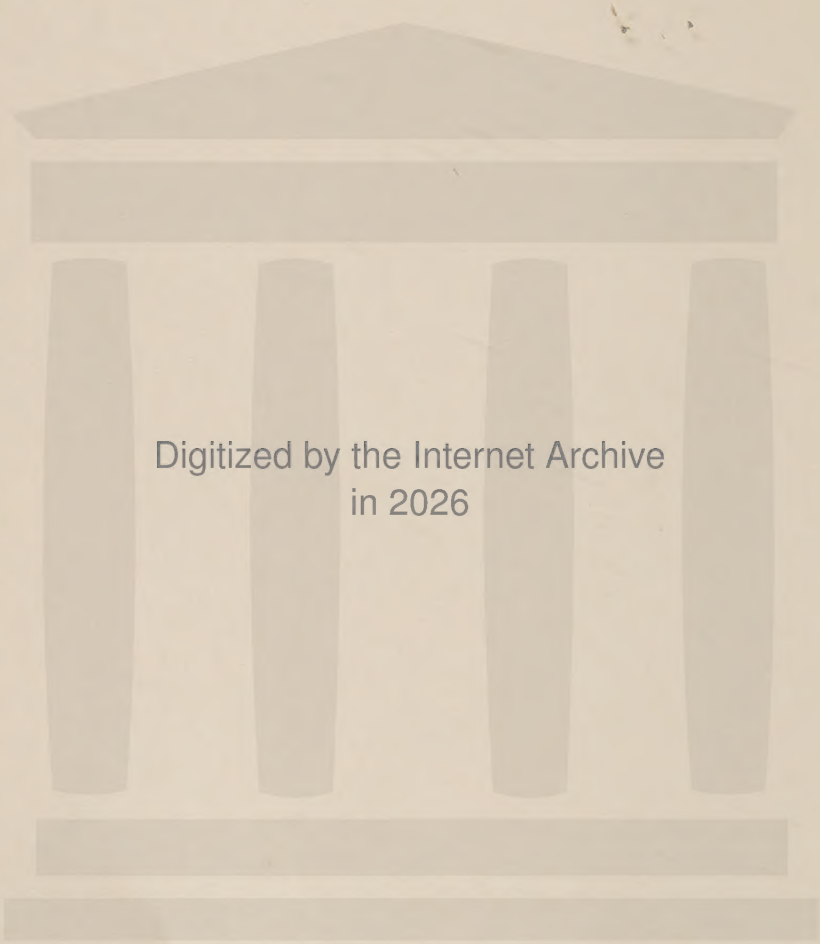
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The AMERICANA ANNUAL 1963

FRONTISPIECE

Amid the halcyon palms of a tropic island, atomic-age weapons suddenly spawned in 1962 and brought the world to the edge of disaster. In October, aerial photographs by United States planes revealed the presence in Cuba of Soviet missile bases, such as this installation near San Cristóbal. The cold war's gravest crisis ended when the Kremlin acceded to United States demands that the weapons be withdrawn. DEPARTMENT OF DEFENSE

ISSILE ERECTOR
THEODOLITE STATION
5 TRUCKS UNDER
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The AMERICANA ANNUAL 1963

AN ENCYCLOPEDIA OF THE EVENTS OF 1962

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EDITORIAL DIRECTOR OF AMERICANA PUBLICATIONS
EDITOR IN CHIEF OF THE ENCYCLOPEDIA AMERICANA

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EDITOR OF THE AMERICANA ANNUAL
ASSOCIATE EDITOR IN CHIEF OF THE ENCYCLOPEDIA AMERICANA

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Foreword . . .

The year 1962, which saw the violence of war in no fewer than five areas of Africa and Asia—ranging from Algeria and the Congo to Yemen, Vietnam, and India—as well as the threat of war in other parts of both hemispheres, might well be characterized as a year of turbulence, of tension, and of crisis. It opened with world attention focused on a familiar setting in Berlin. It closed with the spotlight on a new setting—a bristling island in the once peaceful Caribbean—and in the midst of a drama which suggested that possibly the course of history was beginning to take a new and important turn.

The year will perhaps be remembered longest for the great October confrontation, when the Soviet government, bent on secret expansion into the Western Hemisphere, was stopped short in the face of overwhelming nuclear power and the defiant determination of free people to defend their homeland against aggression, and was forced to retreat in humility and in full view of the world. The far-reaching implications of Moscow's decision to withdraw its instruments of offensive warfare from Cuba cannot, of course, be known fully at this early date. But many observers were quick to point out that it may have represented the first real crack in the monolith of imperialistic communism—and a turning point in the cold war. In any event, it did nothing to heal the growing ideological split between Moscow and Peking, or to halt the apparent reorientation of the Communist world into two camps.

To the individual who watched with a feeling of helplessness while this hour of crisis played itself out in October, the thing that mattered most was the sudden, chilling realization that the fate of all mankind could come to rest in the hands of just two men—or, indeed, of a single man—and that the annihilation of man and his world in one vast nuclear holocaust might conceivably be no more than a scant half-hour away.

The record of any memorable year, however, is not without its bright spots, and 1962 had its share of them, particularly in the field of science. The ever-accelerating conquest of space was highlighted by the first orbital flights of American astronauts Glenn, Carpenter, and Schirra; by the "twin" flights of Soviet cosmonauts Nikolayev and Popovich; and by the remarkable interplanetary voyage of an instrumented spacecraft named Mariner II, which gave man his first close-up "look" at another planet as it sped past Venus in mid-December. Advances in heart surgery, in cancer and virus research, in deciphering the genetic code, and other discoveries in the physical and biological sciences, though somewhat less spectacular, were hardly less important.

The belief that so complex and exciting a story as that of 1962 is worth preserving in some detail for reference in the years to come has inspired the compilation of this 41st edition of The Americana Annual. To all the countless individuals who will look to this book for a fact or a detailed review, as well as to the thousands of men and women who have shared the experience of writing, editing, and manufacturing the volume, the editor wishes to express his most sincere thanks.

J. J. S.

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McGOWAN, DONALD W., *Major General, NGUS; Chief, National Guard Bureau:* NATIONAL GUARD

McGUIRE, JOHNSON, *Professor of Medicine, University of Cincinnati College of Medicine; Director, Cardiac Laboratory, Cincinnati General Hospital:* HEART DISEASE (in part)

MacKINNON, FRANK, *Principal, Prince of Wales College, P.E.I.:* PRINCE EDWARD ISLAND

McNICKLE, GEORGE, *Sports Staff, "The New York Times":* SPORTS, GAMES, AND SHOWS

MALCUIT, STANLEY V., *Chief Economist, Aluminum Company of America:* ALUMINUM

MARTIN, H. E., *Director of Publicity and Advertising, Department of Industry and Development, Province of Alberta:* ALBERTA

MARTIN, J. A., JR., *Danforth Professor of Religion in Higher Education, Union Theological Seminary:* RELIGION (INTRODUCTION)

MATZKE, EDWIN B., *Professor of Botany, Columbia University:* BOTANY

MEADOWS, JOHN C., *Professor of Sociology, The University of Georgia:* GEORGIA (in part)

METCALF, GEORGE, *Scientific Aide, Division of Archeology, U.S. National Museum, Smithsonian Institution:* ARCHAEOLOGY (WESTERN HEMISPHERE)

METZ, WILLIAM D., *Chairman, Department of History, University of Rhode Island:* RHODE ISLAND (in part)

MILLER, NYLE H., *Secretary, Kansas State Historical Society; Co-author, "Kansas: A Pictorial History":* KANSAS (in part)

MILLETT, FRED B., *Emeritus Professor of English, Wesleyan University:* ENGLISH LITERATURE

MITCHELL, BERENICE B., *Commodity Industry Analyst, Division of Foreign Activities, U.S. Bureau of Mines:* MINERAL PRODUCTION; articles on minerals (in part)

MONTGOMERY, I. J., *Certification Supervisor, Alaska Department of Education:* ALASKA

MOORE, CHARLES W., *Associate Professor of Architecture, University of California, Berkeley:* ARCHITECTURE

MOORE, E. G., *Director, Information Division, Agricultural Research Service:* AGRICULTURAL RESEARCH SERVICE

MORGRET, CHARLES O., *Manager, Public and Special Services, Association of American Railroads:* RAILROADS

MOURSUND, ANDREW, *Editor, "News of Norway," Norwegian Embassy in Washington, D.C.:* NORWAY

MUNROE, JOHN A., *Professor and Chairman, Department of History, University of Delaware; Author, "Federalist Delaware, 1775–1815":* DELAWARE (in part)

MURPHY, RUPERT L., *Chairman, Interstate Commerce Commission:* INTERSTATE COMMERCE COMMISSION

MUSTE, JOHN M., *Department of English, The Ohio State University:* AMERICAN LITERATURE

NELSON, RALPH L., *Director, Foundation Investments Study, Foundation Library Center:* PHILANTHROPY

NEUMEYER, MARTIN H., *Professor of Sociology, University of Southern California; Editor, "Sociology and Social Research":* CRIME (DELINQUENCY AND CRIME PREVENTION)

NEWTON, BLAKE T., JR., *President, Institute of Life Insurance:* INSURANCE (LIFE INSURANCE)

NOBLE, ISABEL, *Professor of Home Economics, University of Minnesota:* FOOD RESEARCH

NOSS, JOHN B., *Emeritus Professor of Philosophy, Franklin and Marshall College:* RELIGION (ORIENTAL RELIGIONS, ISLAM, AND EASTERN ORTHODOXY)

NUQUIST, ANDREW E., *Chairman, Department of Political Science, University of Vermont:* VERMONT (in part)

O'DONNELL, L. A., *Division of Wages and Industrial Relations, Bureau of Labor Statistics, U.S. Department of Labor:* LABOR

O'DONNELL, MAURICE E., *Assistant Professor of Government and Politics, University of Maryland:* BALTIMORE; MARYLAND (in part)

O'DONNELL, WILLIAM J., *Assistant Managing Editor, "Aviation Daily":* AERONAUTICS

OEHSER, PAUL H., *Chief, Editorial and Publications Division, Smithsonian Institution:* SMITHSONIAN INSTITUTION

OLIVIER, CHARLES P., *Emeritus Professor of Astronomy and Former Director, Flower and Cook Observatories, University of Pennsylvania:* ASTRONOMY

OLSON, JAMES C., *Chairman, Department of History, University of Nebraska:* NEBRASKA (in part)

PADGETT, L. V., *Associate Professor of Political Science, San Diego State College:* DOMINICAN REPUBLIC; HAITI

PAIEWONSKY, RALPH M., *Governor of the Virgin Islands:* VIRGIN ISLANDS OF THE UNITED STATES

PALEVSKY, HARRY, *Department of Physics, Brookhaven National Laboratory:* ATOMIC ENERGY

PALMER, ARTHUR J., JR., *Assistant to the Legislative Counsel, Legislative Counsel Bureau:* NEVADA (in part)

PARKER, FRANKLIN, *Associate Professor, Department of the History and Philosophy of Education, University of Texas:* MALAGASY REPUBLIC; RHODESIA AND NYASALAND

PARKER, SANDY, *Fur Editor, "Women's Wear Daily":* FUR INDUSTRY

PARSON, RUBEN L., *Northern Illinois University; Author, "Conserving American Resources":* CONSERVATION OF NATURAL RESOURCES

PAYNE, WALTER A., *Associate Professor of History, University of the Pacific; Assistant Managing Editor, "Hispanic American Historical Review":* COSTA RICA; NICARAGUA

PEARSON, ROSS N., *Associate Professor of Geography, University of Michigan:* MICHIGAN (in part)

PHILLIPS, JEWELL CASS, *Professor of Political Science, University of Pennsylvania:* PENNSYLVANIA (in part); PHILADELPHIA

PLUNKETT, THOMAS J., *Municipal Affairs Consultant, Montreal:* MONTREAL

PORTER, J. R., *Chairman, Department of Bacteriology, State University of Iowa:* BACTERIOLOGY

POWER, E. A., *Chief, Branch of Statistics, Bureau of Commercial Fisheries, Fish and Wildlife Service:* FISHERIES INDUSTRY

PRAETORIUS, ROBERT L., *Economist, International Monetary Fund:* EXCHANGE RATES

PRITIKIN, ROLAND I., *Eye Surgeon and Consulting Ophthalmologist; Author, "Essentials of Ophthalmology":* OPHTHALMOLOGY (in part)

PYLE, HOWARD, *President, National Safety Council:* ACCIDENTS

RABBITT, MARY C., *Staff Geologist for Publications, U.S. Geological Survey:* GEOLOGY

RANDALL, CHARLES E., *Forestry Information Specialist; Formerly with Forest Service, U.S. Department of Agriculture:* FORESTRY; LUMBER

RAYMOND, ELLSWORTH, *USSR Area Specialist and Associate Professor of Government, New York University:* COMMUNISM; ESTONIA; LATVIA; LITHUANIA; UNION OF SOVIET SOCIALIST REPUBLICS

READ, W. T., *Consulting Chemist:* CHEMISTRY

REID, JOSEPH L., JR., *Associate Research Oceanographer, Scripps Institution of Oceanography:* OCEANOGRAPHY

RICH, BENNETT M., *Professor of Political Science, Rutgers, The State University:* NEW JERSEY (in part)

RILEY, LYMAN W., *University of Pennsylvania Library:* FRIENDS, RELIGIOUS SOCIETY OF

ROBERTSON, R. G., *Commissioner of the Northwest Territories:* NORTHWEST TERRITORIES

ROBINSON, RICHARD D., *Lecturer, Massachusetts Institute of Technology; Turkish Area Specialist and International Business Consultant:* TURKEY

RODGERS, TED V., III, *Public Relations Department, American Trucking Associations, Inc.:* MOTOR TRANSPORTATION

ROLAND, EDWIN J., *Admiral, USCG; Commandant, U.S. Coast Guard:* COAST GUARD, U.S.

ROLLAND, SIEGFRIED B., *Associate Professor of History, University of Idaho:* IDAHO (in part)

RONNE, EDITH, *Antarctic Specialist:* ANTARCTICA (in part)

RONNE, FINN, *Captain, U.S. Naval Reserve; Antarctic Explorer:* ANTARCTICA (in part)

ROSS, RUSSELL M., *Executive Assistant to the Governor, State of Iowa; Author, "The Government and Administration of Iowa":* IOWA (in part)

ROUTH, PORTER W., *Executive Secretary, Executive Committee, Southern Baptist Convention:* BAPTIST CHURCHES (in part)

ROWE, G. C. BAXTER, *Former Associate Editor, "Electrical Engineering":* ELECTRICAL INDUSTRIES

ROWLEY, JAMES J., *Chief, U.S. Secret Service:* SECRET SERVICE, U.S.

ROWSE, DONOVAN, *Author and Publicist:* AUSTRALIA; BURMA; CEYLON; CYPRUS; MALAYA; NEW ZEALAND; and other Commonwealth countries

SAGEN, OSWALD K., *Chief, National Vital Statistics Division, Public Health Service, U.S. Department of Health, Education and Welfare:* DEATH, CAUSES OF

SALE, ROBERT C., *State Librarian, Connecticut State Library:* CONNECTICUT (in part)

SAMPSON, JESSE, *Emeritus Professor of Veterinary Physiology and Pharmacology, College of Veterinary Medicine, University of Illinois:* VETERINARY SCIENCE

SANDS, C. DALLAS, *Professor of Law, University of Alabama:* ALABAMA (in part)

SARKISSIAN, A. O., *Analyst in Middle Eastern and East European Affairs, The Library of Congress:* SYRIA; UNITED ARAB REPUBLIC

SCAMMON, RICHARD M., *Director of the Census:* CENSUS DATA, U.S.

SCHELLBACH, LEWIS L., *Senior Vice President, Standard & Poor's Corporation:* STOCKS AND BONDS

SCHRENK, H. H., *Managing Director, Industrial Hygiene Foundation of America, Inc.:* INDUSTRIAL HEALTH AND SAFETY

SCHWARTZ, CHARLES F., *Assistant Director, Western Hemisphere Department, International Monetary Fund:* INCOME

SCHWEIGER, IRVING, *Professor of Marketing, University of Chicago:* SAVINGS

SECREST, JAMES D., *Executive Vice President, Electronic Industries Association:* RADIO AND TELEVISION (RADIO-ELECTRONICS-TELEVISION INDUSTRY)

SHAFER, ROBERT JONES, *Professor of History, Syracuse University:* ARGENTINA; BRAZIL; EL SALVADOR; MEXICO; PANAMA

SHANE, SAMUEL W., *Associate Stated Clerk, General Assembly, The United Presbyterian Church in the U.S.A.:* PRESBYTERIAN CHURCHES

SHAW, WILLIAM W., *Professor of Political Science, Tulane University:* NEW ORLEANS

SHEATSLEY, PAUL B., *Eastern Representative, National Opinion Research Center, University of Chicago:* PUBLIC OPINION SURVEYS

SHELLEY, SALLY SWING, *Information Officer, UNESCO, New York:* UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION

SHEPARD, O. CUTLER, *Professor of Metallurgy, Stanford University:* METALLURGY

SHERRILL, GEORGE R., *Professor of Political Science, Emeritus, University of South Carolina:* SOUTH CAROLINA (in part)

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SHRIVER, SARGENT, *Director of the Peace Corps:* PEACE CORPS

SIMPSON, HAROLD E., *Professor of Glass Technology, State University of New York College of Ceramics, Alfred University:* CERAMICS

SINNEN, JEANNE, *Senior Editor, University Press, University of Minnesota:* MINNESOTA (in part)

SKEELS, ROBERT F., *Endocrinologist, The Shelton Clinic, Los Angeles:* ENDOCRINOLOGY

SLATIN, BENJAMIN, *Economist, American Paper and Pulp Association:* PAPER INDUSTRY

SLONIM, MARC, *Director, Sarah Lawrence College Foreign Studies; Author, "Modern Russian Literature" and "Russian Theater: From the Empire to the Soviets"; Editor, "Modern Italian Short Stories":* ITALIAN LITERATURE; SOVIET LITERATURE

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SMITH, RHEA MARSH, *Professor of History, Rollins College:* PORTUGAL; PORTUGUESE TERRITORIES; SPAIN; SPANISH TERRITORIES

SOLECKI, RALPH S., *Associate Professor of Anthropology, Columbia University:* ARCHAEOLOGY (EASTERN HEMISPHERE)

SOUTHARD, FRANK A., JR., *U.S. Executive Director, IMF:* INTERNATIONAL MONETARY FUND

SOZZI, EUGENE S., D.M.D., *Contributing Editor, "Midtown Dental Journal," New York City:* DENTISTRY

STARE, FREDRICK J., *Professor of Nutrition, Harvard School of Public Health:* NUTRITION (in part)

STEHLING, KURT R., *Senior Staff Scientist, Office of Plans and Program Evaluation, National Aeronautics and Space Administration:* SPACE FLIGHT (ASTRONAUTICS)

STEINER, GILBERT Y., *Director, Institute of Government and Public Affairs, University of Illinois:* CHICAGO

STODDARD, BURT, *Staff Writer, "The Detroit News":* DETROIT

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STROMBERG, E. A., *Special Assistant to the Federal Highway Administrator, Bureau of Public Roads:* HIGHWAYS

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SULLIVAN, JOHN W. W., *Metallurgical Engineer, American Iron and Steel Institute:* IRON AND STEEL

SWETNAM, GEORGE, *Staff, "The Pittsburgh Press"; Author, "Pittsylvania Country" and other books:* PITTSBURGH

SWIDLER, JOSEPH C., *Chairman, FPC:* FEDERAL POWER COMMISSION

SYLVESTRE, GUY, *Associate Parliamentary Librarian, Library of Parliament, Ottawa:* CANADIAN LITERATURE (FRENCH-CANADIAN LITERATURE)

TAN, CHESTER C., *Associate Professor of History, New York University:* CHINA (in part); TAIWAN (in part)

TAYLOR, PHILIP B., JR., *Associate Professor of Latin American Affairs, School of Advanced International Studies, Johns Hopkins University:* URUGUAY

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TURNER, ALLAN R., *Provincial Archivist, Saskatchewan Archives Board, Regina:* SASKATCHEWAN

TURNER, ARTHUR C., *Professor of Political Science, University of California, Riverside:* AFRICA; EUROPE; FAR EAST; MIDDLE EAST; NORTH ATLANTIC TREATY ORGANIZATION

UHL, WILLIAM, *Processing Editor, "World Petroleum":* PETROLEUM

UNDERHILL, FRANK H., *Former Professor of History, University of Toronto:* CANADA (THE YEAR 1962 IN CANADA)

UNTERECKER, JOHN, *Associate Professor of English, Columbia University:* THEATER

VANDENBOSCH, AMRY, *Department of Political Science, University of Kentucky:* BELGIUM; NETHERLANDS

VATERLAUS, HANS, *Executive Vice President, International Silk Association (U.S.A.), Inc.:* SILK

VUCINICH, WAYNE S., *Professor of History, Stanford University:* BULGARIA; CZECHOSLOVAKIA; HUNGARY; RUMANIA

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WALKER, JEROME H., *Executive Editor, "Editor and Publisher":* NEWSPAPERS

WALZ, ROBERT B., *Associate Professor of History, Southern State College:* ARKANSAS (in part)

WARREN, FOREST G., *Senior Economist, Export-Import Bank of Washington:* ETHIOPIA; SUDAN

WATERMAN, ALAN T., *Director, National Science Foundation:* NATIONAL SCIENCE FOUNDATION

WATSON, MARK S., *Military Correspondent, "The Baltimore Sun":* ARMY OF THE UNITED STATES; NATIONAL SECURITY

WATTERS, R. E., *Head, Department of English, The Royal Military College of Canada:* CANADIAN LITERATURE

WEAVER, ELLSWORTH E., *Professor of Political Science and Director, Institute of Government, University of Utah:* UTAH (in part)

WEBB, RICHARD E., M.E.B., *Director, Reference and Library Division, British Information Services:* COMMONWEALTH OF NATIONS; GREAT BRITAIN

WEBBER, MELVIN M., *Associate Professor of City Planning, University of California, Berkeley:* CITY PLANNING

WEBSTER, CLIFFORD W., *Editor, "Bakers Review":* BAKING INDUSTRY

WEINSTOCK, HERBERT, *Music Writer and Critic; Author, "Music as an Art," and other works:* MUSIC

WEISENBURGER, FRANCIS P., *Professor of History, The Ohio State University:* OHIO (in part)

WERNER, ALFRED, *Contributing Editor, "Arts" Magazine:* PAINTING AND SCULPTURE

WHEELER, RICHARD S., *Assistant Professor of Political Science, University of Michigan:* INDIA (THE YEAR 1962 IN INDIA)

WHITE, RUTH M., *Headquarters Librarian, American Library Association:* LIBRARIES

WILBER, DONALD N., *Author, "Iran Past and Present" and "An Annotated Bibliography of Afghanistan"; Author and Editor, "Afghanistan":* AFGHANISTAN; IRAN

WILBURN, RALPH G., *Dean and Professor of Historical Theology, The College of the Bible:* RELIGION (PROTESTANTISM)

WILLIAMS, A. O., JR., *Professor of Physics, Brown University:* PHYSICS

WILLIAMS, JAMES R., *Vice President and General Manager, Health Insurance Institute:* INSURANCE (HEALTH INSURANCE)

WILSON, JOHN S., *Reviewer of Jazz Records, "The New York Times" and "High Fidelity" Magazine; Author, "The Collector's Jazz: Traditional and Swing":* RECORDINGS (JAZZ RECORDS)

WINSTON, ELLEN, *Commissioner, North Carolina State Board of Public Welfare:* SOCIAL WELFARE

WIRTH, CONRAD L., *Director, National Park Service:* NATIONAL PARKS AND MONUMENTS

WOLF, HOWARD C., *President, American Spice Trade Association:* SPICES

WRIGHT, QUINCY, *Professor, Woodrow Wilson Department of Foreign Affairs, University of Virginia; Visiting Professor, Columbia University:* FOREIGN POLICY OF THE U.S.

ZAFRA, NICHOLAS, *Professor of History (Retired), University of the Philippines:* PHILIPPINES

ZELUFF, VIN, *Editorial Director, "Electronic Products" Magazine:* ELECTRONICS

ZUBKOFF, HARRY M., *Publications Writer, Office of the Secretary of the Air Force:* AIR FORCE, U.S.

Opposite page: **Mercury capsule containing Lt. Col. John H. Glenn, Jr., is lifted atop an Atlas rocket at Cape Canaveral, Fla., on February 20 as the first orbital flight by a United States astronaut begins. Two other Americans—astronauts M. Scott Carpenter and Walter Schirra—followed Glenn into space in 1962 as the United States stepped up its program to place an astronaut on the moon before 1970.**

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

CHRONOLOGY
the events of 1962

CHRONOLOGY . . 1962

PART 1 . . The Outstanding Dates of the Year

JANUARY

1—Western Samoa becomes independent state.
4—Organization of American States removes sanctions against Dominican Republic.
6—U.S. and Dominican Republic resume diplomatic ties.
10—Avalanche buries 16 villages in Peru, causing about 3,500 deaths.
11—President Kennedy, in State of Union message to Congress, calls for reduction of tariff barriers, expansion of welfare programs, and measures to help economy.
15—Congolese Vice Premier Antoine Gizenga is dismissed and is censured by Chamber of Deputies, following attempt by his forces to seize Stanleyville.
18—Military countercoup in Dominican Republic deposes military junta which overthrew ruling Council of State on Jan. 16; Council is reinstated and elects Rafael Bonnelly as president.
22—President Kennedy, in first Economic Report to Congress, outlines measures to increase economic growth.
29—Britain, U.S., and USSR conclude unsuccessful 39-month talks on nuclear test-ban treaty at Geneva.
30—Leaders of 20 African nations, at six-day conference in Lagos, Nigeria, agree to establish Organization of African States.
31—American foreign ministers, at end of ten-day meeting in Punta del Este, Uruguay, approve resolution to exclude Cuba from inter-American system.

FEBRUARY

3—President Kennedy orders virtual embargo by U.S. on remaining trade with Cuba.
4—Cuban Premier Fidel Castro issues Second Declaration of Havana, attacking U.S. "imperialism" and "economic aggression" against Cuba.
8—Leftists protesting terrorist acts by Secret Army Organization (OAS) clash with police in Paris; eight persons are killed.
Argentina severs diplomatic ties with Cuba.
10—Francis Gary Powers, U.S. pilot of U-2 aircraft which crashed in USSR in May 1960, is released by Soviet Union in exchange for Col. Rudolf Abel, Soviet spy convicted of espionage by U.S. in 1957.
16—British troops move into Georgetown, British Guiana, to restore order after striking demonstrators protesting new tax program clash with police.
20—Lt. Col. John H. Glenn, Jr., becomes first U.S. astronaut to make orbital flight, as he orbits earth three times in *Friendship 7* Mercury capsule.

MARCH

2—Gen. Ne Win leads army coup in Burma that deposes Premier U Nu's civilian government.
14—Disarmament conference attended by foreign ministers of 17 nations opens in Geneva, Switzerland.
18—Cease-fire agreement ending seven-year war in Algeria (effective March 19) is signed by French and Algerian rebel representatives in Évian-les-Bains, France.
Peronist parties win Argentine legislative elections.
26—U.S. Supreme Court, in historic decision, rules that distribution of seats in state legislatures is subject to constitutional scrutiny by federal courts.
28—Argentine military leaders depose President Arturo Frondizi and seize control of government.
30—President Kennedy names Deputy Attorney General Byron R. White to succeed Charles E. Whittaker as an associate justice of the U.S. Supreme Court.

APRIL

2—Syrian military officers stage countercoup and depose army leaders who overthrew government on Mar. 28.
7—Algerian provisional government is installed.
Cuban military court sentences 1,179 rebel prisoners to 30 years' imprisonment.
8—In national referendum, 90.7% of French voters approve Algerian peace settlement.
11—President Kennedy declares increase in steel prices by six major steel producers is "wholly unjustifiable" and will have inflationary effect on economy.
13—Steel companies rescind price increases announced on March 11.
20—Raoul Salan, French ex-general and commander of OAS, is seized in Algiers by French forces.
25—U.S. resumes nuclear testing by exploding nuclear device at Christmas Island test site in Pacific Ocean.
26—Ranger IV, first U.S. spacecraft to make contact with moon, hits far side of moon after 64-hour flight.
First international satellite (Ariel), carrying British equipment and launched by U.S. rockets, is fired into orbit from Cape Canaveral, Fla.
28–29—President Kennedy and Prime Minister Macmillan, at meeting in Washington, agree not to seek early summit conference.

MAY

2—India accuses Communist China of intruding on her border and of creating tensions among Asian nations.
OAS terrorists in Algeria kill 110 persons.
6—U.S. explodes first nuclear warhead to be launched by a long-range missile from a nuclear submarine.
12—Pro-Communist rebels occupy northwestern Laos and drive 2,000 government troops into Thailand.
15—President Kennedy orders 4,000 U.S. troops into Thailand as result of rebel successes in Laos.
23—Military tribunal in Paris sentences OAS leader Raoul Salan to life imprisonment.
24—U.S. astronaut Lt. Comdr. Malcolm Scott Carpenter orbits earth three times in Mercury capsule *Aurora 7*.
25—Mass influx of Chinese refugees into Hong Kong is stopped after about 60,000 refugees were returned to Communist China since May 1.
28—Heavy trading on New York Stock Exchange results in loss of stock values totaling $20.8 billion—the largest one-day drop since Oct. 28, 1929.
31—Adolf Eichmann, former Nazi official who was tried and convicted of war crimes by Israeli tribunal in 1961, is executed by hanging in Ramleh, Israel.

JUNE

3—Air France Boeing 707 crashes at Paris, France, killing 130 persons; death toll is worst single-plane disaster in aviation history.
11—Laotian leaders, meeting at Khang Khay, announce formation of 19-member coalition cabinet for Laos, headed by Prince Souvanna Phouma as premier.
17—OAS orders truce in Algeria following agreement on general amnesty for terrorists.
18—Canada's ruling Conservative Party loses parliamentary majority in national elections.
24—Prime Minister John G. Diefenbaker announces that Canada will borrow $1 billion and introduce austerity program to ease its financial difficulties.

JULY

1—Algerians vote in national referendum to approve independence for Algeria in cooperation with France.
United Nations trust territory of Ruanda-Urundi becomes independent states of Burundi and Rwanda.
3—France formally proclaims Algeria's independence.
6—Hydrogen-type nuclear device is tested underground in U.S. for first time, at Nevada test site.
9—U.S. sets off thermonuclear explosion in upper atmosphere over Johnston Island in Pacific Ocean.
10—Telstar communications satellite is launched into orbit and relays transatlantic television broadcast.
17—Senate narrowly defeats President Kennedy's program of health care for the aged under Social Security.
18—Military junta overthrows government in Peru.
20—International Court of Justice expresses advisory opinion that all United Nations members are legally obligated to pay expenses of United Nations operations in the Congo and Middle East.
23—Delegates to 14-nation conference on Laos, in Geneva, sign agreements guaranteeing Laotian independence.
31—Agreement to establish Federation of Malaysia, comprising Malaya, Singapore, and British Borneo, is signed in London.

AUGUST

5—Soviet Union resumes atmospheric nuclear testing by exploding 30-megaton device at Arctic test site.
Film star Marilyn Monroe dies, in Los Angeles.
6—Jamaica becomes independent dominion within Commonwealth of Nations.
11—Soviet astronaut Maj. Andrian G. Nikolayev, in *Vostok III* spaceship, is launched into orbit.
12—Astronaut Lt. Col. Pavel R. Popovich, in *Vostok IV*, is also orbited. Nikolayev reports sighting Popovich's spacecraft.

15—Soviet astronauts land within 6 minutes of each other in south-central USSR. Nikolayev completed 64 orbits; Popovich, 48 orbits.

Dutch-Indonesian agreement to transfer administration of West New Guinea from Netherlands to United Nations on Oct. 1, 1962, and to Indonesia on May 1, 1963, is signed in New York.

17—U.S. resumes diplomatic relations with Peru.

18—West Berliners demonstrate violently to protest murder of refugee (Aug. 17) by East German border guards.

22—Soviet Union abolishes office of Soviet commandant in East Berlin. U.S. declares action will not affect rights of Western commandants in Berlin.

27—Congress completes action on constitutional amendment outlawing poll tax in federal elections. (Proposal goes to state legislatures for ratification.)

U.S. launches Mariner II spacecraft toward Venus.

29—Associate Justice Felix Frankfurter retires from Supreme Court after 23 years' service; President Kennedy names Arthur J. Goldberg to succeed him.

31—Trinidad and Tobago attains independence within Commonwealth of Nations.

SEPTEMBER

1—Earthquake in Iran destroys 294 villages and kills 12,403 persons.

2—Soviet Union announces agreement to supply arms and technical specialists to Cuba.

4—Soviet Union protests to U.S. against flight (Aug. 31) by U-2 aircraft over Sakhalin Island in eastern USSR. U.S. replies that flight was unintentional.

4–9—French President de Gaulle pays state visit to West Germany to emphasize French-German reconciliation and to "promote" European unification.

9—Communist China announces it has shot down Chinese Nationalist U-2 aircraft over eastern China.

11—Soviet Union accuses U.S. of preparing aggression against Cuba, and warns that this would mean war.

13—President Kennedy declares U.S. military action against Cuba is not now "required or justified," but says U.S. will act if its security is imperiled.

18—United Nations General Assembly opens 17th regular session; elects Muhammad Zafrulla Khan of Pakistan as president; admits Ruanda, Burundi, Jamaica, and Trinidad and Tobago as new members.

23—Insurgent military forces in Argentina seize control of Buenos Aires from opposing army faction.

25—Gov. Ross R. Barnett of Mississippi bars admission of Negro student James H. Meredith to University of Mississippi, despite federal court order.

27—Yemeni Army deposes imam of Yemen; proclaims republic.

28—Canadian-built satellite (Alouette) is launched into polar orbit by U.S. rockets.

30—Rioting crowds battle federal marshals in Oxford, Miss., after Meredith is installed on campus of university; two persons are killed and 75 are injured. President Kennedy, in national address, declares federal government will carry out the law "with whatever means are necessary."

OCTOBER

1—About 5,000 federal troops are dispatched to Oxford, Miss., and help to quell riots, as James H. Meredith is enrolled in University of Mississippi and attends first classes.

Administration of West New Guinea is transferred from Netherlands to United Nations for seven-month interim period, pending transfer to Indonesia.

3—U.S. astronaut Walter M. Shirra, Jr., completes nearly six orbits of earth during 9-hour 14-minute space flight in Mercury capsule *Sigma 7*, landing safely in Pacific Ocean.

5—French Parliament censures government for proposal to select president by popular election, forcing resignation of Premier Georges Pompidou's cabinet.

8—United Nations admits Algeria to membership.

9—Uganda becomes independent state within Commonwealth.

11—Pope John XXIII opens 21st Ecumenical Council of 2,700 Roman Catholic prelates in Vatican City.

20—Large-scale fighting between Communist Chinese and Indian forces breaks out in disputed border areas.

22—President Kennedy announces U.S. air and naval "quarantine" of Cuba because Soviet Union has installed offensive missile and bomber bases on island.

23—Council of Organization of American States authorizes "use of armed force" to impose quarantine of Cuba. Soviet Union challenges right of U.S. to establish quarantine.

24—U.S. air and naval quarantine to prevent shipment of Soviet offensive weapons to Cuba goes into effect.

25—President Kennedy agrees to hold discussions between U.S. representatives and UN Acting Secretary General U Thant on possible negotiations over Cuban crisis. Premier Khrushchev accepts U Thant's proposals for moratorium and negotiations on Cuba.

U.S. Navy intercepts Soviet oil tanker bound for Cuba but permits vessel to proceed because it is not carrying offensive weapons.

Uganda is admitted as 110th United Nations member.

27—In reply to Khrushchev's proposals for settlement of Cuban crisis, Kennedy proposes that Soviet Union remove its offensive weapons from Cuba under United Nations supervision, and that U.S. end its quarantine of Cuba and give "assurances" against invasion.

28—Kennedy and Khrushchev agree to end Cuban crisis. Soviet Union pledges to halt construction of missile bases in Cuba and to remove weapons under United Nations supervision. U.S. agrees to end quarantine of Cuba and give "assurances" against invasion.

French voters, in national referendum, approve President de Gaulle's proposal to elect president by popular vote.

29—Indian Prime Minister Nehru asks for U.S. military aid and receives immediate favorable reply.

30–31—U Thant and Premier Castro confer in Havana, Cuba, but fail to reach agreement on United Nations inspection of Soviet missile bases in Cuba.

31—Prime Minister Nehru dismisses V. K. Krishna Menon as minister of defense, in wake of Chinese military advance, and assumes post himself.

NOVEMBER

1—Premier Castro announces Cuba's rejection of proposals for international inspection of Soviet missile sites.

USSR announces launching of spaceship Mars I toward planet Mars, from orbiting earth satellite.

2—President Kennedy announces that Soviet missile bases in Cuba "are being dismantled," but says U.S. quarantine will continue until threat to peace subsides.

4—U.S. concludes current series of high-altitude nuclear tests in Pacific area with 36th explosion.

6—U.S. voters return Democratic majorities to Congress; Republicans win several key gubernatorial elections.

7—U.S.-Soviet agreement to permit U.S. Navy to inspect missiles being removed from Cuba is announced.

Eleanor Roosevelt dies in New York City.

11—Department of Defense reports that 42 Soviet missiles have been shipped out of Cuba.

14–15—President Kennedy and Chancellor Adenauer confer in Washington on Berlin and other problems.

20—President Kennedy announces end of U.S. blockade of Cuba, as Khrushchev has agreed to withdraw Soviet jet bombers from island.

Kennedy signs executive order prohibiting racial discrimination in federally built or bought housing.

21—Communist China orders cease-fire along Indian border, and offers to withdraw troops back of "lines of actual control" that existed as of Nov. 7, 1959.

25—French candidates supporting President de Gaulle win unprecedented majority in National Assembly.

29—President Kennedy and Soviet First Deputy Premier Anastas I. Mikoyan confer in Washington, and agree to continue Soviet-U.S. talks on Cuban situation.

India and Pakistan agree to discuss settlement of their 15-year dispute over Kashmir.

30—U Thant is elected to four-year term as secretary general of United Nations.

DECEMBER

1—Indian Prime Minister Nehru rejects Communist China's proposals for cease-fire and border negotiations.

3—U.S. announces that Soviet jet bombers are being shipped out of Cuba in accordance with agreement.

9—Tanganyika becomes republic; Julius K. Nyerere is sworn in as president.

11—West German governmental crisis ends with agreement for formation of new coalition cabinet; Franz Josef Strauss is ousted as minister of defense.

12—Premier Khrushchev, in foreign policy address to Supreme Soviet, criticizes Communist China for opposing settlement of Cuban crisis.

13—U.S. orbits Relay satellite for worldwide radio, television, and telephone communications.

14—Mariner II space probe passes 21,594 miles from the planet Venus and radios data on its temperature and other conditions.

India announces beginning of massive Chinese troop withdrawal from northeastern frontier area.

15—Prime Minister Macmillan and President de Gaulle confer in Rambouillet, France; communiqué pledges continued negotiations on British entry into European Economic Community.

20—Juan Bosch is elected president of Dominican Republic.

Geneva disarmament conference adjourns.

21—President Kennedy and Prime Minister Macmillan, at end of four-day meeting in the Bahamas, announce agreement to replace Britain's projected Skybolt missiles project with U.S. Polaris missiles.

23–24—Remaining 1,113 Cuban rebels captured in invasion attempt of April 1961 return to U.S. after release by Castro regime in exchange for foods and medicines valued at $53 million.

26—Communist China announces border agreements with Mongolian People's Republic and with Pakistan.

27–29—India and Pakistan hold first round of talks on their dispute over Kashmir, at Rawalpindi, Pakistan.

28–29—UN Force in Congo seizes control of Elisabethville from Katanga armed forces after heavy fighting.

PART 2 . . Chronological Index of the Year's Events

ON the following pages are indexed the principal world events of 1962. Main subject headings are indexed in alphabetical order, while specific events under each subject heading are listed chronologically (in order of their occurrence). Articles on many of the persons, countries, organizations, and other subjects may be found in the main text of this volume.

The Chronological Index is intended primarily to aid the reader in finding the dates on which the most important events of 1962 occurred. It is, therefore, a selected list of the year's most significant events, rather than a complete list of all events under all subject headings, though it does serve also as a guide to the year's important developments in any subject, particularly in the major countries.

In many instances events have been listed under both the general subject headings and under the specific names of the events or persons concerned; for example, the 21st Ecumenical Council of the Roman Catholic Church is covered under the headings ROMAN CATHOLIC CHURCH; JOHN XXIII; and ITALY. In other instances, events concerning persons whose names are less familiar to most readers may be found under the name of the country or general subject involved. The outstanding United States diplomatic and other appointments are listed under the heading UNITED STATES. Cross references used herein refer only to headings within this Index.

ABEL, Rudolf—See UNITED STATES—*Foreign Affairs*
ACADEMY AWARDS—See MOTION PICTURES
ACCIDENTS AND DISASTERS

Aviation

American Airlines Boeing 707 jet crashes in Jamaica Bay, New York City; death toll of 95 is highest in U.S. history for single commercial plane, **Mar. 1**
British airliner crashes in jungle near Douala, Cameroun; all 111 aboard are killed, **Mar. 4**
Super Constellation carrying 107 persons, including 93 U.S. soldiers, is lost over West Pacific, **Mar. 16**
Colombian Air Force plane crashes in mountainous area of Colombia; 31 aboard killed, **Apr. 6**
Continental Airlines Boeing 707 crashes during storm near Centerville, Iowa; all 45 aboard killed, **May 22**
U.S. Navy Constellation crashes near Munich, Germany, killing 26 military personnel, **May 22**
Air France Boeing 707 crashes on take-off at Paris airport; death toll of 130 persons is worst single-plane disaster in aviation history, **June 3**
Air France Boeing 707 crashes at Guadeloupe in West Indies; all 113 aboard killed, **June 22**
Italian airliner crashes near Bombay; 94 die, **July 7**
United Arab Airline jet crashes near Bangkok, Thailand, , killing all 26 persons aboard, **July 19**
Canadian Pacific airliner crashes at Honolulu, Hawaii; 27 of 40 persons aboard are killed, **July 22**
Air Force jet crashes into mountain near Spokane, Wash., killing all 44 aboard, **Sept. 10**
Flying Tiger Line Super Constellation with 76 aboard ditches in Atlantic; 48 persons rescued, **Sept. 23**
South Vietnamese airliner crashes in central Vietnam; all 26 persons aboard are killed, **Nov. 10**
Brazilian airliner collides in air with private plane near São Paulo, Brazil; 27 persons killed, **Nov. 26**
Brazilian airline Boeing 707 jet smashes into hill near Lima, Peru, killing all 97 aboard, **Nov. 27**
Eastern Air Lines DC-7B crashes at New York airport; 26 of 51 persons aboard are killed, **Nov. 30**
Brazilian airliner crashes near Manaus, Brazil; all 50 aboard are killed, **Dec. 14**
French airliner crashes in Corsica, killing 28, **Dec. 29**

Earthquakes

Earthquake kills four persons in Mexico City and Acapulco; causes heavy property damage, **May 11**
Second quake kills three persons in Mexico City, **May 19**
Earthquake in central Colombia kills 40 persons, **July 30**
Quakes in southern Italy cause 20 deaths, **Aug. 21**
Earthquake jolts parts of Utah, Idaho, Wyoming, Montana, and Colorado, **Aug. 30**
Most destructive earthquake in Iran's history kills 12,403 persons and destroys 294 villages, **Sept. 1**

Fires and Explosions

Eleven miners die in coal mine explosion at Carterville, Ill., **Jan. 10**
Gas pipeline explodes near Edson, Alberta; eight workmen killed, **Jan. 16**
Coal mine explosion in Saar, Germany, results in death of 299 miners, **Feb. 7**
Explosion in lignite mine at Banovici, Yugoslavia, kills 54 miners, **Feb. 27**
Coal mine explosion at Hessen, Germany, kills 31, **Mar. 9**
Explosions and fire at munitions factory in Saint-Just d'Ardèche, France, kills 16 persons, **Apr. 9**
Twenty-one miners die in coal mine explosion at Ny-Aalesund Island, off Norwegian coast, **Nov. 5**
Explosion in coal mine near Carmichaels, Pa., traps and causes death of 37 miners, **Dec. 6**

Floods

Storm and accompanying floods hit North Sea coast of Germany; deaths total 343, **Feb. 17**
Forty-one persons die in Luzon, Philippines, as result of floods caused by heavy rains, (reported) **July 26**
Flash flood in Florencia, Colombia, kills about 100 persons, **Aug. 18**
Floods in northeast India kill 73 persons, **Aug. 26–Sept. 4**
About 290 deaths result from floods in Sunchon, Korea, **Aug. 28**
Flood waters hit Barcelona, Spain; toll of dead and missing is set at 820, **Sept. 26**

ACCIDENTS AND DISASTERS—(*Left*) At Voghera, Italy, workers search for victims of a collision of a freight train and a standing express, filled with vacationers, which left 63 dead on May 31. (*Right*) All 95 persons aboard a jet airliner taking off from New York's International Airport on March 1 were killed when it crashed into the waters of Jamaica Bay.

WIDE WORLD; UPI

Hurricanes, Tornadoes, and Typhoons

Hurricane strikes Mauritius and Réunion islands in Indian Ocean, killing 38 persons, **Feb. 28**
Tornado hits Milton, Fla., killing 15 persons, **Mar. 31**
Tornado strikes Waterbury, Conn., killing one person and injuring 25 others, **May 24**
Typhoon hits Taiwan, killing 30 persons, **Aug. 5**
Typhoon lashes central Philippines; 155 persons reported dead or missing, **Aug. 9**
Typhoon sweeps Hong Kong, leaving 171 dead, **Sept. 1**
Severe storm hits California, Oregon, and Washington; 46 persons are killed, **Oct. 11–13**
Tropical storm hits southern Thailand; 769 die, **Oct. 27**
Typhoon hits Guam; eight persons killed, hundreds injured; damage totals $100 million, **Nov. 11**

Marine

Passenger boat sinks in Savitri River near Bombay, India; 70 persons drowned, **Jan. 1**
Yugoslav freighter sinks after colliding with British freighter in English Channel; 28 crewmen die, **Jan. 8**
Norwegian coastal liner runs aground off western Norway; 44 persons reported dead and missing, **Oct. 21**
Crew abandons burning Greek freighter during storm in North Atlantic; 18 crewmen are lost, **Nov. 15**
Japanese tanker and Norwegian tanker collide near Kawasaki, Japan; 39 crewmen killed and missing, **Nov. 18**
German freighter sinks in North Sea during storm; 23 of 24 crewmen die, **Dec. 16**

Railroads

Passenger trains collide near Woerden, Netherlands; 91 persons killed, **Jan. 8**
Passenger train and freight train collide near Cali, Colombia; 40 killed, **Feb. 22**
Two commuter trains and freight train collide in Tokoyo, Japan; 163 passengers killed, **May 3**
Freight train smashes into passenger train at Voghera, Italy, killing 63 persons, **May 31**
Northern Pacific passenger train jumps rails near Missoula, Mont.; one person killed, 243 hurt, **June 10**
Passenger train crashes into freight train at Dumraon in northwestern India; 69 killed, **July 21**
Passenger train is derailed near Bucharest, Rumania; 32 persons are killed, **July 22**
Train is derailed near Dijon, France; 40 dead, **July 23**
Five cars of Pennsylvania Railroad passenger train are derailed at Steelton, Pa.; 19 persons are killed, and 116 are injured, **July 28**
Polish passenger trains collide near Warsaw, killing more than 40 passengers, **Oct. 9**

Miscellaneous

Search for 94 Korean fishermen lost (Jan. 1) in gale off east coast of South Korea is called off, **Jan. 5**
Avalanche from extinct volcano buries 16 villages in Peru; about 3,500 persons die, **Jan. 10**
Mud slide partially buries village of Conchucos, Peru; 60 persons reported dead or missing, **Feb. 28**
Severe storm strikes eastern U.S. coast from Florida to New England; death toll set at 37, **Mar. 6–8**
Bus collides with car near Mexico City; 30 persons, half of whom were children, are killed, **Mar. 7**
Landslide in Andes Mountains of Peru kills 41, **Mar. 15**
Train collides with school bus at Buenos Aires, Argentina, killing 33 (mostly children), **June 11**
Seventeen children and one adult are drowned when boat overturns in lake near Quincy, Fla., **Aug. 18**
Steam boiler explodes in New York telephone company building, killing 23 persons and injuring 94, **Oct. 3**
Heavy smog blankets most of England; death toll set at 106, **Dec. 3–7**
Cave-in at gold mine near Johannesburg, South Africa, kills 34 African miners, **Dec. 12**

ADENAUER, Konrad
West German chancellor confers in Bonn with British Prime Minister Macmillan on East-West negotiations over Berlin and Britain's proposed entry into European Economic Community, **Jan. 9**
Confers in Baden-Baden with French President de Gaulle; reportedly persuades French leader to agree to renewal of negotiations on political unification by members of European Economic Community, **Feb. 15**
Discusses European unification with Italian Premier Amintore Fanfani, near Milan, Italy, **Apr. 7**
In talks with U.S. Secretary of State Rusk at Bonn, reaches agreement on "major issues," **June 22**
Confers with de Gaulle in Paris; joint communiqué pledges agreement to conclude negotiations on European political unity without waiting for Britain's entry into European Economic Community, **July 2–5**
Confers in Washington with President Kennedy; joint communiqué issued after talks declares that Berlin's "freedom and viability" must be safeguarded, and that NATO should be strengthened, **Nov. 14–15**
On return to Bonn, refuses to accede to Free Democrats' demand for dismissal of Franz Josef Strauss as defense minister, **Nov. 17**
Retirement as chancellor in 1963 announced, **Dec. 7**

ADOULA, Cyrille—See CONGO
AEROSPACE—See SPACE FLIGHT

UPI

ACCIDENTS AND DISASTERS—An earthquake leveled nearly 300 towns and villages in northwest Iran on September 1, taking the lives of more than 12,000 persons in Iran's worst disaster. (*Above*) The search for victims continues through September 3, near Teheran. (*Right*) An indication of the suffering caused by the quake may be seen in the faces of this couple.

AFRICA—See also individual African countries
Leaders of 20 African nations, at end of six-day conference in Lagos, Nigeria, agree to establish Inter-African and Malagasy States Organization to implement unity among African peoples, **Jan. 30**
Leaders of six "Casablanca" powers agree to establish a joint high command, at Cairo conference, **June 15–18**
AIR FORCE, U.S.—See UNITED STATES—*Armed Forces*
ALABAMA
Federal court in Montgomery rules that state legislature must reapportion itself in light of recent decision by U.S. Supreme Court, **Apr. 14**
Federal court orders immediate reapportionment, **July 21**
Special Democratic primary election is held to implement legislative realignment, **Aug. 28**
ALGERIA—See also DE GAULLE; FRANCE
Raoul Salan, former French general and commander of illegal Secret Army Organization (OAS) proclaims "mobilization of all Algerians" to prevent peace accord between France and Algerian rebels, **Jan. 4**
Algerian rebel leaders, at end of four-day meeting in Mohammedia, Morocco, issue communiqué reaffirming desire for peace settlement and declaring military offensive against European terrorists, **Jan. 10**
Cease-fire agreement ending seven-year Algerian war (effective Mar. 19) is signed in Évian-les-Bains, France, by French and Algerian delegates, **Mar. 18**
Christian Fouchet named French high commissioner for Algeria, to implement peace settlement, **Mar. 19**
French Army moves to crush European insurrection in Algiers after OAS units kill 15 French troops, **Mar. 23**
About 70 European demonstrators are killed in Algiers during clashes with French troops; OAS leader Edmond Jouhaud is captured in Oran, **Mar. 26**
Provisional government, headed by Abderrahmane Fares and including nine Algerian and three European members, is installed in Rocher-Noir, **Apr. 7**
OAS commander Raoul Salan is seized in Algiers by French forces and flown to Paris prison, **Apr. 20**

ALGERIA—(*Right*) Clouds of billowing black smoke rise from burning gasoline tanks to darken the harbor of Oran, on June 5. Terrorists of the Secret Army Organization (OAS) were held responsible for the holocaust. (*Below*) French security forces train their spotlights on the rooftops of Algiers in a search for snipers on March 22, during the OAS insurrection.

WIDE WORLD: UPI

UPI

BRAZIL—U.S. Attorney General Robert F. Kennedy (left) confers with President Goulart at Brasília, December 18.

OAS terrorists kill 110 persons in Algiers and other cities—the highest toll since cease-fire, **May 2**
French begin operation of emergency airlift to evacuate thousands of Europeans from Algeria, **May 20**
Military tribunal in Paris sentences Salan to life imprisonment for having led Algerian terrorist movement and attempted coup of April 1961, **May 23**
OAS temporarily halts terrorist killings, **June 1–6**
OAS orders new truce after European and Muslim negotiators agree to general amnesty for OAS terrorists, European participation in forming new police force, and public recognition of OAS by Muslims, **June 17**
In national referendum, 99% of voters approve independence for Algeria, **July 1**
Nationalist Army leaders in western Algeria rebel against Algerian provisional government; denounce dismissal (June 30) of three top officers, **July 2**
Algerian independence is formally proclaimed, **July 3**
Muslim crowds celebrating independence clash with Europeans in Oran; 73 Muslims and at least 20 Europeans are killed, **July 5**
Dissident Muslim nationalist leader Ahmed Ben Bella returns to Algeria after six years' absence, **July 11**
Dissident Muslim leaders, led by Ben Bella, form Political Bureau aimed at supplanting Premier Ben Khedda's provisional government, **July 22**
Rival political factions agree on membership of new Political Bureau as proposed by Ben Bella, **Aug. 2**
Provisional government transfers its authority to new Political Bureau, **Aug. 7**
Fighting breaks out in Algiers between troops backing rival political factions, **Aug. 29**
Crowds demonstrate in Algiers to protest threatened outbreak of civil war, **Aug. 31–Sept. 1**
Cease-fire agreement between opposing forces is announced in Algiers by political leaders, **Sept. 5**
Elections to first National Assembly are held; candidates nominated by Political Bureau are unopposed, **Sept. 20**
New National Assembly opens first session in Algiers; elects Ferhat Abbas as speaker, **Sept. 25**
Assembly approves cabinet headed by Ben Bella, **Sept. 29**
Admitted to membership in United Nations, **Oct. 8**
Premier Ben Bella, during nine-day visit to U.S., confers in Washington with President Kennedy, **Oct. 15**
Ben Bella pays state visit to Cuba, **Oct. 16–17**
Government bans Algerian Communist Party, **Nov. 29**
Ben Bella announces that one-day armed uprising by insurgents has been crushed, **Dec. 4**

ALLIANCE FOR PROGRESS—See INTER-AMERICAN AFFAIRS; UNITED STATES—*Foreign Affairs*

AMBASSADORS—See UNITED STATES—*Appointments and Resignations*

ANGOLA—See also UNITED NATIONS—*General Assembly*
Holden Roberto, president of National Front for the Liberation of Angola, announces in Léopoldville, Congo, formation of government in exile, **Apr. 5**

ARAB LEAGUE—See UNITED ARAB REPUBLIC

ARGENTINA—See also INTER-AMERICAN AFFAIRS
Severs diplomatic relations with Cuba, **Feb. 8**
In congressional and provincial elections, Peronist parties win half of 86 contested congressional seats and governorships of ten provinces, **Mar. 18**
Military leaders depose President Arturo Frondizi and seize control of government, **Mar. 28**
Senate leader José Maria Guido is sworn in as president, **Mar. 30**
President Guido cancels results of provincial and congressional elections; places all provinces under federal control, **Apr. 25**
Guido dissolves congress and political parties, **May 20**
Government bans participation by Peronists and Communists in future elections, **July 24**
Guido names Gen. José O. C. Saravia as secretary of war, ending dispute between military leaders, **Aug. 11**
Government formally dissolves Congress and sets congressional elections for Oct. 27, 1963, **Sept. 6**
Insurgent military forces, supported by President Guido, seize Buenos Aires after subduing troops of rival army faction in sharp fighting, **Sept. 23**
Military revolt in Cordoba is suppressed, **Dec. 11–12**

ARMY, U.S.—See MISSILES; SPACE FLIGHT; UNITED STATES—*Armed Forces*

ATOMIC ENERGY—See also DISARMAMENT
USSR explodes nuclear device underground—the first such Soviet test ever announced by U.S., **Feb. 2**
British and U.S. scientists jointly test nuclear device underground at Nevada site, under new cooperative test program for developing new weapons, **Mar. 1**
U.S. resumes atmospheric nuclear testing by exploding device of intermediate force at Christmas Island test site in Pacific Ocean, **Apr. 25**
Nuclear warhead propelled by long-range missile is exploded by U.S. for first time, after launching from nuclear submarine at Christmas Island site, **May 6**
France announces it has exploded (May 1) nuclear device underground at Sahara test site, **May 7**
U.S. attempts to set off atmospheric nuclear explosions fail as rockets are intentionally destroyed in flight over Pacific site, **June 4** and **19**
Hydrogen-type nuclear device is exploded underground at Nevada test site for first time, **July 6**
Low-yield nuclear device is exploded in atmosphere at Nevada test site, **July 7**
U.S. sets off 1.25-megaton device at height of 250 miles over Johnston Island; blast causes disruption in radio communications and creates new band of radiation in upper atmosphere, **July 9**
USSR explodes 30-megaton device at Arctic test site as new test series gets under way (U.S. Atomic Energy Commission says low-yield devices may have been exploded there a few days earlier), **Aug. 5**
U.S. conducts 36th nuclear test and final high-altitude test of current series in Pacific, **Nov. 4**
USSR sets off 39th recorded atmospheric nuclear test—final test of current series, **Dec. 25**

AUSTRALIA
People of Perth turn on city's lights to salute U.S. astronaut John H. Glenn, who flies over Perth during his first orbit in *Friendship 7* capsule, **Feb. 20**
Prime Minister Robert G. Menzies confers in Washington with President Kennedy on Great Britain's proposed membership in European Common Market, **June 18–20**

AVIATION—See ACCIDENTS AND DISASTERS; SPACE FLIGHT

AYUB KHAN, Mohammed—See PAKISTAN

BARNETT, Ross R.—See MISSISSIPPI

BASEBALL—See SPORTS

BEN BELLA, Ahmed—See ALGERIA; CUBA

BERLIN—See GERMANY

BOLIVIA
Severs relations with Chile after latter announces it will divert water from a border river despite Bolivia's objections, **Apr. 16**
Withdraws temporarily from participation in Organization of American States as result of water dispute, **Sept. 3**

BORNEO—See also MALAYA
Revolt by anti-British nationalists breaks out in Brunei; sultan of Brunei denounces revolt, **Dec. 8**
Sultan's forces and British troops recapture Seria, in Brunei, after decisive battle with rebels, **Dec. 9**
British forces report that remaining rebel strongholds have been taken, **Dec. 13**

BOSTON
State government takes control of Greater Boston's transit system, ending two-day strike, **Apr. 1**

BOXING—See SPORTS

BRAZIL—See also KENNEDY, ROBERT F.
President João Goulart confers in Washington with President Kennedy on Latin American problems, **Apr. 3–4**
Premier Tancredo Neves resigns, **June 26**
Food riots occur in Rio de Janeiro following one-day general strike; six persons killed, **July 5**
Francisco Brochado da Rocha is elected temporary premier by Chamber of Deputies, **July 10**
Premier Brochado da Rocha's government resigns after Congress fails to grant full executive powers to President Goulart, **Sept. 14**
Congress approves holding of national plebiscite (on Jan. 6, 1963) to decide whether parliamentary system of government should be retained, **Sept. 15**
Goulart nominates Hermes Lima (Labor Party) as premier, **Sept. 17**
Congressional and national elections are held; moderates and conservatives retain majority, **Oct. 7**
Chamber of Deputies confirms Lima as premier, **Nov. 30**

BRITISH GUIANA
Strikers protesting government's new tax program clash with police in Georgetown; British troops arrive to put down uprising at government's request, **Feb. 16**
Labor leaders call off five-day general strike after troops restore order; rioting results in six deaths, **Feb. 19**

BROWN, Edmund G.—See CALIFORNIA

BULGARIA—See also ITALY; KHRUSHCHEV
Voters elect government's candidates in single-list balloting for parliamentary seats, **Feb. 25**

Announces purge of seven top Stalinists among Communist leaders, including Premier Yugov, **Nov. 5**
Communist Party chief Todor Zhivkov is elected premier by National Assembly, **Nov. 19**

BURMA
Army coup, led by Gen. Ne Win, deposes Premier Nu's civilian government, **Mar. 2**

BURUNDI—See also UNITED NATIONS—*General Assembly*
Former kingdom within United Nations trust territory of Ruanda-Urundi attains independence, **July 1**
Admitted to membership in United Nations, **Sept. 18**

CALIFORNIA
Democratic Gov. Edmund G. Brown is re-elected, defeating Republican candidate Richard M. Nixon, **Nov. 6**

CAMEROUN
President Ahmadou Ahidjo confers in Washington with President Kennedy during five-day visit, **Mar. 13–14**

CANADA—See also DIEFENBAKER; QUEBEC
Northwest Territories Council approves creation of Mackenzie Territory by 1964, (reported) **Jan. 27**
Charles S. A. Ritchie named ambassador to U.S., succeeding Arnold D. P. Heeney, **Feb. 12**
Twenty-fourth Parliament is dissolved, **Apr. 21**
Government announces new exchange rate for Canadian dollar of 92.5 U.S. cents, **May 2**
National elections are held; ruling Conservatives lose parliamentary majority as Liberals, New Democratic Party, and Social Credit Party make gains, **June 18**
Prime Minister Diefenbaker announces government will borrow $1 billion and introduce austerity program to ease country's financial difficulties, **June 24**
Doctors in Saskatchewan strike against provincial government's compulsory medical care plan, **July 1–24**
Diefenbaker announces major cabinet changes; George C. Nowlan named finance minister to succeed Donald M. Fleming, who is appointed minister of justice, **Aug. 9**
Twenty-fifth Parliament opens first session, **Sept. 27**
Government issues statement aligning Canada with United States position during Cuban crisis, **Oct. 25**

CARPENTER, Malcolm Scott
Navy lieutenant commander becomes second U.S. astronaut to orbit earth three times; his *Aurora 7* space capsule overshoots Caribbean target area on re-entry but is sighted after 39-minute lapse, **May 24**

CASTRO, Fidel—See also CUBA; MIKOYAN; ROMAN CATHOLIC CHURCH
Cuban premier, at mass gathering in Havana, issues Second Declaration of Havana, attacking U.S. "imperialism" and exclusion of Cuba from inter-American system; charges that U.S. embargo on Cuban exports is "economic aggression," **Feb. 4**
Rejects President Kennedy's charges that Cuba has offensive missiles; declares Cuban weapons are for defensive purposes only, **Oct. 23**
In wake of Kennedy-Khrushchev agreement for ending Cuban crisis, demands that U.S. evacuate Guantánamo Naval Base, in Havana statement, **Oct. 28**
Confers with UN Acting Secretary General U Thant in Havana; reportedly refuses to allow United Nations inspection of Soviet missile sites in Cuba, **Oct. 30–31**
Agrees to removal of Soviet jet bombers from Cuba, in letter to U Thant, **Nov. 20**
Agrees to exchange rebel prisoners for foods and medicines valued at $53 million, in Havana meeting with James B. Donovan, representative of U.S. private group seeking release of prisoners, **Dec. 21**

CELEBREZZE, Anthony J.
Is sworn in as secretary of health, education, and welfare, **July 31**

CENTURY 21 EXPOSITION (SEATTLE WORLD'S FAIR)
Is officially opened by President Kennedy, **Apr. 21**
Closes, after registering great financial success, **Oct. 22**

CHILE—See BOLIVIA

CHINA, Communist—See also HONG KONG; INDIA; JAPAN; MONGOLIAN PEOPLE'S REPUBLIC; PAKISTAN
Foreign Ministry demands U.S. military withdrawal from South Vietnam; declares China's security is threatened by U.S. "undeclared war" there, **Feb. 24**
National People's Congress adopts austerity program emphasizing agricultural development, at end of three-week closed session in Peking, **Apr. 16**
In note to India, demands that Indian frontier guards withdraw from "aggressive posts," **May 2**
Announces that troops have been massed opposite Nationalist-held Quemoy and Matsu islands to deter alleged Nationalist invasion from Taiwan, **June 23**
Protests to India against "serious intrusion by Indian troops" in Sinkiang-Uigur region, **July 8**
Shoots down Chinese Nationalist U-2 reconnaissance plane over eastern China, **Sept. 9**
Premier Chou En-lai reiterates Communist China's support for revolutionary spread of communism, **Sept. 30**
Reports that India has launched "large-scale frenzied attack" in disputed border regions, **Oct. 20**
India discloses that Chinese Communists have completed conquest of 15,000 square miles of land in Ladakh which they claim as Chinese territory, **Nov. 5**
Announces cease-fire along Indian border; proposes that both sides withdraw troops 12.5 miles back of "lines of actual control" as of Nov. 7, 1959, **Nov. 21**
In note to India, asks for clear acceptance or rejection of Chinese cease-fire proposals, **Dec. 9**

ANNAN PHOTO FEATURES

CANADA—Prime Minister John G. Diefenbaker shakes hands with Montreal youngsters at a Conservative rally, June 11, prior to elections in which the Conservatives lost their majority. The Diefenbaker government fell on Feb. 6, 1963.

CHINA, Nationalist—See TAIWAN

CHOU EN-LAI—See CHINA

CHURCHILL, Sir Winston
Leaves hospital in London after convalescing for 54 days because of fractured thigh, **Aug. 21**

CLAY, Gen. Lucius D.—See GERMANY

COLOMBIA
Conservative leader Guillermo León Valencia succeeds Liberal Alberto Lleras Camargo as president, **Aug. 7**

COMMON MARKET—See EUROPEAN ECONOMIC COMMUNITY

COMMONWEALTH OF NATIONS
Commonwealth prime ministers, at end of ten-day conference in London, issue communiqué declaring they will not object to Britain's membership in European Economic Community, provided their interests are safeguarded, **Sept. 19**

COMMUNIST PARTY, U.S.
Is convicted by federal jury in Washington for failing to register as Soviet agent under Subversive Activities Control Act, and is fined $120,000, **Dec. 17**

CONGO
Mutinous Congolese troops slay 19 Roman Catholic priests and three laymen in Kongolo, Katanga, **Jan. 1**
Chamber of Deputies directs Antoine Gizenga, federal deputy premier and political leader in Oriental Province, to return to Léopoldville and answer charges about alleged secessionist activities, **Jan. 8**
Gizenga's forces are defeated by central government's troops in attempt to seize Stanleyville, **Jan. 13–14**

CHURCHILL—Nearly two months after he suffered a thigh fracture in a fall at Monte Carlo, 87-year-old Sir Winston Churchill leaves the hospital at Middlesex, on August 21.

CENTRAL PRESS

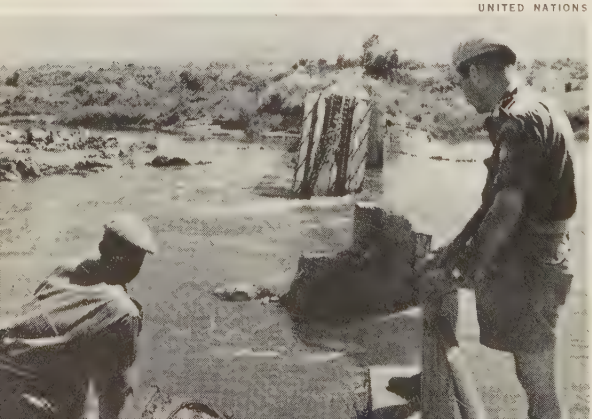
UPI

CONGO—Arriving in New York, February 2, to request more support from the United Nations, Congolese Premier Cyrille Adoula (right) is met by UN Under-Secretary Ralph Bunche.

Chamber of Deputies censures Gizenga and dismisses him as deputy premier, **Jan. 15**
Gizenga is flown to Léopoldville and placed under detention by central government, **Jan. 20**
Robert K. A. Gardiner of Ghana is named head of UN Operation in Congo, succeeding Sture C. Linner, **Jan. 26**
Premier Cyrille Adoula arrives in New York; in address to UN General Assembly, requests increased military aid in order to end Katanga's secession, **Feb. 2**
Adoula confers with President Kennedy in Washington on Congolese problems, **Feb. 5**
UN troops and Katanga forces clash at Kaminaville, endangering existing truce, **Mar. 5**
Adoula and Katanga President Moïse Tshombe confer in Léopoldville; fail to agree on methods to end Katanga's secession, **Mar. 18–Apr. 17**
Tshombe and Adoula announce agreement to integrate Katanga armed forces into Congolese Army, at conference in Léopoldville (begun May 22), **May 30**
Talks between Tshombe and Adoula on reunification end; Tshombe returns to Elisabethville, **June 26**
Adoula reorganizes cabinet, dismissing extremist ministers, **July 11**
Federal government orders economic measures and bans intended to isolate Katanga Province, **Aug. 7**
UN proposals to end Katanga's secession are presented to Tshombe government; plans call for federal and provincial government to share equally Katanga's revenues, and for military reunification, **Aug. 24**
Katanga President Tshombe accepts UN plan as "basis of an acceptable settlement" for reunification, **Sept. 3**
Premier Adoula introduces new federal constitution; provisions would grant provinces local autonomy but would retain strong federal government, **Oct. 16**
Mutinous Katanga forces and UN troops engage in heaviest fighting in more than a year; UN Force captures most of Elisabethville, **Dec. 28–29**
UN Force captures Kamina and other key posts, and destroys Katanga air force; President Tshombe flees to Southern Rhodesia, **Dec. 30**
U Thant issues ultimatum demanding that Tshombe negotiate Katanga's reunification within two weeks or face further military action by UN Force, **Dec. 31**

CONGO—United Nations personnel in the Congo examine the ruins of the Kongolo Bridge, North Katanga, in December. The bridge was destroyed by withdrawing Katanga forces.

UNITED NATIONS



CONGRESS, U.S.—See UNITED STATES
CONNECTICUT—See RIBICOFF
COSMOS SATELLITES—See SPACE FLIGHT
COSTA RICA—See also INTER-AMERICAN AFFAIRS
Francisco José Orlich Bolmarcich is chosen president in national elections, **Feb. 4**
CUBA—See also CASTRO; INTER-AMERICAN AFFAIRS; ORGANIZATION OF AMERICAN STATES; ROMAN CATHOLIC CHURCH; UNION OF SOVIET SOCIALIST REPUBLICS; UNITED STATES—*Foreign Affairs*
In note to U.S., protests alleged violations by U.S. of Cuban territorial waters and air space, **Jan. 2**
Communist leader Carlos R. Rodríguez named president of National Institute of Agrarian Reform, replacing Premier Castro, **Feb. 14**
Announces formation of 25-member directorate to head Integrated Revolutionary Organizations, **Mar. 9**
Food rationing system takes effect, **Mar. 19**
Military tribunal sentences 1,179 Cuban rebels captured in invasion attempt of April 1961 to 30 years' imprisonment, following five-day trial, **Apr. 7**
Returns 60 sick prisoners to U.S. in exchange for promised indemnity of $2.5 million to be paid by Cuban exile group, **Apr. 14**
Government announces that cooperatives will be turned into "state farms" because of mismanagement, **Aug. 18**
U.S. officials report heavy influx of Soviet military equipment and technicians in past month, **Aug. 20**
Cuban exile group shells Havana suburb from offshore boats, causing light damage, **Aug. 24**
Cuban naval ships fire on U.S. Navy patrol plane over international waters near Cuban coast, **Aug. 30**
Castro announces that Cuba and Soviet Union will jointly build and use a Cuban fishing port, **Sept. 25**
President Dorticós, in address to UN General Assembly in New York, calls for condemnation of alleged U.S. "naval blockade" of Cuba, **Oct. 8**
Commandos of a Cuban exile group raid the Cuban port of Isabela de Sagua, killing 20 guards, **Oct. 8**
Joint communiqué signed by Castro and visiting Algerian Premier Ben Bella demands that U.S. evacuate Guantánamo naval base, **Oct. 17**
Mobilizes all military forces following President Kennedy's order to "quarantine" Cuba, **Oct. 22**
Announces rejection of proposals for international inspection of Soviet missile withdrawal, **Nov. 1**
Forty-two Soviet jet bombers are being shipped from Cuba aboard three Soviet vessels, U.S. Defense Department announces, **Dec. 6**
Remaining 1,113 rebels captured in invasion attempt of April 1961 are released in exchange for $53 million worth of foods and medicines supplied by private groups in U.S., **Dec. 23–24**
Group of 922 relatives of rebel prisoners is allowed to go to U.S., **Dec. 27**
CYPRUS
President Makarios, during five-day state visit to U.S., confers in Washington with President Kennedy about his country's economic development needs, **June 5–6**
DE GAULLE, Charles—See also ADENAUER; FRANCE; MACMILLAN
French president, in national address, expresses hope for early Algerian cease-fire and future cooperation between France and an independent Algeria, **Feb. 5**
Orders French Army in Algeria to crush "armed insurrection" of European extremists protesting Algerian cease-fire settlement, **Mar. 23**
Discusses plans for European federation with Italian Premier Amintore Fanfani, in Turin, Italy, **Apr. 4**
At Paris news conference, declares France will organize own defensive atomic force rather than rely on U.S. protection, and that western Europe must attain unity on basis of cooperation among states, **May 15**
Declares constitutional changes are necessary to insure strong state executive after his own term of office ends, in national address, **June 8**
Discusses French–U.S. differences on Allied nuclear policy with U.S. Secretary of State Rusk, **June 19**
Escapes assassination attempt in Paris suburb, **Aug. 22**
Pays six-day state visit to West Germany; joint communiqué says France and West Germany will "promote" European unification, **Sept. 4–9**
In national address, calls on French people to approve his proposal for popular election of a president, in forthcoming national referendum, **Oct. 4**
Announces that he will dissolve National Assembly, following Assembly's censure of government, **Oct. 6**
DEMOCRATIC PARTY—See ELECTIONS
DENMARK
Premier Viggo Kampmann resigns because of ill health, **Aug. 31**
Foreign Minister Jens Otto Krag named premier, **Sept. 3**
DESEGREGATION—See GEORGIA; LOUISIANA; MISSISSIPPI; SUPREME COURT; VIRGINIA
DIEFENBAKER, John G.—See also CANADA; MACMILLAN
Calls for new general elections and orders dissolution of House of Commons, **Apr. 17–18**
Opposes British terms for Britain's entry into European Economic Community, at London meeting of Commonwealth prime ministers, **Sept. 10–19**
Discloses exchange of letters with President Kennedy proposing international meeting to cut tariffs, **Oct. 19**

DISARMAMENT—See also KENNEDY, JOHN F.; KHRUSHCHEV
Britain, U.S., and USSR end 39-month talks at Geneva, Switzerland, on treaty to halt nuclear weapons testing, **Jan. 29**
Disarmament conference attended by foreign ministers of 17 nations (4 Western, 5 Communist, and 8 neutral) opens in Geneva, **Mar. 14**
Soviet Union and U.S. submit proposals to Geneva conference for general and complete disarmament; Soviets reject Western-proposed inspection safeguards for nuclear test-ban treaty, **Mar. 15**
Britain, U.S., and USSR report their inability to agree on nuclear test-ban treaty to Geneva meeting, **Mar. 23**
Britain and U.S. issue joint statement expressing hope USSR will accept "international verification" of nuclear test-ban treaty, but declaring they will resume atmospheric testing in absence of treaty, **Apr. 10**
Brazil, on behalf of neutral nations at Geneva conference, presents proposed compromise plan for "continuous observation and effective control" of a nuclear test-ban treaty, **Apr. 16**
U.S. presents "outline of basic provisions" for three-stage disarmament program to Geneva conference; proposals include drastic reductions in armaments under effective international control system, **Apr. 18**
Soviet Union rejects U.S. compromise proposals for test-ban treaty involving fewer on-site yearly inspections and "internationally supervised" control stations, at Geneva conference, **Aug. 9**
Soviet Union rejects alternative Western nuclear test-ban treaties (submitted Aug. 27) providing for either total ban with international on-site inspections or uninspected limited ban, at Geneva conference, **Aug. 28**
Geneva conference adopts "no progress" report, **Sept. 7**
Soviet Union rejects neutralist proposal to ban temporarily underground nuclear tests, **Dec. 3**
Britain and U.S. reject Soviet proposal for uncontrolled moratorium on nuclear testing effective Jan. 1, 1963; Geneva disarmament conference adjourns, **Dec. 20**

DOMINICAN REPUBLIC—See also INTER-AMERICAN AFFAIRS; ORGANIZATION OF AMERICAN STATES
Seven-man Council of State, new legislative and executive ruling body, is installed, **Jan. 1**
Resumes diplomatic relations with U.S., **Jan. 6**
President Joaquin Balaguer resigns and military junta led by Gen. Pedro Rodriguez y Echavarria seizes power, after riots occur in Santo Domingo when troops fire on antigovernment demonstrators, **Jan. 16**
Military countercoup deposes junta and reinstates Council of State, which proclaims Vice President Rafael Bonnelly as president, **Jan. 18**
President Bonnelly proclaims new constitution providing for popular election of president and Congress, **Sept. 16**
Juan Bosch is elected president to a four-year term, and his Revolutionary Party wins majority in new Congress, in orderly national elections, **Dec. 20**
Announces suppression of peasant revolt in which 30 persons were killed, **Dec. 29**

DONOVAN, James B.—See CASTRO

EARTHQUAKES—See ACCIDENTS AND DISASTERS

ECUADOR
Cuts ties with Cuba, Poland, and Czechoslovakia, **Apr. 3**
President Carlos J. Arosemena pays state visit to Washington; confers with President Kennedy on Alliance for Progress program, **July 23–24**

ECUMENICAL COUNCIL—See ROMAN CATHOLIC CHURCH

EDUCATION—See GEORGIA; LOUISIANA; MISSISSIPPI; UNITED STATES—*Congress*

EGYPT—See UNITED ARAB REPUBLIC

EICHMANN, Adolf—See ISRAEL

ELECTIONS, U.S.—See also CALIFORNIA; MASSACHUSETTS; MICHIGAN; NEW YORK; PENNSYLVANIA
In U.S. elections, Democrats win 259 seats (down 4 from previous seating) in House of Representatives, and Republicans, 176 (up 2); Democratic seats in Senate increase from 64 to 68; Republican seats decrease from 36 to 32; of 35 contested governorships, Democrats win 20 and Republicans 15, **Nov. 6**

EL SALVADOR
Eusebio Rodolfo Cordon is elected provisional president by Constituent Assembly, **Jan. 8**
National Conciliation Party, led by Lt. Col. Julio A. Rivera, wins national elections, **Apr. 29**
Rivera is sworn in as president, **July 1**

ESTES, Billy Sol
Is sentenced by state judge in Tyler, Texas, to eight years in prison on charges of fraudulently arranging mortgage on nonexistent fertilizer tanks, **Nov. 7**

ETHIOPIA
Eritrean Assembly approves end of Eritrea's federated status and its unification with Ethiopia (effective Nov. 15), Nov. 14

EUROPEAN ECONOMIC COMMUNITY
Council of Ministers, at end of 18-day meeting in Brussels, agrees to abolish import controls on certain farm products; step will lead to full customs union among six member nations by 1969, **Jan. 14**
Announces associate membership for Greece (effective Nov. 1), **Aug. 9**
Negotiations in Brussels fail to reach agreement on Britain's membership, **Dec. 10–11** and **Dec. 19–20**

EXPLOSIONS—See ACCIDENTS AND DISASTERS

WIDE WORLD

CUBA—United Nations delegates examine photos of Soviet missile sites in Cuba, in an exhibit which was presented by the United States to the Security Council, October 25.

FANFANI, Amintore—See also ADENAUER; DE GAULLE
Confers in London with British Prime Minister Macmillan on European problems, **Jan. 17**
Announces formation of new coalition cabinet, **Feb. 21**

FAULKNER, William
American novelist dies in Oxford, Miss., **July 6**

FINLAND
National election is held; President Urho Kekkonen is re-elected to second six-year term, **Jan. 15–16**
In parliamentary elections, President Kekkonen's Agrarian Party wins largest number of seats, **Feb. 4–5**

FIRES—See ACCIDENTS AND DISASTERS

FLOODS—See ACCIDENTS AND DISASTERS

FOOTBALL—See SPORTS

FOREIGN AID—See KENNEDY, JOHN F.; UNITED STATES—*Congress*

FRANCE—See also ALGERIA; DE GAULLE
Bomb explosion at foreign ministry in Paris kills one man and injures 13 others; terrorist act attributed to Secret Army Organization (OAS), **Jan. 22**
Leftist demonstrators protesting terrorist acts of OAS clash with police in Paris; eight persons die, **Feb. 8**
About 500,000 persons march in funeral procession in Paris for victims killed in riots of Feb. 8, **Feb. 13**
Announces it will not attend forthcoming Geneva disarmament conference, **Mar. 5**
Expels Soviet ambassador and recalls French ambassador in Moscow to protest Soviet recognition of Algerian rebels' provisional government, **Mar. 23**
In national referendum, 90.7% of participating voters approve Algerian peace settlement, **Apr. 8**
President de Gaulle accepts Premier Michel Debré's resignation; names Georges Pompidou as premier, **Apr. 14**
Five MRP cabinet ministers resign as result of President de Gaulle's disavowal of an integrated, supranational Europe, **May 16**
Foreign Minister Maurice Couve de Murville rejects U.S. proposal to coordinate Western nuclear forces, **June 20**
Formally proclaims Algeria's independence, **July 3**
Boring of world's longest vehicular tunnel (7.25 miles) under Mont Blanc on French-Italian border is completed, **Aug. 14**
Signs protocols providing aid to Algeria and for joint exploitation of Sahara mineral deposits, **Aug. 28**

CUBA—Premier Fidel Castro (right) gives a reception for Soviet Deputy Premier Anastas Mikoyan (left) on November 7, in Havana, during his 24-day visit to Cuba to arrange for withdrawal of Soviet offensive weapons from the island.

UPI

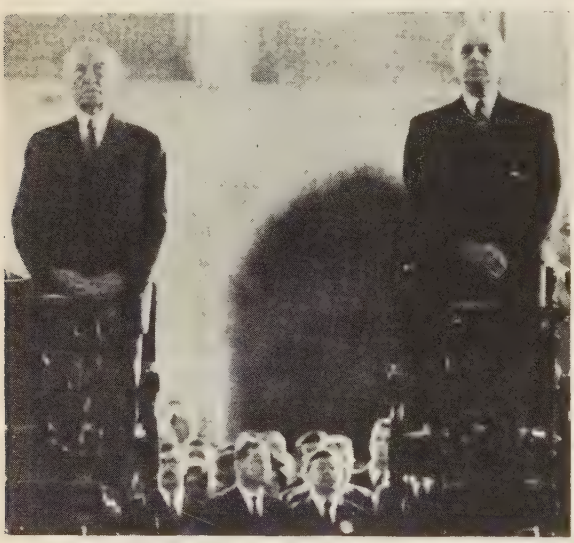
Parliament censures government over President de Gaulle's proposal for popular election of a president, causing resignation of Pompidou cabinet, **Oct. 5**
In national referendum, 61.7% of participating voters approve de Gaulle's proposal to elect president of country by popular vote, **Oct. 28**
Candidates supporting President de Gaulle win unprecedented majority of 275 seats in 482-seat National Assembly, in legislative elections, **Nov. 18** and **25**
Premier Pompidou forms new cabinet, **Dec. 6**

FRANKFURTER, Felix—See SUPREME COURT

FRONDIZI, Arturo—See ARGENTINA

GENEVA CONFERENCES—See DISARMAMENT

GEORGIA
Negro leaders in Albany call for boycott of retail stores following city's refusal to approve desegregation agreement, **Feb. 2**
About 2,500 Negroes in Macon agree to boycott city buses, following arrest of four Negro ministers who attempted to practice bus desegregation, **Feb. 11**
Federal court in Augusta rules unconstitutional state laws providing for segregation on buses, **Feb. 13**
Federal court in Atlanta rules that state's county-unit election system is unconstitutional, **Apr. 28**
Department of Justice files first suit (in Bibb County) challenging use of segregated voting machines, **May 16**
Negro integration leader Dr. Martin Luther King, Jr., is released after serving two days of 45-day jail sentence in Albany, following conviction in 1961 for violating ordinance by leading demonstration, **July 12**



AFP FROM PICTORIAL PARADE

FRANCE—France's President Charles de Gaulle (right) and West Germany's Chancellor Konrad Adenauer, on a state visit to France, attend Mass at Reims Cathedral, July 8.

Negroes in Albany demonstrate against city's refusal to discuss grievances; 160 Negroes arrested, **July 21**
Dr. Martin Luther King and other Negro leaders are imprisoned in Albany for participating in antisegregation demonstration, **July 27–Aug. 10**
Gov. Ernest Vandiver signs bill reapportioning legislature to comply with federal court orders, **Oct. 5**

GERMANY—See also ADENAUER; KHRUSHCHEV
Ludwig Erhard, West German economics minister, confers in Washington with President Kennedy and other U.S. officials on West Germany's economy, **Jan. 8–9**
Western Allies protest to USSR against harassment by Soviet planes of Allied flights to Berlin, **Feb. 15**
Soviet planes stop harassing Western planes in air corridors between West Germany and Berlin, **Mar. 30**
Soviet Union recalls Marshal Ivan S. Konev as commander of Soviet forces in East Germany, **Apr. 19**
Gen. Lucius D. Clay leaves West Berlin after serving for eight months as President Kennedy's special representative in city, **May 8**
U.S. commandant in Berlin accuses East German border guards of provoking "dangerous incidents," **June 9**
East Germans begin to fortify East-West Berlin wall, following border shootings and explosions, **June 15**
West Berlin police start to build protective barricades near wall as defensive measure, **June 20**
West Berliners stone Soviet vehicles and clash with police while demonstrating against shooting (Aug. 17) of refugee by East German border guards, **Aug. 18–20**
Soviet Union abolishes office of Soviet commandant in East Berlin; transfers Soviet military authority there to its commander in East Germany, **Aug. 22**
East Germany appoints its Berlin commandant, **Aug. 23**
Western communiqué declares Soviet Union cannot unilaterally abridge its rights in Berlin, **Aug. 23**
Soviet Union declares four-power agreement for administration of Berlin is no longer in effect, **Sept. 17**
East German border guards bar entry of Western army vehicle into East Berlin for first time, **Oct. 6**
Western powers protest to USSR against East German violation of rights of Western access to East Berlin; Soviets refuse to accept protest, **Oct. 8**
West German Chancellor Adenauer agrees to Free Democrats' demands for dismissal of two state secretaries, following government's arrest of five editors of news magazine *Der Spiegel* for publishing secret military information, **Nov. 5**
Free Democrats vote to leave coalition cabinet, but say they will enter new cabinet if Adenauer dismisses Defense Minister Franz Josef Strauss, who allegedly had a role in *Der Spiegel* affair, **Nov. 19**
In Bavarian state elections, Christian Social Union wins 108 seats in 204-member legislature, **Nov. 25**
East German leader Walter Ulbricht declares his government is willing to make compromises on Berlin and German problem, in speech made public, **Dec. 5**
Christian Democratic Union and Free Democrats agree to form new coalition cabinet; Kai-Uwe von Hassel named minister of defense, replacing Strauss, **Dec. 11**

GIZENGA, Antoine—See CONGO

GLENN, John H., Jr.
Marine Corps lieutenant colonel becomes first U.S. astronaut to make orbital flight; encircles earth three times during 4-hour 56-minute flight at maximum altitude of 162 miles; *Friendship 7* capsule lands safely in Atlantic near Grand Turk Island, **Feb. 20**
Confers in Washington with visiting Soviet astronaut Maj. Gherman S. Titov and President Kennedy, **May 3**

GOLDBERG, Arthur J.—See also SUPREME COURT
Resigns as secretary of labor, **Sept. 20**
Sworn in as associate justice of Supreme Court, **Oct. 1**

GOLF—See SPORTS

GOULART, João—See BRAZIL

GREAT BRITAIN—See also ATOMIC ENERGY; CHURCHILL; DISARMAMENT; HOME; MACMILLAN; UNITED STATES
Rejects Soviet proposal (Mar. 17) that British and Soviet governments urge U.S. to end its "interference" in South Vietnam, **Apr. 16**
Law limiting immigration into Great Britain from other Commonwealth countries is enacted, **Apr. 18**
British-equipped satellite (Ariel) is launched into orbit by U.S. rockets, from Cape Canaveral, Fla., **Apr. 26**
In local elections, Conservatives lose majorities on 36 borough councils to Labour and Liberal parties, **May 10**
Prime Minister Macmillan reshuffles Conservative cabinet, displacing seven ministers; R. A. Butler named deputy prime minister; Reginald Maudling succeeds Selwyn Lloyd as chancellor of exchequer, **July 13**
Macmillan orders nine junior ministers to resign, and appoints 24 subcabinet ministers, **July 16**
Minister Thomas G. D. Galbraith resigns, after disclosure of his past connection with Soviet spy, **Nov. 8**

GREECE
Greek Orthodox bishops elect Archbishop Iakovos primate of the national church of Greece, succeeding Archbishop Theoklitos (who died Jan. 8), **Jan. 13**
Metropolitan Chrysostomos of Cavalla elected primate to succeed Archbishop Iakovos, who abdicated on Jan. 25 following criticism of his election, **Feb. 14**
Princess Sophia of Greece and Prince Juan Carlos of Spain are wed in Athens, **May 14**
Becomes associate member of Common Market, **Nov. 1**

GROMYKO, Andrei A.
Soviet foreign minister attends foreign ministers' meeting and 17-nation disarmament conference in Geneva, Switzerland, **Mar. 11–29**
In Soviet foreign policy statement presented to UN General Assembly, repeats Soviet warning that an attack by U.S. on Cuba would mean war; blames Western powers for deadlock on disarmament, **Sept. 21**
Confers in Washington with President Kennedy; tells him that Soviet military build-up in Cuba was for defensive purposes only, **Oct. 18**

GUATEMALA—See also INTER-AMERICAN AFFAIRS
Demonstrators clash with police in Guatemala City; 22 persons killed and 1,000 arrested, **Mar. 13–19**
Government troops crush short-lived revolt by Air Force units in Guatemala City, **Nov. 25**

GUIDO, José Maria—See ARGENTINA

HOME, Earl of
British foreign secretary attends foreign ministers' meeting and 17-nation disarmament conference in Geneva, Switzerland, **Mar. 11–27**
In address to UN General Assembly in New York, says members should insist that Soviet Union cease creating "artificial" crises in Berlin; declares self-determination is only solution to German problem, **Sept. 27**

HONG KONG
Government announces that about 10,000 Chinese refugees who entered colony illegally since May 1 have been returned to Communist China, **May 12**
Mass influx of Chinese refugees into colony is halted abruptly by Communist China, after about 60,000 of 70,000 refugees who entered since May 1 were compelled to return, **May 25**

HUNGARY
Communist Party has purged itself of former Stalinist leaders, including ex-Communist first secretaries Ernoe Gero and Matyas Rakosi, it is announced, **Aug. 19**

IKEDA, Hayato—See JAPAN

INDIA—See also CHINA; NEHRU
General elections are held; ruling Congress Party wins 356 of 459 contested parliamentary seats, **Feb. 16–26**
Accuses Communist China of intruding on her border and of creating tensions among Asian nations, **May 2**
Sarvepalli Radhakrishnam is elected president by electoral college, succeeding Rajendra Prasad, **May 11**
India announces that Communist Chinese troops have encircled Indian outpost in Ladakh, **July 10**
Charges that Chinese Communist troops had fired on Indian border patrols in Ladakh, **July 22**
Parliament completes action on legislation creating new (and 16th) State of Nagaland, **Sept. 3**
Major clashes between Chinese and Indian troops along disputed border area in Ladakh are reported, **Oct. 11**
Chinese launch full-scale attack in North East Frontier Agency and Ladakh, overrunning Indian positions; 2,000–2,500 Indian troops dead or missing, **Oct. 20**
Chinese forces capture key town of Towang, 17 miles south of Tibetan border, **Oct. 25**
India declares state of emergency, **Oct. 26**
Prime Minister Nehru dismisses V. K. Krishna Menon as minister of defense; assumes post himself, **Oct. 31**
First shipment of U.S. arms aid arrives in Calcutta, **Nov. 3**
Chinese troops launch large-scale attack near Walong in North East Frontier Agency, **Nov. 16**
Chinese seize Bomdi La and threaten to sweep out of mountains and into Assam plains, **Nov. 19**
China announces cease-fire in Sino-Indian war, **Nov. 21**
India agrees to negotiate with Pakistan on their 15-year dispute over Kashmir, **Nov. 29**
Nehru rejects Communist Chinese note demanding acceptance of its cease-fire proposals, **Dec. 10**
Announces beginning of mass Chinese withdrawal from North East Frontier Agency, **Dec. 14**

INDONESIA—See NETHERLANDS; SUKARNO; WEST NEW GUINEA

INTER-AMERICAN AFFAIRS—See also ORGANIZATION OF AMERICAN STATES
American foreign ministers, at end of ten-day meeting in Punta del Este, Uruguay, approve resolution to exclude Cuba from inter-American system, **Jan. 31**
First conference of Alliance for Progress, attended by finance ministers of 20 American states, is held in Mexico City; forms committees to study Alliance programs and methods, **Sept. 30–Oct. 27**
Six Latin American states (Argentina, Costa Rica, Dominican Republic, Guatemala, Nicaragua, and Panama) offer military help to U.S. for quarantine of Cuba, **Oct. 24**
Charter to establish Organization of Central American States is signed in San Salvador by Costa Rica, Nicaragua, Honduras, El Salvador, and Guatemala, **Dec. 14**

INTERNATIONAL CONFERENCES—See AFRICA; DISARMAMENT; INTER-AMERICAN AFFAIRS; LAOS

INTERNATIONAL COURT OF JUSTICE—See also UNITED NATIONS
Expresses advisory opinion that all United Nations members are obligated to pay expenses of UN operations in the Congo and Middle East, **July 20**

IRAN
Shah confers in Washington with President Kennedy on Iran's military and economic needs, during eight-day state visit to U.S., **Apr. 12**
Assadollah Alam named premier to succeed Ali Amini, who resigned because of budget deficit, **July 19**
Earthquake kills 12,403 persons and destroys 294 villages in northwest, **Sept. 1**

IRAQ
Kurds in north have rebelled against government and have destroyed some 100 villages, (reported) **Apr. 23**

IRELAND
Irish Republican Army announces end of campaign of violence against Northern Ireland, **Feb. 26**

ISRAEL
Israeli tribunal at Tel Aviv convicts Dr. Israel Beer of having spied for an unnamed Communist power and sentences him to ten years' imprisonment, **Jan. 14**
Devalues currency to 3 Israeli pounds to U.S. dollar (old rate: 1.8 pounds to the dollar), **Feb. 9**
Armed forces attack Syrian fortifications; 30 Syrians and five Israeli soldiers reportedly killed, **Mar. 17**
Adolf Eichmann, former Nazi official who was tried and convicted of war crimes by Israeli tribunal in 1961, is executed by hanging in Ramleh, Israel, **May 31**
U.S. Department of State discloses that Israel will be sold short-range Hawk missiles, **Sept. 26**

ITALY
Bulgarian MIG-17 jet fighter crashes near Acquaviva after flying over NATO missile base, **Jan. 20**
Protests in note to Bulgaria against MIG's violation of Italian airspace, **Jan. 21**
Bulgarian pilot is imprisoned in Bari, pending trial for espionage by civil court, **Jan. 27**
Ruling Christian Democratic Party approves parliamentary alliance with left-wing Socialists, **Feb. 1**

UPI

GERMANY—(*Above*) The arrow points to place where an East German boy, attempting to escape, was wounded and left unassisted for nearly an hour until he died, early on August 17. (*Right*) A Russian officer (standing in armored car) is stopped by U.S. Army guards on entering West Berlin, August 23, and is told that his convoy must have a protective escort.

Premier Amintore Fanfani forms new coalition cabinet of Christian Democrats, Socialists, and Republicans, **Feb. 21**
Ex-Premier Antonio Segni (Christian Democrat) is elected president of Italy by Electoral Assembly, **May 6**
Provincial and municipal elections are held; Christian Democrats suffer slight losses but remain dominant party, as Communists register losses, **June 10–11**
Twenty-first Ecumenical Council of Roman Catholic Church holds first session at Vatican City, in Rome, **Oct. 11–Dec. 8**

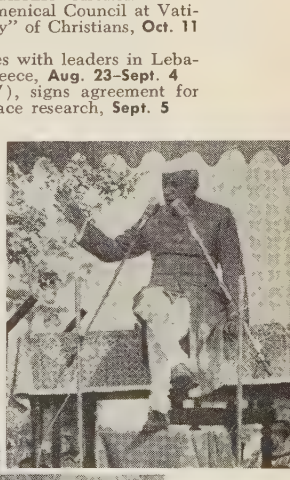
IVORY COAST
President Félix Houphouët-Boigny confers with President Kennedy in Washington on foreign aid request, **May 23–24**

JAMAICA
National elections are held; Labour Party wins majority of 29 seats in House of Representatives, **Apr. 10**
Sir Alexander Bustamante (Labour Party) is sworn in as prime minister, **Apr. 24**
Becomes independent dominion within Commonwealth of Nations, **Aug. 6**
Admitted to membership in United Nations, **Sept. 18**

JAPAN
Ruling Liberal-Democrats retain control of upper house of Diet by winning 56 of 127 contested seats, **July 1**
Premier Ikeda forms new cabinet after reelection (July 14) as Liberal-Democratic Party leader, **July 18**
Concludes five-year trade agreement with Communist China, providing for a barter exchange of $104.8 million annually, it is announced **Nov. 9**

JOHN XXIII—See also ROMAN CATHOLIC CHURCH
In speech inaugurating 21st Ecumenical Council at Vatican City, calls for "visible unity" of Christians, **Oct. 11**

JOHNSON, Lyndon B.
Discusses U.S. foreign aid policies with leaders in Lebanon, Iran, Turkey, Cyprus, Greece, **Aug. 23–Sept. 4**
During visit to Italy (Sept. 4–7), signs agreement for U.S.–Italian cooperation in space research, **Sept. 5**



INDIA—(*Right*) Visiting positions in northeast India, near the territory recently invaded by Communist China, Prime Minister Nehru stops to address an open-air meeting at Charduar on December 4. (*Below*) An Indian soldier (left) talks to Tibetan refugees who had fled from the region seized by the Chinese and are working on supply lines to Indian troops at the front.

WIDE WORLD

WIDE WORLD

INDONESIA—Conducting preliminary talks in Washington on the transfer of administration of West New Guinea from the Netherlands to Indonesia are U.S. Secretary of State Rusk (left) and Indonesian Foreign Minister Subandrio, July 19.

JORDAN
Premier Bahjat Talhouni resigns; new cabinet, headed by Wasfi al-Tall, takes office, **Jan. 27**
King Hussein announces birth in Amman of his son, Abdullah, who is to be crown prince, **Jan. 30**

JUAN CARLOS, Prince—See GREECE

KASHMIR—See INDIA; PAKISTAN

KENNEDY, Edward M.—See MASSACHUSETTS

KENNEDY, Jacqueline
Pays state visit to Italy, **Mar. 10–12**
Visits India and Pakistan, on goodwill tour, **Mar. 12–26**
Vacations in Italy with daughter Caroline, **Aug. 8–31**

KENNEDY, John F.—See also UNITED STATES
President announces, in Washington, that Army's strength will be increased from 14 to 16 divisions, **Jan. 3**
In State of Union message to Congress, calls in part for reduction of tariff barriers and expansion of federal welfare programs, **Jan. 11**
In budget message to Congress, estimates expenditures in 1963 fiscal year at $92.5 billion, and revenues at $93.0 billion, **Jan. 18**
In first annual Economic Report to Congress, outlines measures to sustain nation's economic growth and to relieve effects of possible recessions, **Jan. 22**
At Washington news conference, announces he will create Department of Urban Affairs by executive decree and appoint as its head Robert C. Weaver, administrator of Housing and Home Finance Agency, **Jan. 24**
In special message to Congress, requests new authority to reduce tariffs to promote trade expansion, **Jan. 25**
Submits to Congress reorganization plan creating Department of Urban Affairs and Housing, **Jan. 30**
Requests congressional appropriation of $100 million to buy half of United Nations bond issue, **Jan. 30**
At Washington news conference, calls for congressional investigation of strategic materials stockpiling program, which totals about $3.4 billion more than present emergency requirements, **Jan. 31**
In special farm message to Congress, proposes stringent controls on grain and dairy production, **Jan. 31**
In special message to Congress, proposes revisions in welfare program to help needy persons, **Feb. 1**
Requests Congress to expend $5.7 billion over five-year period to aid public schools, **Feb. 6**
In joint letter with British Prime Minister Macmillan to Soviet Premier Khrushchev, proposes that foreign ministers of 18 nations attend Geneva disarmament conference opening Mar. 14, **Feb. 7**
Asks Congress to create private corporation to operate global communications system employing earth satellites as relay stations, **Feb. 7**
In letter to Khrushchev, declares summit meeting at Geneva disarmament conference should be held only after "progress has been made" at lower levels, **Feb. 13**
Asks Congress for stand-by authority to spend $2 billion on public works to help avert recessions, **Feb. 19**
Requests Congress to legislate old-age health insurance system under Social Security, and other public health measures, in special message, **Feb. 27**
In special message to Congress, requests $1 billion, eight-year program to expand recreational areas, **Mar. 1**
Announces in national broadcast that U.S. will resume atmospheric nuclear testing in late April unless USSR agrees to sign nuclear test-ban treaty, **Mar. 2**
Announces agreement on tariff reductions for certain industrial products between U.S. and members of European Economic Community, **Mar. 7**
Proposes five-point program for joint U.S.–Soviet space exploration, in letter to Premier Khrushchev, **Mar. 7**
Asks Congress to appropriate $4,878.5 million for foreign economic and military aid in fiscal 1963, **Mar. 13**
At Washington news conference, denounces price increases by major steel producers as "a wholly unjustifiable and irresponsible defiance of the public interest," **Apr. 11**
Orders U.S. to resume atmospheric nuclear testing, **Apr. 24**
Asks labor unions to serve the public interest by seeking noninflationary wage increases, in speech to United Automobile Workers in Atlantic City, **May 8**
Orders 7th Fleet task force into Gulf of Siam in wake of rebel military victory in northwest Laos, **May 12**
Asks public support for legislation providing medical care for the aged under Social Security system, at rally of 20,000 persons in New York, **May 20**
Appeals to businessmen for their cooperation in making U.S. economy "work at full capacity," in speech at Yale University commencement, **June 11**
Declares that if Chinese Communists attack Matsu and Quemoy islands, U.S. will take "action necessary" to defend Taiwan, **June 27**
Signs into law legislation admitting some refugees to U.S. without regard to immigration quotas, **June 28**
Pays state visit to Mexico, **June 29–July 1**
Calls for "eventual union of all free men," based on partnership between U.S. and a united Europe, in Independence Day speech at Philadelphia, **July 4**
Announces that Treasury Department has issued new rules permitting more liberal depreciation allowances and tax saving of $1.5 billion for businessmen, **July 11**
Calls on Soviet Union to join in ending "arms race" by accepting U.S. proposals for "sound disarmament program" to be made at 17-nation Geneva disarmament conference, **July 14**
Appoints Gen. Maxwell D. Taylor as chairman of Joint Chiefs of Staff to succeed Gen. Lyman L. Lemnitzer, who is named to become supreme allied commander in Europe; names Gen. Earle G. Wheeler as Army chief of staff, **July 20**
Signs legislation authorizing $4,672 million for foreign aid in fiscal year 1963, **Aug. 1**
In national address on American economy, declares immediate tax reduction is unnecessary, **Aug. 13**
During tour of South Dakota, Colorado, and California, pledges his administration's efforts to improve conservation and public power programs, **Aug. 17–18**
Signs bill creating private corporation to operate world communications system using earth satellites, **Aug. 31**
Declares U.S. will act to prevent Cuban aggression against other American states, **Sept. 4**
Requests authority to call up 150,000 military reservists because of Berlin and Cuban crises, **Sept. 7**
Declares military action by U.S. against Cuba is not now "required or justified," but says U.S. will take necessary actions if its security is endangered, at Washington news conference, **Sept. 13**
Opens his congressional political campaigning by calling for election of Democratic Congress, at Harrisburg, Pa., **Sept. 20**
At meeting of International Monetary Fund, in Washington, appeals for other nations to do more in defending free world to reduce "disproportionate share" of defense and aid costs borne by U.S., **Sept. 20**
In national address, declares federal government will carry out court orders relating to integration of University of Mississippi "with whatever means are necessary"; calls on Mississippi students and citizens to "preserve both the law and the peace," **Sept. 30**

KENNEDY, JACQUELINE—With her sister, Princess Lee Radziwill, Mrs. Kennedy (right) rides an elephant in Jaipur, India, March 19, while on a visit to India and Pakistan.

WIDE WORLD

Signs Trade Extension Act of 1962, **Oct. 11**
Signs tax revision law providing investment credits to business for plant modernization, **Oct. 16**
Confers in Washington with Soviet Foreign Minister Gromyko; discusses Berlin and Cuban problems, and possible future meeting with Khrushchev, **Oct. 18**
In national address, announces air and naval "quarantine" of Cuba because Soviet Union was installing offensive missile and bomber bases in Cuba, **Oct. 22**
Signs proclamation imposing blocade against Soviet weapons shipments to Cuba (effective Oct. 24), **Oct. 23**
Reaches agreement with Khrushchev to end Cuban crisis; pledges U.S. will end arms blocade of Cuba and not invade island, in return for Soviet dismantlement of rocket bases in Cuba under UN supervision, **Oct. 28**
Announces that Soviet missile bases in Cuba "are being dismantled," but that U.S. quarantine will continue until "threat to peace" subsides, **Nov. 2**
Confers in Washington with Chancellor Adenauer; joint communiqué issued after talks gives assurances that West will retain its interests in Berlin, **Nov. 14–15**
Announces ending of naval blocade of Cuba, as Khrushchev has agreed to withdraw Soviet jet bombers from island, **Nov. 20**
Signs executive order prohibiting racial discrimination in federally built or bought housing, **Nov. 20**
Proposes measures to settle civil war in Yemen, including withdrawal of UAR troops from country, in letters to four Middle Eastern leaders, (disclosed) **Nov. 25**
Confers in Washington with Soviet First Deputy Premier Mikoyan on Cuban situation, disarmament, and Laos; leaders reportedly agree only to continue Soviet–U.S. negotiations on Cuba, **Nov. 29**
Calls for major tax revision legislation involving reductions in personal income and corporate taxes, to take effect in 1963, in New York address, **Dec. 14**
Says "real understandings" with Khrushchev are not possible in near future, during review of his past two years in office, in radio-TV interview, **Dec. 17**
Confers with Macmillan in Nassau, the Bahamas; obtains latter's agreement to replace Britain's Skybolt air-to-ground missile project with Polaris missiles to be sold by U.S., **Dec. 18–21**
In Miami address welcoming return of 1,113 Cuban rebels who had been imprisoned by Castro regime, says U.S. firmly supports all efforts to free Cuba, **Dec. 29**

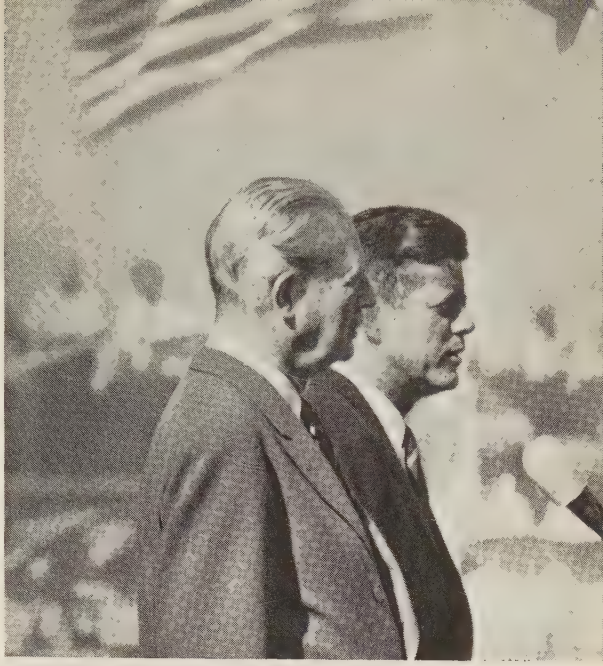
KENNEDY, Robert F.
U.S. attorney general confers with political leaders in Japan, Hong Kong, Indonesia, Thailand, Italy, West Germany, Netherlands, and France, **Feb. 1–28**
Charges state officials with responsibility for violence accompanying enrollment of Negro at University of Mississippi, **Oct. 1**
Confers with Brazilian President Goulart in Brasília on Brazil's economic difficulties, **Dec. 17**

KENYA
Kenyan political leaders and British officials agree on new constitution providing for internal self-government, following London conference, **Apr. 6**

KHRUSHCHEV, Nikita S.
Soviet premier proposes that heads of government attend 18-nation Geneva disarmament conference opening Mar. 14, in letter to President Kennedy, **Feb. 10**
Confers in Moscow with East German leader Walter Ulbricht on concluding German peace treaty to end Western occupation rights in West Berlin, **Feb. 26–27**
In speech at meeting of Communist Party Central Committee, declares fullfillment of Soviet seven-year agricultural plan was "in serious danger" due to poor management and bad farming methods, **Mar. 5**
Claims USSR has developed "global" rocket invulnerable to antimissile systems, in Moscow speech, **Mar. 16**
In letter to President Kennedy, accepts proposal for Soviet–U.S. talks on joint space research, **Mar. 20**
Turns down joint British–U.S. offer not to renew atmospheric nuclear tests if Soviet Union will agree to international verification of test-ban treaty, **Apr. 13**
Is renamed premier by Supreme Soviet, **Apr. 24**
Concludes six-day visit to Bulgaria; joint communiqué condemns landings of U.S. troops in Thailand, and accuses German Chancellor Adenauer of trying to delay East-West agreement on Berlin, **May 20**
In Moscow speech, proposes international conference to establish world trade organization; denounces European Economic Community as aggressive body practicing "colonialism," **May 30**
Concludes one-week visit to Rumania; joint Soviet-Rumanian communiqué calls for end to Western occupation of West Berlin, **June 25**
Proposes that Western troops in Berlin be replaced by troops of small nations under United Nations control, in Moscow speech to Communist-sponsored World Congress for General Disarmament and Peace, **July 10**
At welcoming ceremonies for Soviet astronauts in Moscow, renews threat to sign East German peace treaty unless West ends occupation of West Berlin, **Aug. 18**
Confers separately at Yalta with UN Secretary General U Thant on international issues, and with East German leader Walter Ulbricht on Berlin problem, **Aug. 28**
Declares Soviet Union will not make "reckless decisions" regarding Cuban crisis, and suggests summit meeting be held, in letter to British philosopher Bertrand Russell, **Oct. 24**
Accepts U Thant's proposals for moratorium on actions by both U.S. and USSR in regard to Cuba, **Oct. 25**
Urges Indian Prime Minister Nehru to agree to cease-fire between Indian and Communist Chinese troops in border areas, in letter made public, **Oct. 25**
Proposes that Soviet missiles and jet bombers in Cuba be removed in return for removal of similar U.S. weapons in Turkey, in letter to Kennedy, **Oct. 27**
Declares he has ordered halt to construction of Soviet missile sites in Cuba and for dismantling offensive weapons there; agrees to UN supervision in carrying out actions, in message accepting Kennedy's proposals for ending Cuban crisis, **Oct. 28**
Declares that all Soviet offensive missiles emplaced in Cuba have been removed, **Nov. 7**
Informs President Kennedy that Soviet jet bombers will be removed from Cuba within 30 days, **Nov. 20**
Confers in Moscow with Yugoslav President Tito on closing rift between their respective countries, **Dec. 6**
In foreign policy address to Supreme Soviet, attacks Communist China for opposing settlement of Cuban crisis; claims that settlement has averted nuclear war; and reiterates Soviet intention of signing German peace treaty, but sets no deadline, **Dec. 12**

KING, Martin Luther, Jr.—See GEORGIA

KOREA
Chang Do Young, South Korean general who formerly headed ruling junta after 1961 military coup, is sentenced to death by revolutionary tribunal for alleged counter-revolutionary activities, **Jan. 10**
General Chang's death sentence is commuted to life imprisonment by appeals tribunal, **Mar. 10**



THE MIAMI HERALD

KENNEDY, JOHN F.—The president (right) meets Prime Minister Macmillan of Great Britain in Nassau, Bahamas, December 19, for a discussion of joint defense problems.

KHRUSHCHEV—A review of domestic economic developments is given by Soviet Premier Khrushchev in a speech to the Communist Party Central Committee in Moscow, Nov. 19.

UPI FROM TASS

Gen. Chung Hee Park, chairman of South Korea's ruling junta, assumes presidency, **Mar. 24**
General Chang is released from prison, **May 2**
South Korea announces arrest of 41 persons allegedly involved in plot to overthrow ruling junta, **June 1**
General Park assumes premiership, following resignation of Lt. Gen. Song Yo Chan, **June 18**
Kim Hyun Chul appointed premier of South Korea, **July 10**
Martial law in South Korea is ended, **Dec. 5**
South Korean voters approve new constitution in national referendum, **Dec. 17**

LABOR—See also STRIKES AND WALKOUTS; WIRTZ
United Steelworkers Union and steel industry leaders announce agreement on new contract providing noninflationary pattern for collective bargaining agreements in metal industries, **Mar. 31**
President Kennedy invokes provisions of Taft-Hartley Act to halt west coast maritime strike, **Apr. 11**

LAOS
Right-wing Premier Boun Oum, pro-Communist leader Prince Souphanouvong, and neutralist leader Prince Souvanna Phouma confer in Geneva, Switzerland; agree to form coalition government, **Jan. 19**
Pro-Communist rebels capture government stronghold of Nam Tha after four-month siege, (announced) **May 7**
Rebels occupy northwestern Laos and drive 2,000 government troops across border into Thailand, **May 12**
Political leaders, meeting at Khang Khay, announce formation of 19-member coalition cabinet, **June 11**

UPI

LAOS—Prince Souvanna Phouma (right), premier of Laos, arrives in Washington on July 26 for a four-day visit to the United States. At left is U.S. Secretary of State Rusk.

Coalition cabinet, headed by neutralist Prince Souvanna Phouma, is installed in Vientiane, **June 23**
Delegates to 14-nation conference on Laos, in Geneva, sign agreements guaranteeing Laotian independence and neutrality, **July 23**
Premier Souvanna Phouma, during four-day visit to U.S., confers in Washington with President Kennedy on economic aid program for Laos, **July 27**
Last U.S. military advisors leave country, in accordance with provisions of neutrality agreement, **Oct. 5**
Agreement to form unified army of 30,000 troops from existing factional armies is announced, **Nov. 28**

LAW—See ALABAMA; GEORGIA; INTERNATIONAL COURT OF JUSTICE; LOUISIANA; SUPREME COURT; UNITED STATES—*Congress*

LEGISLATION—See KENNEDY, JOHN F.; UNITED STATES—*Congress*

LEMNITZER, Lyman L.—See UNITED STATES—*Armed Forces*

LOUISIANA
Federal court rules unconstitutional state laws requiring segregation in bus and train terminals, **Jan. 5**
Southern University, all-Negro school in Baton Rouge, is closed by authorities after student body demonstrates against expulsion of seven students for participating in antisegregation demonstration, **Jan. 18–28**
Federal court invalidates state's pupil placement law and orders integration of public primary schools in New Orleans, **Apr. 3**
Roman Catholic Church excommunicates three segregationists in New Orleans for opposing desegregation of parochial schools, **Apr. 16**
Roman Catholic parochial schools in New Orleans are opened to desegregated classes for first time, **Sept. 4**

McCORMACK, John W.—See UNITED STATES—*Congress*

MACMILLAN, Harold—See also ADENAUER; FANFANI; GREAT BRITAIN
Confers in Washington with President Kennedy; leaders agree not to seek early summit meeting, but to continue diplomatic negotiations with USSR, **Apr. 28–29**
Confers in Ottawa, Canada, with Prime Minister Diefenbaker on international problems, **Apr. 30–May 1**
Discusses Britain's joining European Economic Community with President de Gaulle in Paris, **June 2–3**
Confers in London with U.S. Secretary of State Rusk on creating European multilateral nuclear force, **June 24**
In national address, says Britain must join European Economic Community to strengthen European unity and retain influential position in world, **Sept. 20**
Declares Great Britain will provide whatever aid India requests to halt Chinese Communist invasion, **Oct. 30**
Confers with President de Gaulle in Rambouillet, France; communiqué issued after talks pledges continued negotiations on Britain's entry into European Economic Community, **Dec. 15–16**
Confers with President Kennedy in Nassau, the Bahamas; agrees to replace projected Skybolt air-to-ground missile project with U.S.-supplied Polaris missiles for Britain's independent nuclear deterrent force, **Dec. 18–21**

McNAMARA, Robert S.
U.S. secretary of defense invokes executive privilege to prevent a department official from being identified with specific act of censorship, at hearing of Senate panel investigating charges that military leaders have been "muzzled," **Feb. 8**
In major policy statement, at Chicago, declares U.S. is training armed forces to fight "Communist subversion and covert aggression" in other countries, **Feb. 17**
Meets with U.S. and South Vietnamese officials in Saigon; says U.S. aid to country has reached peak, **May 9–11**
Declares Western nuclear force must be "indivisible" since independent force would not deter war, in major policy pronouncement at Ann Arbor, Mich., **June 16**
Following two-day visit to West Germany, declares U.S. will employ nuclear arms if necessary to preserve vital interests in Berlin, **Sept. 28**

MALAYA—See also PHILIPPINES
Malaysian Solidarity Committee, meeting in Kuala Lumpur, recommends merger of Malaya, Singapore, and British Borneo into Greater Malaysia federation, **Feb. 7**
Prime Minister Tunku Abdul Rahman and British Prime Minister Macmillan sign agreement in London to establish Federation of Malaysia, **July 31**

MARINER SPACECRAFT—See SPACE FLIGHT

MARS I SPACECRAFT—See SPACE FLIGHT

MASSACHUSETTS
Edward M. Kennedy is elected senator, defeating Republican George C. Lodge, **Nov. 6**

MENZIES, Robert G.—See AUSTRALIA

MEREDITH, James H.—See MISSISSIPPI

MEXICO
President Kennedy visits Mexico City; following his talks with President López Mateos, joint communiqué declares agreement has been reached on dispute between U.S. and Mexico over use of Colorado River waters, **June 29–July 1**

MICHIGAN
Republican George Romney defeats Democratic Gov. John G. Swainson in gubernatorial election, **Nov. 6**

MIKOYAN, Anastas I.—See also STEVENSON
Visits Cuba and confers with Premier Castro on Soviet missile withdrawal from island, **Nov. 2–26**
Confers in Washington with President Kennedy; agrees to continue Soviet–U.S. talks on Cuba, **Nov. 29**

MISS AMERICA
Jacquelyn Jeanne Mayer of Sandusky, Ohio, is crowned Miss America 1963 at Atlantic City, N.J., **Sept. 8**

MISSILES
Air Force fires Atlas E intercontinental ballistic missile (ICBM) for first time from special above-ground launcher, **Feb. 28**
Titan II ICBM makes first test flight of 5,000 miles, from Cape Canaveral, Fla., **Mar. 16**
Strategic Air Command takes delivery of first operational Titan I squadron at Lowry AFB, Colo., **Apr. 18**
Skybolt, first U.S. air-to-ground missile, is tested initially by Air Force at Cape Canaveral, Fla., **Apr. 19**
First missile-carried nuclear warhead is test-fired by Polaris nuclear submarine *Ethan Allen*, **May 6**
Army's Nike-Zeus antimissile missile intercepts Atlas ICBM for first time, over Kwajalein Atoll in Pacific; Atlas was fired from Vandenberg Air Force Base, Calif., about 4,700 miles away, **July 19**
Air Force launches Atlas F ICBM from operational prototype silo for first time, at Vandenberg AFB, Calif., **Aug. 1**
USSR fires missiles about 7,500 miles to target area in mid-Pacific, **Oct. 16–17**
First Minuteman missile site, at Malmstrom AFB, Mont., becomes operational, **Dec. 11**

Skybolt project has been cancelled by U.S. and Britain, President Kennedy and Prime Minister Macmillan jointly announce at Nassau, the Bahamas, **Dec. 21**
Nike-Zeus antimissile missile intercepts ICBM deploying decoys for the first time, in Pacific test, **Dec. 22**

MISSISSIPPI—See also KENNEDY, JOHN F.
Department of Justice files first suit against a voting registrar (in Forrest County) for allegedly violating court order by refusing to register Negroes, **Apr. 30**
Federal court orders University of Mississippi to admit James H. Meredith, a Negro student previously refused admission, **June 25**
Department of Justice institutes federal suit in Jackson to open state voting rolls to Negroes, **Aug. 28**
State officials defy federal court order by denying Meredith's admission to state university, **Sept. 20**
University of Mississippi officials agree to admit Meredith, **Sept. 24**
Gov. Ross R. Barnett tells Meredith, at confrontation in Jackson, that he cannot enroll in university, **Sept. 25**
Federal court in New Orleans finds Governor Barnett guilty of civil contempt for failing to comply with court order against interfering in integration of state university, **Sept. 28**
Riots break out in Oxford after federal marshals escort Meredith onto campus of University of Mississippi; two persons are killed and 75 are injured, **Sept. 30**
Governor Barnett says his state was "physically overpowered" by federal government and calls on citizens to "avoid bloodshed," **Sept. 30**
About 5,000 federal troops enter state and help to quell riots in Oxford, as Meredith enrolls in university and attends first classes, **Oct. 1**
Some 3,500 troops of 13,500 called into Oxford are withdrawn after order is restored, **Oct. 2**
County grand jury in Oxford indicts chief federal marshal for having incited riots of Sept. 30, **Nov. 16**

MONGOLIAN PEOPLE'S REPUBLIC
Signs treaty demarcating border with Communist China, **Dec. 26**

MONROE, Marilyn
Film star dies (a suicide) at home in Los Angeles, Calif., **Aug. 5**

MONT BLANC TUNNEL—See FRANCE

MONTANA—See NUTTER

MONTREAL
Riot by prisoners at St. Vincent de Paul federal penitentiary is quelled by army troops and police, **June 17**

MOROCCO
King Hassan II announces creation of Moroccan-Algerian commission to draft charter for union of North African states into United Arab Maghreb, **Jan. 23**
New constitution providing for the first elected legislature is approved in national referendum, **Dec. 7**

MOTION PICTURES
Academy awards announced for 1961: best film, *West Side Story;* best actor, Maximillian Schell (*Judgment at Nuremberg*); best actress, Sophia Loren (*Two Women*), **Apr. 9**

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION—See SPACE FLIGHT

NASSER, Gamal Abdel—See UNITED ARAB REPUBLIC

NATO—See NORTH ATLANTIC TREATY ORGANIZATION

NAVY, U.S.—See MISSILES; SPACE FLIGHT; UNITED STATES—*Armed Forces*

NEGROES, American—See GEORGIA; LOUISIANA; MISSISSIPPI

NEHRU, Jawaharlal—See also INDIA
Declares Chinese Communist attack in border areas is threat to India's "freedom and independence," **Oct. 22**
Requests military aid from U.S. to fight Chinese advance, and receives immediate favorable reply, **Oct. 29**
Informs Parliament that China has observed cease-fire, **Nov. 22**
Rejects Communist China's proposals for cease-fire and negotiations on border dispute, **Dec. 1**
Tells Parliament that India will not guarantee existing cease-fire in border areas, **Dec. 12**

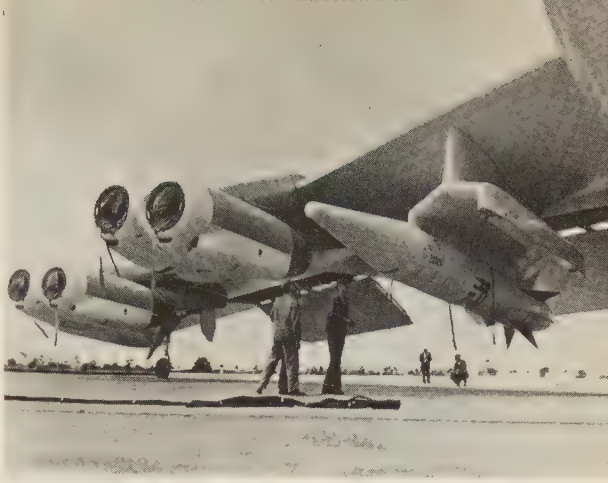
NETHERLANDS—See also WEST NEW GUINEA
Premier Jan E. de Quay accepts proposal by UN Acting Secretary General U Thant to discuss Dutch dispute with Indonesia over West New Guinea, **Jan. 18**
Holds secret talks with Indonesia on disputed status of West New Guinea, at undisclosed site near Washington, **Mar. 20–23**
Accepts U.S. proposals for future self-determination plebiscite in West New Guinea, and eventual transfer of its administration to Indonesia, **May 26**
Dutch and Indonesian negotiators agree to transfer administrative control of West New Guinea from Netherlands to Indonesia on May 1, 1963, **July 31**
Dutch-Indonesian agreement on West New Guinea is signed in New York, **Aug. 15**
Former Queen Wilhelmina dies, **Nov. 28**

NETHERLANDS NEW GUINEA—See WEST NEW GUINEA

NEW JERSEY—See STRIKES AND WALKOUTS

NEW YORK
Gov. Nelson A. Rockefeller is reelected, defeating Democrat Robert M. Morgenthau, **Nov. 6**

NEW YORK CITY—See also STRIKES AND WALKOUTS
Henry A. Barnes appointed traffic commissioner, **Jan. 15**
Seizes struck bus lines following passage of enabling laws by state legislature, **Mar. 21**



WIDE WORLD

MISSILES—Development of the Skybolt, which had been promised to Great Britain, was terminated in December. The United States then offered to supply Britain with Polaris missiles through the North Atlantic Treaty Organization.

One-day teachers' strike ends following court order prohibiting walk-out; Mayor Robert F. Wagner and Gov. Nelson A. Rockefeller agree on additional state aid of $13 million for city schools, **Apr. 12**

NIKOLAYEV, Andrian G.—See SPACE FLIGHT

NIXON, Richard M.—See also CALIFORNIA
At press conference following his defeat in California gubernatorial election, expresses resentment against press coverage of election campaign, **Nov. 7**

NOBEL PRIZES
James D. Watson of United States, and Maurice H. F. Wilkins and Francis H. C. Crick, both of England, named co-winners of 1962 prize in medicine, **Oct. 18**
American novelist John Steinbeck named winner of prize in literature, **Oct. 25**
Lev D. Landau of Soviet Union named winner of prize in physics; Max F. Pertuz and John C. Kendrew, both of England, share prize in chemistry, **Nov. 1**
The Nobel Peace Prize Committee announces in Oslo that it will make no award for 1962, **Nov. 5**
Prizes are awarded in Stockholm, **Dec. 10**

NORSTAD, Lauris
Announces retirement as supreme NATO commander (effective Nov. 1), **July 20**
Retirement from NATO post delayed until January 1963 because of Cuban crisis, **Oct. 29**
Is succeeded as commander of U.S. forces in Europe by Gen. Lyman Lemnitzer, **Nov. 1**

NORTH ATLANTIC TREATY ORGANIZATION—See also NORSTAD
North Atlantic Council meets in Athens, Greece; accepts U.S. proposals for sharing nuclear information and adding five nuclear submarines to NATO force, **May 4–6**
Foreign ministers meeting is held in Paris; communiqué states that "conventional forces" of members should be increased, and that a nuclear striking force was necessary to repel an attack, **Dec. 13–15**

NOWLAN, George C.—See CANADA

NORWAY
Asks to join European Economic Community, **May 2**

NUTTER, Donald G.
Montana governor and five other persons are killed in airplane crash near Wolf Creek, Mont., **Jan. 25**

NYASALAND—See RHODESIA AND NYASALAND

MISSISSIPPI—Heavily guarded by United States marshals, Negro James Meredith attends his first class at the University of Mississippi on October 1 after violent rioting.

AFP FROM PICTORIAL PARADE

ORGANIZATION OF AMERICAN STATES—See also BOLIVIA
Council lifts sanctions against Dominican Republic, **Jan. 4**
Formally excludes Cuba from OAS organs, **Feb. 14**
Council, by 19–0 vote, authorizes necessary measures, including "use of armed force," to impose quarantine of Cuba, **Oct. 23**

PAKISTAN
In first national elections since 1947, voters endorse government candidates in indirect balloting, **Apr. 28**
New constitution, ending martial law, takes effect, **June 7**
President Ayub Khan, during three-day unofficial visit to U.S., confers in Newport, R.I., with President Kennedy on Asian problems, **Sept. 24**
Agrees to negotiate with India their 15-year dispute over Kashmir, **Nov. 29**
Announces "complete agreement in principle" on border alignment with Communist China, **Dec. 26**
Holds first round of discussions with India on Kashmir dispute, at Rawalpindi, **Dec. 27–29**

PEACE CORPS—See UNITED STATES—*Congress*

PENNSYLVANIA
Republican William W. Scranton is elected governor, defeating Democrat Richardson Dilworth, **Nov. 6**

PARIS MATCH

ROMAN CATHOLIC CHURCH—A procession of bishops files from the Apostolic Palace to St. Peter's Basilica in Rome, October 20, for a session of the 21st Ecumenical Council.

PERU—See also UNITED STATES—*Foreign Affairs*
Avalanche buries 16 villages, causing about 3,500 deaths, **Jan. 10**
Military junta, headed by Maj. Gen. Ricardo Perez Godoy, arrests President Prado and overthrows government, **July 18**
President Prado goes into exile after being released from prison, **Aug. 1**

PHILIPPINES—See also UNITED STATES—*Congress*
President Diosdado Macapagal restores free economy by abolishing foreign-exchange and other controls, **Jan. 21**
Macapagal proposes creation of Greater Malaya confederation to include Philippines, Malaya, Singapore, and British Borneo, **July 27**

POPOVICH, Pavel R.—See SPACE FLIGHT

PORTUGAL
Army crushes revolt by 40 armed rebels at Beja, **Jan. 1**
Premier Salazar, in address to National Assembly, declares Portugal will "abandon" United Nations, **Jan. 3**
Salazar confers in Lisbon with U.S. Secretary of State Rusk on U.S. military rights in Azores, **June 28**
Premier Salazar appoints six new cabinet members and resigns as minister of defense, **Dec. 3**

PORTUGUESE TERRITORIES—See ANGOLA; UNITED NATIONS—*General Assembly*

POWERS, Francis Gary—See also UNITED STATES—*Foreign Affairs*
U.S. pilot of U-2 aircraft which was downed in USSR in May 1960, and who was subsequently sentenced by Moscow court to ten years' confinement, returns to U.S. following his release by Soviet government, **Feb. 11**
Testifies to Senate committee in Washington about details of his 1960 flight, trial, and imprisonment in USSR; report issued by Central Intelligence Agency declares that he had followed instructions, **Mar. 6**

PULITZER PRIZES
Awards announced for 1961, including: play, Frank Loesser and Abe Burrows' *How to Succeed in Business Without Really Trying;* fiction, Edwin O'Connor's *The Edge of Sadness;* nonfiction, Theodore H. White's *The Making of the President, 1960;* poetry, Alan Dugan's *Poems;* music, Robert Ward's *The Crucible,* **May 7**

QUEBEC—See also MONTREAL
Liberal Party, led by Premier Jean Lesage, wins 63 of 95 legislative seats in provincial elections, **Nov. 14**

RADIO AND TELEVISION
First television broadcasts from Europe are relayed to U.S. via Telstar communications satellite, **July 11**
U.S. and 18 European nations exchange television broadcasts via Telstar satellite for first time, **July 23**

RANGER SPACECRAFT—See SPACE FLIGHT

REAPPORTIONMENT AND REDISTRICTING—See ALABAMA; GEORGIA; VIRGINIA

RHODESIA AND NYASALAND
Prime Minister Sir Roy Welensky dissolves federal parliament and calls for new elections, **Mar. 9**
Welensky's United Federal Party wins 54 of 55 regularly elected parliamentary seats in federal elections; opposition European and African political groups boycott election, **Apr. 27**
Britain agrees to grant internal self-government to Nyasaland, at constitutional conference in London, **Nov. 23**
Formation of Northern Rhodesia's first predominantly Negro cabinet is announced, **Dec. 14**
Sir Edgar Whitehead resigns as prime minister of Southern Rhodesia, following his party's election defeat by prosegregationist Rhodesian Front Party, **Dec. 15**

RIBICOFF, Abraham A.
Resigns as secretary of health, education, and welfare to seek election as senator from Connecticut, **July 12**
Is elected senator from Connecticut, **Nov. 6**

ROCKEFELLER, Nelson A.—See NEW YORK; NEW YORK CITY

ROCKETS—See MISSILES; SPACE FLIGHT

ROMAN CATHOLIC CHURCH—See also LOUISIANA
Vatican discloses that Premier Fidel Castro and other Cuban officials have been excommunicated automatically for "impeding and imprisoning" Roman Catholic bishops in Cuba, **Jan. 3**
Pope John XXIII elevates ten prelates to cardinal, increasing number of cardinals to record 90, **May 19**
Twenty-first Ecumenical Council of 2,700 Roman Catholic prelates holds first session in Vatican City, **Oct. 11–Dec. 8**

ROMNEY, George—See MICHIGAN

ROOSEVELT, (Anna) Eleanor (Mrs. Franklin D.)
Dies at home in New York, at age of 78, **Nov. 7**

RUANDA-URUNDI—See BURUNDI; RWANDA; UNITED NATIONS

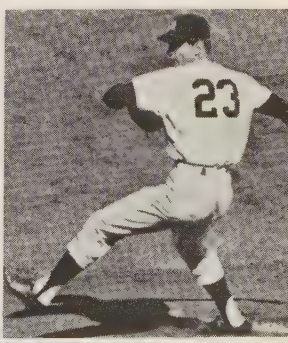
RUSK, Dean—See also ADENAUER; DE GAULLE; MACMILLAN; UNITED STATES—*Foreign Affairs*
U.S. secretary of state, at conference of American foreign ministers in Punta del Este, Uruguay, urges that Cuba be excluded from inter-American system and its hemispheric trade be halted, **Jan. 25**
Attends foreign ministers' meeting and 17-nation disarmament conference in Geneva, Switzerland, **Mar. 11–27**
Holds three meetings in Washington with Soviet Ambassador Anatoly F. Dobrynin; discusses possible Soviet–U.S. accommodation on Berlin situation, **Apr. 16–27**
Attends NATO ministerial meeting in Athens, **May 4–6**
Discusses consolidation of Atlantic alliance with leaders in France, Germany, Italy, England, and Portugal, **June 19–28**
Confers in Geneva with Soviet Foreign Minister Gromyko on East-West deadlock over Berlin, **July 21–24**
Signs agreements guaranteeing independence and neutrality of Laos, at 14-nation Geneva conference, **July 23**
Asks Soviet Union to discuss with Western powers ways to avoid dangerous incidents in Berlin, at Washington meeting with Soviet Ambassador Dobrynin, **Aug. 21**
Confers in Ottawa with Canadian officials on Berlin problem, **Aug. 24**
Meets in Washington with envoys of 19 Latin American countries; outlines U.S. policy toward Cuba, **Sept. 5**
In Washington meeting with Latin American foreign ministers, discusses measures to block "Sino-Soviet penetration" of Cuba, **Oct. 2–3**
Secures unanimous OAS support for resolution authorizing force in imposing arms quarantine of Cuba, **Oct. 23**
Declares U.S. cannot accept continued "Soviet military presence" in Cuba, **Dec. 10**
At opening of three-day NATO foreign ministers meeting in Paris, presents report reviewing world affairs; says settlement of Cuban crisis has opened up new possibilities for keeping Communist bloc on the defensive, **Dec. 13**

RWANDA—See also UNITED NATIONS—*General Assembly*
Former kingdom within United Nations trust territory of Ruanda-Urundi becomes independent state, **July 1**
Admitted to membership in United Nations, **Sept. 18**
SALAN, Raoul—See ALGERIA
SALAZAR, António de Oliveira—See PORTUGAL
SASKATCHEWAN—See CANADA
SATELLITES, Earth—See SPACE FLIGHT
SAUDI ARABIA
King Saud confers in Washington with President Kennedy on increased American aid to Saudi Arabia, **Feb. 13**
Prince Faisal named premier by King Saud, **Oct. 17**
Severs ties with United Arab Republic, following alleged bombing of Saudi port by UAR planes, **Nov. 6**
SCHIRRA, Walter M., Jr.
Becomes first U.S. astronaut to orbit earth nearly six times, as his *Sigma 7* Mercury capsule lands safely in Pacific Ocean after 9-hour 13-minute flight, **Oct. 3**
SCRANTON, William W.—See PENNSYLVANIA
SEATTLE WORLD'S FAIR—See CENTURY 21 EXPOSITION
SENEGAL
Premier Mamadou Dia is arrested and Assembly abolishes premiership, following failure of his attempted coup; President Leopold Senghor is elected head of government, **Dec. 18**
SINGAPORE—See also MALAYA
In national referendum, electorate votes overwhelmingly to join proposed Malaysia federation, **Sept. 2**
SKYBOLT MISSILE—See MISSILES
SOBLEN, Robert A.
Convicted Communist spy who fled U.S. (June 23) dies in London, as result of suicide attempt (Sept. 6) to avoid deportation from England to U.S., **Sept. 11**
SOUTH AFRICA—See also UNITED NATIONS
Premier Hendrik F. Verwoerd announces that limited self-government is to be granted to Transkeian Territories, **Jan. 23**
Parliament adopts Sabotage Act instituting harsh penalties for acts committed in order to change "the economic or social order," **June 15**
Government bans left-wing Congress of Democrats under Suppression of Communism Act, **Sept. 7**
SPACE FLIGHT
Ranger III, designed to photograph moon and to land on moon's surface, is rocketed into solar orbit by U.S.; craft misses moon by 22,862 miles and fails to transmit televised pictures as planned, **Jan. 26–28**
Tiros IV weather satellite is launched into orbit from Cape Canaveral, Fla.; begins to transmit photographs of cloud formations for use in weather forecasts, **Feb. 8**
Marine Lt. Col. John H. Glenn, Jr., becomes first U.S. astronaut to orbit earth; his *Friendship 7* capsule orbits earth three times during 4-hour 56-minute flight (maximum altitude, 162 miles); lands safely in Atlantic Ocean near Grand Turk Island, **Feb. 20**
First OSO (orbiting solar observatory) satellite, designed to study solar rays from outside earth's atmosphere, is launched at Cape Canaveral, **Mar. 7**
USSR orbits Cosmos I, first of new satellites designed to explore conditions for manned flights, **Mar. 16**
Ranger IV, 730-pound spacecraft, is launched on flight to moon by Atlas-Agena B rocket at Cape Canaveral, Fla.; electronic equipment designed to transmit scientific data fails to function properly, **Apr. 23**
Saturn S-1 rocket with dummy upper stages is successfully flight-tested at Cape Canaveral, Fla., **Apr. 25**
Ranger IV hits far side of moon after 64-hour flight; instruments presumably destroyed in crash, **Apr. 26**
First international satellite (Ariel), carrying British equipment and launched by U.S. rockets, is fired into eccentric orbit from Cape Canaveral, Fla., **Apr. 26**
Air Force announces that first transmission of television pictures bounced off an orbiting satellite (Echo I) was accomplished on Apr. 24, **May 3**
Navy Lt. Comdr. Malcolm Scott Carpenter orbits earth three times during 4-hour 56-minute flight in *Aurora 7* capsule (apogee, 167.4 miles); craft overshoots Caribbean target area by 250 miles and astronaut is "lost" for 39 minutes before being sighted, **May 24**
U.S. and USSR announce agreement at Geneva on measures for cooperation in space research, **June 8**
Tiros V weather satellite is launched into orbit, **June 19**
Telstar communications satellite is launched into orbit by U.S., and relays first transatlantic television broadcast, **July 10**
Maj. Robert M. White pilots X-15 rocket plane to record altitude for winged aircraft of 59.6 miles, **July 17**
Attempt to launch Mariner I toward Venus fails when vehicle strays off course and is destroyed, **July 22**
Soviet astronauts Maj. Andrian G. Nikolayev and Lt. Col. Pavel R. Popovich orbit earth in *Vostok III* (launched Aug. 11) and *Vostok IV* (Aug. 12), respectively, and land in south-central USSR; Nikolayev's 94-hour 25-minute flight included 64 orbits; Popovich's 71-hour flight, 48 orbits, **Aug. 11–15**
Mariner II spacecraft is launched toward Venus, **Aug. 27**
Course of Mariner II is corrected by radio signals, **Sept. 4**
National Aeronautics and Space Administration announce names of 9 new astronaut candidates, **Sept. 17**
Tiros VI weather satellite is placed in orbit, **Sept. 18**
Canadian-built satellite (Alouette) is launched into polar orbit at Point Arguello, Calif., **Sept. 28**

NASA

SPACE FLIGHT—(*Above*) ***Sigma 7*** **space capsule in which Walter Schirra, Jr., orbited the earth six times on October 3, is prepared for hoisting to the deck of the aircraft carrier *Kearsarge* after landing in the Pacific Ocean. (*Right*) John H. Glenn enters *Friendship 7* capsule at Cape Canaveral, Fla., February 20, for first United States manned orbital flight.**

Explorer XIV, designed to study radiation, is launched into elliptical orbit from Cape Canaveral, **Oct. 2**
Navy Comdr. Walter M. Schirra, Jr., orbits earth nearly six times in *Sigma 7* Mercury capsule launched from Cape Canaveral; lands safely in Pacific northeast of Midway Island after 9-hour 14-minute flight (apogee, 176 miles), **Oct. 3**
Ranger V is launched toward moon; electrical malfunction causes failure of data-reporting mission, **Oct. 18**
Explorer XV launched to study effects of atmospheric nuclear blasts on radiation belts, **Oct. 27**
First geodetic satellite (Anna 1-B), designed to measure size and shape of earth, is launched into orbit from Cape Canaveral, **Oct. 31**
Soviet Union announces launching of one-ton space ship (Mars I) toward Mars, from orbiting earth satellite, **Nov. 1**
Saturn S-1 rocket, with improved first stage and dummy upper stages, is tested successfully at Cape Canaveral, **Nov. 16**
U.S. orbits Relay, 172-pound satellite, designed to test worldwide radio, television, and telephone communications, although its batteries fail temporarily after five orbits, **Dec. 13**
Mariner II, at position in space some 36 million miles from earth and 21,594 miles from planet Venus, radios information on planet, **Dec. 14**
Explorer XVI is launched into orbit from Wallops Island, Va.; begins transmitting data on meteorites, **Dec. 16**
Air Force orbits Transit V-A, first of four satellites designed to provide fixation positions for guidance of ships and submarines; radio receiver and transmitter fails to operate properly, **Dec. 18**
SPAIN—See also GREECE
About 60,000 coal miners strike for higher wages, **Apr. 17**
Gen. Francisco Franco orders state of emergency in three provinces as result of widespread strikes, **May 5**



WIDE WORLD

SPORTS—(*Right*) **New York Yankee pitcher Ralph Terry as he pitched a brilliant 4-hit game on October 16 against the San Francisco Giants, giving the Yankees a 1–0 victory and the 1962 World Series. (*Below*) The American yacht *Weatherly* wins the fifth and final race of the America's Cup defense from the Australian challenger, *Gretel*, off Rhode Island, September 25.**

Franco, in Madrid speech to war veterans rally, blames Communists, liberals, and Catholic laymen for inciting strikes, **May 27**
Suspends citizens' rights to free choice of residence; arrests of opposition leaders reported, **June 9**
Franco forms new cabinet; Capt. Gen. Agustin Muñoz Grandes named to new post of vice president and designated successor to head of government, **July 11**
New strikes break out in Asturias area, **Aug. 17**
Government approves decree to facilitate settlement of labor disputes, **Sept. 7**

SPORTS
Minnesota defeats UCLA, 21–3, in annual Rose Bowl football game at Pasadena, Calif., **Jan. 1**
Marine Cpl. John Uelses becomes first man to pole-vault 16 feet, at Millrose games in New York, **Feb. 2**
Toronto wins National Hockey League's Stanley Cup by defeating Chicago in final play-off game, **Apr. 22**
Decidedly, ridden by Bill Hartack, wins Kentucky Derby at Louisville, Ky., **May 5**
Rodger Ward, of Indianapolis, Ind., wins Indianapolis Speedway auto race for second time, setting record average speed of 140.3 mph., **May 30**
Jack Nicklaus, of Columbus, Ohio, wins U.S. Open golf championship, in play-off at Oakmont, Pa., **June 17**
National League defeats American League, 3–1, in first of two All-Star games, at Washington, **July 10**
American League defeats National League, 9–4, in second All-Star game, at Chicago, **July 30**
U.S. yacht *Weatherly* defeats Australian *Gretel,* 4 races to 1, to win America's Cup off Newport, R.I., **Sept. 15–25**
Sonny Liston knocks out Floyd Patterson in first round at Chicago to win world heavyweight boxing championship, **Sept. 25**
San Francisco wins National League pennant by defeating Los Angeles in play-off series, 2 games to 1, **Oct. 1–3**
New York Yankees defeat San Francisco Giants for World Series championship, 4 games to 3, **Oct. 4–16**
Australia wins team title in Empire and Commonwealth Games, held at Perth, **Nov. 22–Dec. 1**
Australia wins Davis Cup tennis title, defeating Mexico, 5–0, in Brisbane, Australia, **Dec. 26–28**
Green Bay again wins National Football League title by defeating New York in play-off, at New York, 16–7, **Dec. 30**

STAHR, Elvis J., Jr.
Resigns as Secretary of the Army, **May 2**

STEEL INDUSTRY—See also LABOR
Six major steel companies announce price increases of about $6 per ton of steel, **Apr. 10–11**
Steel companies rescind price increases in wake of President Kennedy's disapproval, proposed governmental investigations, and announcements by two steel producers that they will not raise prices, **Apr. 13**
Federal grand jury in New York indicts four steel companies for allegedly violating antitrust laws by fixing prices on sale of forged steel, **Apr. 26**

STEINBECK, John—See NOBEL PRIZES

STEVENSON, Adlai E.
Presents U.S. policy statement to UN General Assembly; declares Assembly must support UN operations in Congo and elsewhere or doom body to "impotence," **Sept. 20**
In reply to Cuban President Dorticós' speech attacking U.S., issues statement declaring that U.S. will "not commit aggression" against Cuba, but will act to prevent Communist aggression in Western Hemisphere, **Oct. 8**
At emergency meeting of UN Security Council, proposes resolution calling for removal of offensive missiles and other weapons from Cuba, **Oct. 23**

THANT, U—The acting UN secretary general (center) chats with U.S. Ambassador Stevenson (left) and State Secretary Rusk, August 16, after having discussed the Congo problem.

UPI

Challenges Soviet delegate Zorin, at Council meeting, to deny that USSR has placed offensive missile sites in Cuba, and displays photographs of sites, **Oct. 25**
Confers in New York with Soviet First Deputy Premier Mikoyan, **Nov. 28**
Is lauded in letter by President Kennedy after magazine article criticized his role in Cuban crisis, **Dec. 4**

STOCKS AND BONDS
Heavy trading on New York Stock Exchange results in loss of stock values totaling $20.8 billion—the largest one-day drop since Oct. 28, 1929, **May 28**

STRAUSS, Franz Josef—See ADENAUER; GERMANY

STRIKES AND WALKOUTS
Drivers strike against New York City's two largest private bus lines, **Jan. 1–4**
United Automobile Workers strike Studebaker-Packard plant at South Bend, Ind., **Jan. 2–Feb. 8**
Strike by some 9,000 electricians in New York City slows down many construction projects, **Jan. 11–18**
About 6,000 union workers strike bus lines in New Jersey, halting service for 1 million riders, **Feb. 19–21**
Transport Workers Union strikes largest New York bus line, affecting 1.5 million daily riders, **Mar. 1–23**
Strike by three maritime unions impairs shipping service on west coast and in Hawaii, **Mar. 16–Apr. 16**
About 20,000 public school teachers in New York go on strike, forcing some city schools to close, **Apr. 11**
Flight engineers strike Eastern Air Lines, disrupting domestic and international services, **June 23–Sept. 13**
Telegraphers' strike forces Chicago and North Western Railway to suspend operations, **Aug. 30–Sept. 28**
National Farmers Organization strikes for higher farm prices by withholding certain grains and livestock from market, **Sept. 1**
Teamsters' strike and subsequent shutdown by trucking firms (Sept. 27) in New York curtails merchandise deliveries, **Sept. 24**
Longshoremen's strike ties up ports in eastern and southeastern U.S., before being halted by court injunction imposing 80-day cooling-off period, **Oct. 1–4**
United Auto Workers strike (begun Apr. 5, 1954) against Kohler Co. in Kohler, Wis., is ended, **Oct. 8**
Newspaper Guild strikes New York *Daily News,* largest daily (in circulation) in U.S., **Nov. 1–8**
Printers' strike causes nine New York daily newspapers to suspend publication, **Dec. 8**
About 60,000 longshoremen resume strike, curtailing port activities from Maine to Texas, **Dec. 23**

SUKARNO
Proclaims West New Guinea an autonomous province of Indonesia, **Jan. 3**
Escapes unharmed from assassination attempt in Djakarta, Indonesia; five aides are injured by shots, **May 14**

SUPREME COURT, U.S.
Affirms lower court's ruling that a Louisiana law allowing parishes to close schools in order to prevent racial integration is unconstitutional, **Feb. 19**
Rules that distribution of seats in state legislatures is subject to constitutional scrutiny by federal courts, **Mar. 26**
Associate Justice Charles E. Whittaker retires, citing poor health as reason, **Mar. 29**
President Kennedy appoints Byron R. White, deputy attorney general, as an associate justice, **Mar. 30**
Sets aside convictions of six men for contempt of Congress on grounds that congressional committees had not stated "subject under inquiry" when interrogating witnesses in regard to communism, **May 21**
Rules that the reading of an official state prayer in New York public schools is unconstitutional, **June 25**
Associate Justice Felix Frankfurter retires after 23 years' service; Arthur J. Goldberg, secretary of labor, appointed successor, **Aug. 29**
Upholds power of federal judges to order state registrars to register Negroes on voting rolls, **Oct. 22**

SWAINSON, John B.—See MICHIGAN

SYRIA
Army command dissolves Parliament and seizes control of government in bloodless coup, **Mar. 28**
Countercoup by military officers deposes army leaders who overthrew parliamentary government, **Apr. 2**

TAIWAN—See also CHINA, COMMUNIST; KENNEDY, JOHN F.
Admits that one of its two U-2 aircraft is missing over Chinese mainland, following Communist Chinese claims that aircraft has been shot down, **Sept. 10**

TANGANYIKA
Julius K. Nyerere resigns as prime minister; Rashidi Kawawa named to succeed him, **Jan. 22**
Becomes republic; Nyerere sworn in as president, **Dec. 9**

TAYLOR, Maxwell D.
Sworn in as chairman of Joint Chiefs of Staff, **Oct. 1**

TELEVISION—See RADIO AND TELEVISION

TELSTAR SATELLITE—See RADIO AND TELEVISION; SPACE FLIGHT

TENNIS—See SPORTS

THAILAND—See also UNITED STATES—*Foreign Affairs*
First contingent of 4,000 U.S. troops dispatched at request of Thai government arrives in Bangkok, **May 17**
Last of 2,800 U.S. Marines sent to Thailand in May begin withdrawal from country, **Aug. 4**
Withdrawal of 2,300 U.S. Army troops begins, **Nov. 24**

THANT, U—See also CONGO; KENNEDY, JOHN F.
Asks Netherlands and Indonesia to halt hostilities in West New Guinea pending negotiations, **May 29**
Confers in Yalta, USSR, with Premier Khrushchev on major international issues, **Aug. 28**
Appeals to President Kennedy and Premier Khrushchev to agree to cooling-off period and negotiations before taking action in tense Cuban situation, **Oct. 24**
Confers in Havana, Cuba, with Premier Castro; fails to obtain agreement for United Nations inspection of Soviet missile sites in Cuba, **Oct. 30–31**
Is elected secretary general for full four-year term by UN General Assembly, **Nov. 30**

TIROS SATELLITES—See SPACE FLIGHT

TITO, Marshal
Confers in Moscow with Soviet Premier Khrushchev on possibility of healing breach between Yugoslavia and USSR, **Dec. 6**
In address to Supreme Soviet of USSR, says Yugoslavia and Soviet Union hold "identical" viewpoints on world affairs, **Dec. 13**

TOGO
President Sylvanus Olympio visits Washington and obtains pledge from President Kennedy for continued U.S. economic aid, **Mar. 20–21**

TRINIDAD AND TOBAGO
Independence date set for Aug. 31, 1962, following constitutional conference in London, **June 8**
Attains independence within Commonwealth, **Aug. 31**
Admitted to membership in United Nations, **Sept. 18**

TSHOMBE, Moïse—See CONGO

TUNISIA
Resumes ties with France after one-year lapse, **July 20**
Assassination plot against President Habib Bourguiba is discovered by police, who begin arrest of more than 100 suspects, **Dec. 21**

TURKEY
Government forces crush attempted coup by mutinous army troops led by young officers, **Feb. 22–23**
Premier Ismet Inönü resigns as result of differences among coalition cabinet members over issuing amnesty to imprisoned ex-government officials, **May 31**
Premier Inönü forms new coalition cabinet, **June 25**

UGANDA
Attains internal self-government; Democratic Party leader Benedictor Kiwanuka becomes chief minister, **Mar. 1**
Milton Obote becomes chief minister, after his People's Party's election victory (Apr. 25), **Apr. 30**
Becomes independent state within Commonwealth, **Oct. 9**
Admitted to membership in United Nations, **Oct. 25**

ULBRICHT, Walter—See GERMANY; KHRUSHCHEV

UNION OF SOVIET SOCIALIST REPUBLICS—See also ATOMIC ENERGY; DISARMAMENT; GERMANY; KHRUSHCHEV; SPACE FLIGHT; UNITED NATIONS
Charges Israeli diplomats with spreading Zionist propaganda and conducting espionage, **Jan. 19**
Releases Francis Gary Powers, U.S. pilot of U-2 aircraft which crashed in USSR in May 1960, in exchange for Col. Rudolf Abel, convicted of espionage by U.S. in 1957, **Feb. 10**
Rejects Western protests against Soviet harassment of Allied flights to West Berlin, **Feb. 17**
Communist Party Central Committee approves creation of two new bodies to supervise farm production, **Mar. 9**
Accuses U.S. of waging "undeclared war" in South Vietnam; demands American military withdrawal, **Mar. 17**
National elections to Supreme Soviet are held; 99% of voters approve government's candidates, **Mar. 18**
Supreme Soviet re-elects Leonid I. Brezhnev as chairman of Soviet Presidum, and Khrushchev as premier, **Apr. 24**
Announces price increases of 25–30% for meat and butter in order to spur lagging farm production, **June 1**
Rejects Western proposal (June 25) for four-power meeting to discuss ways of averting violence along wall separating East and West Berlin, **July 16**
Announces it will resume nuclear testing in response to U.S. nuclear tests, **July 22**
Protests to Western powers against "provocative acts" by German groups in West Berlin, **Aug. 11**
Announces agreement to supply arms and technical specialists to Cuba as result of alleged threats by "aggressive imperialist quarters," **Sept. 2**
Protests to U.S. against flight (Aug. 31) by U-2 plane over Sakhalin Island in eastern USSR, **Sept. 4**
In notes to Western powers, rejects proposal to discuss Berlin crisis; reiterates demand that West end occupation of West Berlin, **Sept. 5**
Accuses U.S. of preparing "act of aggression" against Cuba, and warns such act would mean war, **Sept. 11**
Chief of state Leonid I. Brezhnev visits Yugoslavia to improve Soviet-Yugoslav relations, **Sept. 24–Oct. 3**
Challenges right of U.S. to "quarantine" weapons shipments to Cuba, in note to U.S., **Oct. 23**
Agreement to permit U.S. Navy to inspect missiles being withdrawn from Cuba is announced, **Nov. 7**
Veniamin E. Dymshits is named head of new Council of National Economy, which is to direct newly instituted dual system of economic administration, **Nov. 24**
Announces replacement of Valerian A. Zorin as Soviet UN delegate by Nikolai T. Fedorenko, **Dec. 22**

WIDE WORLD

USSR—Russian cosmonauts Andrian Nikolayev (at left) and Pavel Popovich, who flew twin orbital missions around the earth on August 11–15, are photographed after the flights.

UNITED ARAB REPUBLIC—See also YEMEN
President Nasser, at opening session of National Congress, submits proposals for national charter establishing socialist system and popular government, **May 21**
National Congress approves national charter, **June 30**
Delegates quit meeting of Arab League Council in Shtura, Lebanon, forcing council to end discussion of Syria's charges that UAR had interfered in its affairs, **Aug. 28**
Signs defense pact with new Republic of Yemen, **Nov. 10**
Announces it will withdraw its 12,000 troops from Yemen, **Dec. 18**

UNITED NATIONS

General Assembly
Approves resolution calling on Portugal to stop "repressive measures" in Angola, **Jan. 30**
Political Committee rejects Cuban charge that U.S. was preparing aggression against Cuba, **Feb. 15**

UNITED NATIONS—Honoring a former colleague, members of the UN General Assembly observe one minute of silence at a memorial service held for Eleanor Roosevelt, November 9.

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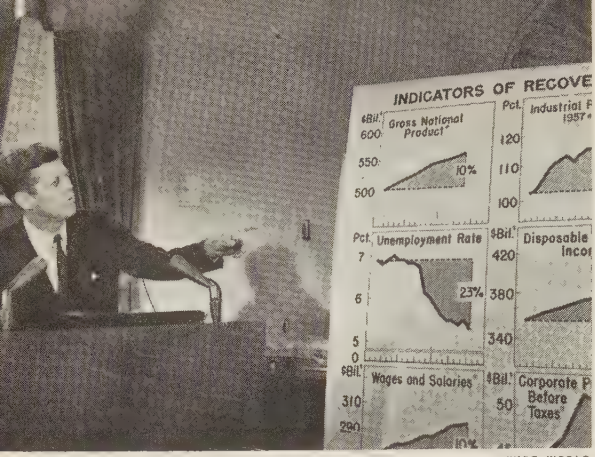


WIDE WORLD

UNITED STATES—Ready to address a nationwide television audience on August 3, President Kennedy studies a chart of economic indicators backing his claim of growth in economy.

Approves resolutions favoring independence for trust territory of Ruanda-Urundi, and ordering a committee to investigate political situation in Southern Rhodesia; 16th regular session adjourns, **Feb. 23**
Reconvenes to consider Ruanda-Urundi question, **June 7**
Approves independence for Ruanda-Urundi as two separate states effective July 1, **June 27**
Approves resolution calling on Britain to consider granting adequate political representation to Africans in Southern Rhodesia; 16th session ends, **June 28**
Opens 17th regular session; elects Muhammad Zafrulla Khan of Pakistan as president; admits Rwanda, Burundi, Jamaica, and Trinidad and Tobago as new members, **Sept. 18**
Approves Dutch-Indonesian agreement to transfer administration of West New Guinea to Indonesia as of May 1, 1963, **Sept. 21**
Admits Algeria as 109th member, **Oct. 8**
Elects Brazil, Morocco, Norway, and Philippines to nonpermanent seats on Security Council, **Oct. 17**
Admits Uganda as 110th member, **Oct. 25**
Rejects by 56–42 vote a Soviet proposal to seat Communist China and eject Nationalist China, **Oct. 30**
Political Committee approves resolution calling on nuclear powers to end testing by year's end, **Nov. 5**
Adopts resolution by 67–16 vote (23 abstentions) to impose economic sanctions against South Africa unless that nation abandons racial segregation, **Nov. 6**
Elects U Thant to four-year term as secretary general, **Nov. 30**
Approves resolution condemning Portugal's "severe repressive measures" in Angola, **Dec. 18**
Votes to accept advisory opinion of International Court of Justice that all UN members are obliged to pay expenses of United Nations operations in the Congo and Middle East, **Dec. 19**
Seventeenth regular session is adjourned, **Dec. 21**

Security Council

Meets at request of USSR, but refuses to consider Soviet complaint against UN policy in Congo, **Jan. 30**
Refuses to discuss Cuban charges that U.S. had acted "illegally" to bar Cuba from inter-American system, **Feb. 27**
Soviet Union vetoes proposal calling for talks between India and Pakistan on their Kashmir dispute, **June 22**
Meets at U.S. request to consider threat to peace posed by Soviet weapons shipments to Cuba, **Oct. 23–25**

UNITED STATES—W. Willard Wirtz (left) is sworn in as labor secretary by President Kennedy, September 25. With them are Wirtz' wife (second from left) and his parents.

WIDE WORLD

UNITED STATES—For internal affairs see also such headings as Accidents and Disasters; Atomic Energy; Elections; Labor; Space Flight; Sports; Strikes and Walkouts; and Supreme Court; and names of outstanding personalities of the year. For external affairs, see also such headings as Disarmament; Inter-American Affairs; and names of outstanding personalities.

Foreign Affairs

State Department makes public document submitted (Dec. 6, 1961) to Inter-American Peace Committee that states Cuba is "base for Communist agitation and subversion" within Western Hemisphere, **Jan. 3**
Resumes diplomatic relations with Dominican Republic after 16-month lapse, **Jan. 6**
Initials agreement with European Economic Community for tariff reductions on industrial products, **Jan. 16**
Extends "emergency credit" of $25 million to Dominican Republic, **Jan. 22**
President Kennedy orders virtually total embargo on remaining trade with Cuba, **Feb. 3**
In joint statements with Britain, announces that British government is offering Christmas Island in Pacific Ocean as site for atmospheric nuclear testing; calls for "supreme effort" at forthcoming Geneva disarmament conference to halt nuclear arms race, **Feb. 8**
Francis Gary Powers, pilot of U-2 aircraft which crashed in USSR in May 1960, is released by Soviet Union in exchange for Col. Rudolf Abel, Soviet spy convicted of espionage by U.S. in 1957, **Feb. 10**
Rejects Soviet request for summit meeting at forthcoming Geneva disarmament conference, **Feb. 13**
Secretary of State Rusk and Foreign Minister Thanat Khouman of Thailand issue joint statement pledging unilateral defense of Thailand by U.S. in case of direct Communist aggression, **Mar. 6**
Signs agreement with Soviet Union for joint expanded cultural, scientific, and educational exchanges, **Mar. 8**
Commits five nuclear submarines to NATO's military force, at meeting of NATO Council in Athens, Greece, **May 5**
President Kennedy orders 4,000 U.S. troops into Thailand as result of Communist military movements in Laos toward Thai border, **May 15**
Announces decision to waive immigration laws and admit up to 6,000 Chinese refugees from Hong Kong, **May 23**
In note to USSR (similar to notes sent by Britain and France), calls for four-power talks to discuss ways of ending violence along Berlin wall, **June 25**
President Kennedy has ordered gradual withdrawal of 1,000 U.S. Marines from Thailand, it is announced **July 1**
Recognizes Algeria as independent nation, **July 3**
State Department rejects Khrushchev's proposal for replacing Western troops in Berlin with troops from smaller nations, **July 10**
Cuts ties with Peru, following military coup, **July 18**
White House statement declares Peruvian military coup is "serious setback" for Alliance for Progress program; State Department suspends economic aid to Peru, **July 19**
Denounces Katanga's secession from Congolese central government; declares "all possible measures" (excluding military action) may be employed to reunify nation, in State Department statement, **July 19**
Defense Department announces withdrawal of remaining 1,800 Marines from Thailand, **July 27**
President Kennedy announces that U.S. will accept compromise disarmament proposal for national control posts, under international inspection system, to monitor a nuclear test ban, **Aug. 1**
State Department rejects Soviet protest over alleged provocations in West Berlin as "groundless," **Aug. 11**
Resumes diplomatic relations with Peru, **Aug. 17**
State Department statement says Soviet Union's abolition of office of Soviet commandant in Berlin will not affect rights and responsibilities of Western commandants in Berlin under existing agreements, **Aug. 22**
Declares U.S. government was not involved in Cuban exile group's bombardment of Cuban coast, **Aug. 25**
Admits that U-2 plane may have flown "unintentionally" over Soviet territory, **Sept. 4**
State Department spokesman dismisses Soviet accusation that U.S. was preparing for aggression against Cuba as "obvious propaganda," **Sept. 11**
Department of Justice announces that two Soviet employees of United Nations have been dismissed and have left U.S. following three-year investigation of their alleged intelligence activities, **Sept. 15**
Demands expulsion of two Soviet officials at United Nations because of their alleged involvement with an American sailor in espionage plot, **Sept. 29**
Accords diplomatic recognition to new Algerian government, **Sept. 29**
Asks International Control Commission for Laos to investigate violation of neutrality agreement by presence of North Vietnamese troops in Laos, **Oct. 9**
Protests expulsion of U.S. assistant naval attaché Comdr. Raymond D. Smith from Soviet Union; denies charge that Smith had engaged in espionage, **Oct. 10**

Quarantine to prevent Soviet shipments of offensive weapons to Cuba goes into effect, **Oct. 24**
Suspends quarantine to facilitate United Nations–Cuban negotiations in Havana, **Oct. 30–31**
Announces agreement with Soviet Union to permit naval inspection of missiles being removed from Cuba, **Nov. 7**
Defense Department statement announces that all "known" missile bases in Cuba have been dismantled, **Nov. 8**
Forty-two Soviet missiles have been shipped out of Cuba, Department of Defense reports, **Nov. 11**
Suspends quarantine of Cuba, **Nov. 20**
Announces that Soviet jet bombers are being shipped out of Cuba in accordance with Soviet–U.S. agreement, **Dec. 3**
Agrees to UN Acting Secretary General U Thant's request for more U.S. military equipment to bolster UN Force in the Congo, **Dec. 18**
Recognizes new republican regime in Yemen, **Dec. 19**

Congress

Second session of 87th Congress convenes; House elects John W. McCormack (Massachusetts) as speaker, **Jan. 10**
House defeats President Kennedy's proposal to create Department of Urban Affairs and Housing, **Feb. 21**
Approves law strengthening controls on welfare and pension funds affecting 100 million persons, **Mar. 15**
Senate approves constitutional amendment abolishing state poll tax as requirement for voting in federal elections, **Mar. 27**
Completes action on bill authorizing expansion of Peace Corps to 9,970 volunteers by late 1963, **Apr. 12**
Southern senators begin filibuster against proposed bill to curb discriminatory literacy tests for voters participating in federal elections, **Apr. 25**
Senate, by vote of 53 to 43, defeats move to stop filibuster, thereby dooming literacy bill, **May 9**
House, by vote of 215 to 205, defeats administration's farm bill imposing acreage controls and marketing quotas on grain production for first time, **June 21**
Approves taxation legislation extending excise and corporate taxes for another year, repealing 10% tax on land carriers, and reducing tax on air travel from 10% to 5%, **June 27**
Completes action on measure raising national debt ceiling to record $308 billion, **June 28**
Senate rejects, by vote of 52–48, administration's proposal to establish health care for the aged under Social Security system, **July 17**
Senate passes House-approved bill appropriating $48.1 billion for defense purposes in fiscal 1963, **Aug. 1**
Senate, by 63–27 vote, curtails debate on communications satellite bill, ending liberals' filibuster, **Aug. 14**
Senate approves, by 66–11 vote, bill authorizing private corporation to establish international communications system using Telstar satellites, **Aug. 17**
Completes action on legislation authorizing $73 million for final payments on Philippines war damage, **Aug. 24**
House passes Senate-approved constitutional amendment outlawing poll tax in federal elections, **Aug. 27**
Senate defeats President Kennedy's proposal to withhold income taxes on interest and dividends, **Aug. 29**
Passes bill authorizing $900 million for public works project in economically depressed areas, **Sept. 10**
Authorizes loan of $100 million to United Nations, **Sept. 19**
Completes action on bill authorizing President Kennedy to call up 150,000 military reservists, **Sept. 24**
Votes final approval of new farm legislation containing some production controls, **Sept. 25**
Completes action on resolution endorsing use of force, if necessary, to block Cuban aggression or subversion, **Sept. 26**
Approves taxation legislation providing $1 billion in business tax credits for plant modernization, **Oct. 2**
Approves legislation to safeguard public against use of harmful drugs, **Oct. 3–4**
Approves trade legislation granting president sweeping authority to reduce tariffs and to assist domestic companies and workers hurt by increased imports, **Oct. 4**
Approves legislation increasing postal rates and salaries of 1,600,000 government employees, **Oct. 5**
Passes compromise foreign aid appropriation of $3.928 billion for fiscal year 1963—$1.033 billion less than administration's request, **Oct. 8**
Eighty-seventh Congress adjourns, **Oct. 13**

Armed Forces

Army cuts length of overseas duty for men whose tours were extended in 1961 because of Berlin crisis, **Jan. 31**
Gen. Paul D. Harkins named commander of newly created U.S. Military Assistance Command, Vietnam, **Feb. 8**
Lt. Col. Emily C. Gorman named director of Women's Army Corps, succeeding Col. Mary L. M. Rasmuson, **Feb. 15**
Vice Adm. Edwin J. Roland named commandant of Coast Guard, succeeding Adm. Alfred C. Richmond, **Apr. 23**

UPI

VENEZUELA—Troops in Puerto Cabello battle marines who revolted against the Betancourt government, June 2–4.

Army announces that Reservists and National Guardsmen recalled to duty in October 1961 as result of Berlin crisis will be released in early August, **Apr. 27**
Lt. Gen. John K. Gerhart named chief of North American Air Defense Command, **May 29**
Gen. Maxwell D. Taylor named chairman of Joint Chiefs of Staff to succeed Gen. Lyman L. Lemnitzer, who is appointed to succeed Gen. Lauris Norstad (on his retirement) as supreme allied commander in Europe; Gen. Earle G. Wheeler named Army chief of staff, **July 20**
Two Navy nuclear submarines met at North Pole on July 31, President Kennedy announces, **Aug. 22**
Air Force stages 3d annual Sky Shield defense operation, **Sept. 2**
Defense Department announces that Navy force concentrating in Caribbean area has been authorized to use force to impose "quarantine" of Cuba, **Oct. 22**
Navy intercepts first Soviet ship bound for Cuba; permits vessel to proceed after "ascertaining" that it carried only petroleum, **Oct. 25**
General Lemnitzer becomes commander of U.S. forces in Europe; Gen. Lauris Norstad retains temporary command of NATO forces because of Cuban crisis, **Nov. 1**
Navy intercepts and inspects five Soviet ships carrying dismantled missiles from Cuba, **Nov. 8**
Maj. Gen. James H. Polk named to succeed Maj. Gen. Albert Watson 2d as U.S. commander in Berlin (effective in January 1963), **Nov. 19**
Defense Department orders release of 14,200 Air Force Reservists and rescinds extension of duty for Navy and Marine personnel, **Nov. 21**

Appointments and Resignations

Maj. Gen. Robert J. Flemming named governor of Panama Canal Zone, **Jan. 4**
Deputy Attorney General Byron R. White named to succeed retiring Charles E. Whittaker as associate justice of Supreme Court, **Mar. 30**
Livingston T. Merchant announces his resignation as ambassador to Canada, **Apr. 9**
Mrs. Elizabeth R. Smith resigns as treasurer of the United States, **Apr. 13**
Elvis J. Stahr, Jr., resigns as secretary of Army, **May 2**
Admiral Alan G. Kirk named ambassador to Taiwan, **May 18**
Cyrus R. Vance named secretary of Army, **May 20**
William C. Battle named ambassador to Australia, **May 28**

VIETNAM—Presidential Palace in Saigon is set afire in brief aerial attack by two air force pilots, February 27.

WIDE WORLD

Foy D. Kohler, assistant secretary of state for European affairs, named ambassador to USSR, **July 5**
Harry J. Anslinger announces retirement as commissioner of narcotics; Henry L. Giordano named successor, **July 5**
Anthony J. Celebrezze named secretary of health, education, and welfare, succeeding Abraham A. Ribicoff (who resigned July 12), **July 14**
Sterling M. McMurrin resigns as commissioner of education, **July 27**
Charles E. Bohlen named ambassador to France, succeeding Lt. Gen. James M. Gavin, **Aug. 11**
Arthur J. Goldberg named associate justice of Supreme Court, succeeding Felix Frankfurter, **Aug. 29**
W. Willard Wirtz named secretary of labor, **Aug. 30**
W. Walton Butterworth named ambassador to Canada, **Sept. 11**
Llewellyn E. Thompson, Jr., named ambassador at large, **Sept. 22**
Congresswoman Kathryn E. Granahan of Pennsylvania named treasurer of U.S., **Sept. 28**
President Kennedy appoints ex-Secretary of State Christian A. Herter to new post of special representative for trade negotiations, **Nov. 15**
David E. Bell, U.S. budget director, named director of Agency for International Development, succeeding Fowler Hamilton (who resigned Nov. 10); Kermit Gordon named budget director, **Nov. 26**

VANCE, Cyrus R.
Sworn in as secretary of the Army, **July 5**

VATICAN CITY—See Roman Catholic Church

VENEZUELA
Police and left-wing demonstrators clash in Caracas; 40 persons killed, **Jan. 22–25**
Two-day revolt by marine battalion at Carúpano naval base fails; rebels surrender, **May 5**
Rebellion of marines at Puerto Cabello naval base is crushed by government forces; 400 killed, **June 2–4**
Four power stations at U.S.-owned oilfields are blown up by pro-Castro saboteurs, **Oct. 27**

VIETNAM
North Vietnam proclaims formation of Vietnam People's Revolutionary Party in South Vietnam to overthrow President Ngo's regime, **Jan. 18**
President Ngo Dinh Diem is unharmed in assassination attempt as two fighter-bombers piloted by dissident Air Force officers bomb his Saigon palace, **Feb. 27**
Government troops halt major offensive by 1,200 Communist guerrillas in Tra Bong District, **Apr. 6**
South Vietnamese troops rout Communist guerrillas near An Hu, killing at least 153 rebels, **Sept. 18**

VIRGINIA
Federal judge in Richmond orders public schools in Prince Edward County to reopen in fall on integrated basis, **July 26**
Federal court in Alexandria rules that state must reapportion legislature within 60 days, **Nov. 29**

WATSON, James D.—See Nobel Prizes

WEST INDIES FEDERATION
Eight member territories agree to form new federation within Commonwealth, following secession of Jamaica and Trinidad and Tobago, **May 24**

WEST NEW GUINEA—See also Netherlands; Sukarno
Netherlands Navy sinks Indonesian torpedo boat off south coast; 50 Indonesians are drowned and 53 survivors are taken prisoner, **Jan. 15**
About 200 Indonesian paratroopers reportedly land in Fakfak area, **May 15–17**
Indonesian paratrooper invaders have surrendered to Dutch forces, it is announced, **June 15**
Agreement transferring administration from Netherlands to United Nations on Oct. 1, 1962, and to Indonesia on May 1, 1963, is signed in New York, **Aug. 15**
Administration is transferred from Netherlands to United Nations for seven-month period, **Oct. 1**

WESTERN SAMOA
Former United Nations trusteeship under administration of New Zealand becomes independent nation, **Jan. 1**

WHITE, Byron R.—See also Supreme Court
Sworn in as associate justice of Supreme Court, **Apr. 16**

WHITTAKER, Charles E.—See Supreme Court

WIRTZ, W. Willard
Sworn in as secretary of labor, **Sept. 25**

X-15 AIRCRAFT—See Space Flight

YEMEN—See also United Arab Republic
Imam Ahmad dies and is succeeded by Crown Prince Muhammad al-Badr, **Sept. 19**
Yemeni Army under Col. Abdallah al-Sallal seizes government, proclaims republic, and reports that Imam Muhammad has been killed during revolt, **Sept. 27**
Troops from UAR arrive to support republican forces against royalists fighting in north, **Oct. 19**
Imam Muhammad holds press conference at undisclosed site to disprove reports of his death, **Nov. 10**
New republic is recognized by United States, after UAR agrees to withdraw troops from country, **Dec. 19**

YUGOSLAVIA—See also Tito
Tito regime grants amnesty to most of its foes, **Mar. 13**
Delegation headed by Tito visits USSR, **Dec. 3–21**

ZORIN, Valerian A.
Replacement by Nikolai T. Fedorenko as Soviet delegate to the United Nations is announced, **Dec. 22**

Indian troops patrol Pangong Lake in the Ladakh District, one of two areas of India invaded by Communist China on October 20. The fighting ended with a cease-fire on November 21, but by the end of the year no final settlement had been reached.

UPI

ABRASIVES

Output of natural abrasives in the United States in 1961 declined 5% in volume and 1% in value from 1960, according to the U.S. Bureau of Mines. The value of abrasives imports rose 14%, while that of exports increased 10%.

Details of production of natural and manufactured abrasives for the years 1960 and 1961, along with import data for the same years, are shown in the following table.

ABRASIVES IN THE UNITED STATES
(In short tons, unless otherwise indicated)

Type and category	1960	1961
Natural:		
Grinding and polishing sand	1,702,088	1,729,660
Quartz (crude, crushed, and ground)	192,391	211,238
Garnet	10,522	12,057
Emery	8,169	6,180
Tripoli	57,713	54,641
Pumice (abrasive only)	11,000	13,000
Grindstones	...[1]	...[1]
Grinding pebbles	1,132	...[1]
Other silica-stone products	1,407	2,495
Manufactured:		
Silicon carbide	133,219	125,726
Aluminum oxide	195,906	136,951
Metal abrasives	112,383	109,515
Imports:		
Industrial diamonds (carats)	12,024,853[2]	13,462,739
Corundum	2,654	2,396
Emery	...	1,120
Pumice	6,556	6,907
Carbides of silicon	88,546	73,727
Aluminous abrasives	160,495	124,143

[1] Included with "Other products" to avoid disclosing individual company confidential data. [2] Revised. (Source: U.S. Bureau of Mines.)

F. E. HARRIS, *Former Publications Editor, "Mineral Trade Notes"*; and BERENICE B. MITCHELL, *Commodity Industry Analyst, Division of Foreign Activities, U.S. Bureau of Mines.*

ACADEMIES AND ASSOCIATIONS. See SOCIETIES AND ORGANIZATIONS.

ACCIDENTS

Accidental deaths in the United States in the first eight months of 1962 totaled some 63,200, 6% higher than in the same period of 1961. All categories of accidents were involved, including motor vehicle (up 9%), home (up 5%), work (up 3%), and public nonmotor vehicle (up 1%). The increase in motor vehicle deaths indicated that if the trend continued, a record high total approaching 41,000 would be set for the year, eclipsing the previous high of 39,969 established in 1941.

In 1961, accidents claimed 91,500 lives, a decrease of 2% from 1960. On a population basis, accidents killed 50 persons out of every 100,000, a reduction of 3% from the previous year's death rate, and a record low. An additional 9,300,000 persons suffered disabling injuries in 1961.

Accidents rank fourth among leading causes of death in the United States, exceeded only by heart disease, cancer, and cerebral hemorrhage. Accidents were the leading killer of persons between 1 and 36 years of age in 1961.

The 1961 death total by class of accident included 38,000 motor vehicle, 26,500 home, 13,500 work, and 16,500 public fatalities. The latter three classes of accidents comprised primarily the following types: falls (18,400), fires and burns (6,900), drownings (6,550), railroad (2,300), firearms (2,300), poison gases (1,050), and other poisons (1,800).

Accidental death and injury cost the United

(Above) Guarding a section of strife-torn Algiers early in March, a French soldier symbolizes the tension which enveloped Algeria in 1962 as the country attained its independence and then sought to establish order out of chaos.

WIDE WORLD

ACCIDENTAL DEATHS IN THE U.S., 1960–62

Year	Total[1]	Motor vehicle	Public non-motor vehicle	Home	Work
1960	93,000	38,200	16,500	27,500	13,800
1961	91,500	38,000	16,500	26,500	13,500
1961 (Jan.–Aug.)	59,600	23,760	11,300	17,300	9,100
1962 (Jan.–Aug.)	63,200	25,910	11,600	18,400	9,300

[1] Duplications between motor vehicle, work and home accidents are eliminated in the "Total" column. Deaths of military personnel are assigned to motor vehicle, public nonmotor vehicle, and home accidents, according to the type of accident.

(Source: National Vital Statistics Division and National Safety Council.)

States an estimated $14.5 billion in 1961. Those costs included wage losses, medical fees, hospital expense, overhead costs of insurance, property damaged or destroyed, and production lost. It is estimated that the organized safety movement in the United States, headed by the National Safety Council, has saved more than 1 million lives since its founding in 1913.

Canada recorded 9,403 accidental deaths in 1960 (the latest year for which complete figures are available). The death rate was 52.8 per 100,000 population, a reduction of 2.4% from the 1959 rate of 54.1. Motor vehicle accidents were the main cause of accidental deaths in Canada in 1960 (3,700), followed by falls (1,571), drowning (1,180), burns (583), railroad (281), and poison gases (144).

HOWARD PYLE,
President, National Safety Council.

ADEN

Comprising a British colony and two British protectorates, Aden is located in the western half of the southern rim of the Arabian peninsula.

Political Divisions.—*Aden Colony* consists chiefly of two rocky peninsulas about 100 miles east of Bab al-Mandeb, together with Perim Island (5 square miles) in Bab al-Mandeb. Aden Colony has an area of 80 square miles and a population, according to the 1955 census, of 138,441 (1960 est., 155,000). The Kuria Muria Islands (30 square miles) and Kamaran Island (22 square miles) constitute dependencies of the colony.

Aden Protectorate is divided into Western Aden Protectorate (which nearly surrounds Aden Colony) and Eastern Aden Protectorate (67,000 square miles; est. pop., 350,000), which consists of five states, all in treaty relationships with Great Britain. The Qu'aiti state of Shihr and Mukalla and the Kathiri state of Sai'un, the best organized of the five, together are known are the Hadhramaut; the Qu'aiti sultan is the premier chief of the protectorate.

Western Aden Protectorate (45,000 square miles; est. pop., 400,000) consists of 18 states, all of which have protective treaties with Great Britain. On Feb. 11, 1959, with the approval of Britain, six of the states—the amirates of Baihan and Dhala; the sultanates of Audhali, Fadhli, and Lower Yafa'i; and the sheikdom of Upper Aulaqi—joined to form the Federation of the Arab Amirates of the South. The Lahej sultanate joined the federation later in 1959; the Lower Aulaqi sultanate, the Agrabi sheikdom, and Dathina confederation joined in 1960; and in 1962 the sultanate of Wahidi, in the Eastern Aden Protectorate, became a member. On April 6, 1962, the name was changed to the Federation of South Arabia. (See also below, *Events, 1962.*)

Government.—The British governor of Aden Colony (Sir Charles Hepburn Johnston, appointed in October 1960) is commander-in-chief of all British forces in the colony and protectorate. The governor presides over the colony's Legislative Council, which consists of 23 members (12 elected); he is aided by an Executive Council of 10 members (4 elected). The colony's Supreme Court has unlimited civil and criminal jurisdiction.

The Federation of South Arabia is governed by a Supreme Council of 7 members (with the chairmanship rotating each month) elected by a Federal Council composed of 6 representatives from each member state. The new capital, al-Ittihad, at Bir Ahmad, was completed and occupied in 1961. In the Eastern Protectorate, the Qu'aiti sultan is a constitutional ruler and has a State Council.

Control of British army, naval, and air forces in the area is centered in Aden under the command of Air Marshal Sir Charles Elsworthy, who is commander-in-chief, British Forces, Middle East.

Education and Religion.—In 1962 the colony had 35 primary schools, 16 intermediate schools, 7 secondary schools, a technical institute, and 2 teacher-training centers. Combined enrollment of the primary and intermediate schools was 10,416 in 1959. In the protectorates there were 68 primary schools (including 5 for girls) and 6 intermediate schools. The population is predominantly Muslim.

Economy.—Aden is one of the world's great bunkering ports, with 26 berths and 4 floating docks, in addition to 4 berths at Little Aden. An important transshipment point, the port received 5,972 ships with a total tonnage of 27,646,403 in 1960. British Petroleum, Ltd., operates a refinery in Aden with a capacity of 6.8 million tons annually. Pan-American Hadhramaut Oil Company, an affiliate of Standard Oil of Indiana, took over the oil concession of the subsidiary of the Iraq Petroleum Company in 1962. It agreed to grant 55% of its profits to the Kathiri and Qu'aiti states, and offered 20% local ownership of the company for a 30-year lease of a 26 million-acre tract.

Shipping and oil are the principal industries in the colony. Agriculture predominates in the protectorates; chief crops are sorghum and cotton. Total exports, 1961: $185 million ($171 million in 1960); imports, $237 million ($217 million). Chief exports are oil and petroleum products.

Events, 1962.—Two themes dominated affairs in Aden in 1962: strikes and the proposed union of Aden with the Federation of South Arabia to include possibly all 23 states of the protectorate. There was hardly a week when some group was not on strike in Aden. A massive general strike was called on July 23 as a demonstration against constitutional talks in London on the merging of Aden and the other states. Further demonstrations against the merger occurred in September.

Hassan Ali Bayumi, head of the National Unity Party, declared that under the merger plan Aden could attain economic and political stability. In Aden, however, many Yemeni persons belonging to opposition parties reacted violently against unity agitation. Bayumi petitioned for the merger to the United Nations, declaring that "the overwhelming majority of the population of Aden fully endorse the reunification of Aden with the South Arabian Federation." Unity talks proceeded as scheduled, and five basic documents of agreement were initialed in London on August 16. A draft treaty was considered in late 1962, and Aden's entry into the federation was scheduled to take place in 1963. The British government declared, however, that the merger will not affect the "unfettered operation" of British defense installations, and that there will be no change in the governor's powers or in British sovereignty over Aden.

SYDNEY N. FISHER,
Professor of History,
The Ohio State University.

ADENAUER, KONRAD

Chancellor of the Federal Republic of Germany: b. Cologne, Germany, Jan. 5, 1876.

Chancellor Adenauer in 1962 succeeded in keeping his country firmly allied with the United States and France, despite the differences between Presidents Kennedy and de Gaulle over defense policy. But at home, the aging leader's unstable coalition toppled in November after a national outcry over suppression of a news magazine, and in forming a new cabinet Adenauer was forced to dismiss his defense minister.

A law graduate, Adenauer entered politics in his native Cologne in 1906. He was elected mayor in 1917 and remained in that post until he was removed by the Nazis in 1933. After World War II he returned to politics, became leader of the Christian Democratic Union (CDU), was elected chancellor in 1949, and was reelected in 1953, 1957, and 1961.

Political unification of Europe and the entry of Great Britain into the European Economic Community (Common Market) occupied the chancellor during the first part of the year. He conferred with de Gaulle in Baden-Baden on February 15.

The two leaders then exchanged state visits—Adenauer going to France on July 2–8 and de Gaulle to Germany on September 4–9. During Adenauer's trip to France, he and de Gaulle issued a communiqué indicating their agreement on matters of defense and reunification of Germany. They said that negotiations toward the political unification of Europe should proceed before Great Britain's entry into the Common Market.

After vacillating in his attitude toward United States policies in Europe, Adenauer conferred in Bonn with U.S. Secretary of State Dean Rusk (June 22); they announced they had reached "agreement on all major issues"—a view echoed on November 14 after Adenauer's talks with President Kennedy in Washington.

The fall of the coalition cabinet was precipitated by a police raid on the magazine *Der Spiegel* early on October 25; the publisher, three editors, and a correspondent were jailed on charges of having revealed defense secrets. There was strong public resentment about police tactics, and the issue of censorship was raised. At first Adenauer stood firm against public demands for the dismissal of Defense Minister Franz Josef Strauss, who was alleged to have ordered the action. But in mid-November the five Free Democrats in the cabinet resigned over the *Der Spiegel* affair. The other 15 ministers, members of the CDU and its Bavarian affiliate, the Christian Social Union, then gave their resignations to Adenauer to allow him a free hand in forming a new cabinet. On November 27, the CDU told Adenauer it wanted his resignation by mid-1963—a demand to which he did not reply; and on the following day, the chancellor agreed that Strauss would not be in the new government.

(See also GERMANY.)

ADULT EDUCATION. See EDUCATION and the Index entry, *Adult Education.*

ADVERTISING

Advertising in the United States in 1962 set a new record of $12.37 billion invested in national and local advertising media. The 1962 figure marked the first time the $12 billion point had been reached, and was 4.4% higher than the 1961 total of $11.84 billion.

Other notable developments included the first public offering of stock by an advertising agency, Papert, Koenig, Lois, Inc., of New York City; widespread use of electronic computers in advertising agency operations; and installation of an advertising trade newspaper editor as head of the American Association of Advertising Agencies (John Crichton of *Advertising Age* succeeded Frederic Gamble, who retired).

There was speculation at the beginning of 1962 that the new postal rates, which were debated in Washington during the year, would materially affect advertising. Some segments of the business were concerned about the Federal Trade Commission (q.v.) and its attempts to obtain wider power to deal with advertising; many advertising executives feared that the commission would adopt harsher tactics toward advertising. By the end of the year, however, no major repressive legislation had been adopted, and federal agencies had not significantly altered their policies toward advertising, but it appeared that new postal rates scheduled to go into effect in January 1963 would have an adverse effect on direct-mail advertising.

The increase in advertising investment between 1961 and 1962 was the most impressive since 1959, but the 4.4% increase was below the average annual increases of 5% to 6% in media rates. Thus the increase in revenue was not spectacular in terms of purchases of time and space in the various media.

Figures prepared by McCann-Erickson, Inc., for the magazine *Printers' Ink* show that revenue for every major medium except national outdoor advertising increased in 1962. Only network and spot advertising on television, however, increased more than 6% over the previous year. The television total was $1,445 million (including talent and production costs), 8% higher than in 1961. Magazines recorded $970 million, 5% higher than in 1961 (the 1961 figure was 2% lower than that for 1960). National advertising in newspapers totaled $825 million, 3% higher than the previous year. National advertising on radio (including network and spot advertisements) totaled $265 million, 4% higher than in 1961. Business newspapers also increased their advertising revenue by 4%, reaching $600 million. The national outdoor advertising revenue was $115 million, 6% lower than in 1961.

Other media used by national advertisers, including direct mail, point-of-purchase displays, and transportation advertising, accounted for a volume of $3,290 million, 2% higher than in 1961. Total investments in advertising by national advertisers were estimated at $7,510 million in 1962, 4% higher than in 1961. Investments by local advertisers were estimated at $4,860 million, an increase of 6% over 1961.

(See also MAGAZINES; NEWSPAPERS.)

CAMERON DAY,
Managing Editor, "Printers' Ink."

AERONAUTICS

The aviation industry in the United States in 1962 moved into the era of supersonic transports and revolutionary turbine-powered aircraft that will take off and land vertically and travel horizontally at high speeds. Although neither the supersonic transport designs nor the various vertical takeoff and landing (VTOL) aircraft were close to going into production, proposals in both categories were making progress.

In military aviation, the first model of the much-delayed B-70 supersonic bomber was completed at the North American Aviation plant in Los Angeles, Calif. The reconnaissance-strike aircraft, now known as the RS-70, will solve many problems of the technology of the Mach 3 supersonic transport, development of which is being directed by the Federal Aviation Agency (FAA), the National Aeronautics and Space Administration (NASA), and the Department of Defense. The president and the Department of Defense, despite pressure by Congress and military officers, were still keeping the RS-70 strictly as a development program. By the end of 1962 there had been no indication when, or if, approval would be given for any quantity production. The tri-service tactical fighter aircraft (TFX) program was delayed twice in 1962 as the Department of Defense asked for more refined proposals before General Dynamics Corp. and Grumman Aircraft Engineering Corp. were selected as prime contractors on November 24.

State of the Industry.—Some 668,900 persons were employed in the aerospace manufacturing industry at the beginning of 1962. The figure, which represents about 4.1% of the total manufacturing industry, is the lowest manpower figure for the aircraft industry since before the Korean War. The proportion of these persons working on aircraft and related products is declining within the in-

Terminal building and control tower of Dulles International Airport, Chantilly, Va., was opened to traffic at ceremonies on November 17.

FEDERAL AVIATION AGENCY

dustry as more effort is being devoted to the nation's missiles and space programs.

New labor contracts between the various unions and manufacturers were negotiated in 1962. As the negotiations reached critical stages in the summer and fall, President Kennedy appointed several aerospace boards, which recommended the establishment of union shops in factories where they were not prohibited by state legislation. Most of the companies went along with the recommendations "in the national interest," and a serious work stoppage was prevented. (See also LABOR.)

The industry was able to raise its earnings as a percentage of sales to about 1.8% in 1962, but this still was far below the national manufacturing average of 4.3%. Research and development expenses, new facilities, and other large investments necessary to stay competitive in the field contributed to the low earnings ratio.

Military Aircraft.—In the fighter-interceptor field, the major development in 1962 was the cutback in production of the Republic F-105D and a shift by the Air Force to a version of the McDonnell Aircraft F4H (first designated F-110A and later F-4C). Republic's loss of the F-105 work was somewhat offset by its selection as a major subcontractor in the F-4C program. Bomber production in 1962 was completed when the last B-52H rolled out of the Boeing Wichita plant as the year opened. The H series was far advanced over earlier B-52 models, but the end of the program definitely set a limit to the Strategic Air Command's bomber capabilities. With production of the B-70, if in any quantity at all, far in the future, the Air Force will have to do its best with its subsonic B-52's and B-47's and its smaller number of supersonic Convair B-58's. Navy aeronautics was advanced by the introduction of the new turboprop Lockheed P-3A in operational service in antisubmarine warfare (ASW). This version of the Electra commercial transport will add considerable capability to the ASW search missions which had been dependent on the long-lived P2V's, in production since the 1940's.

The Lockheed C-141 military transport program was progressing on schedule to give the military its first jet cargoliners designed specifically for the purpose. The interim order for Boeing C-135 jet transports was completed when the 45th aircraft in the series was delivered in the summer of 1962.

The Northrop N-156, a fighter version of the T-38 supersonic trainer, was selected during the year as the Military Assistance Pact (MAP) fighter to be sold to friendly nations. The N-156, which will be developed for smaller nations much as the Lockheed F-104 program was developed for North Atlantic Treaty Organization (NATO) nations, may reach a total production of about 800 aircraft. The Air Force has designated the fighter the F-5A.

Air Force.—As the Air Force in 1962 won some broadening of its space role, its aircraft force was being trimmed. Its role in the counterinsurgency forces to fight limited wars was seriously challenged by the Army, and its forced de-emphasis of bombers in favor of missiles resulted in a cutback in the number of airplanes in its inventory to about 16,200, compared with 16,905 in 1961. This decline was scheduled to continue into 1963, when its inventory will drop to about 15,500. The Air Force's share of the defense budget in 1962 dropped to 38% from 43%. Besides the B-70 and TFX programs, the Air Force's only winged development was the hypersonic X-20, or Dyna-Soar, which will be used for manned, fully controllable space flight. (See also AIR FORCE, U.S.; SPACE FLIGHT.)

Navy.—The growing submarine threat posed by the Soviet Union in 1962 was met by increased effort in antisubmarine warfare techniques by Navy. In addition to the Lockheed P-3A, other ASW acquisitions included increased numbers of Sikorsky SH-3A turbine-powered ASW helicopters and Grumman E-2A and S-2D search and tracking planes. The Navy in 1962 had some 9,300 planes of all types in inventory, compared with 8,793 in 1961. The Grumman A-6A Intruder was phased into fleet use during the year to give the sea arm greater load-carrying capability, longer range, and greater all-weather capacities. A new approach by the Navy, successfully tested in 1962, is the Groydyne Dash unmanned helicopter, designed to operate from destroyers, for search and destruction missions against hostile submarines. (See also NAVY, U.S.)

Army.—The Howze Board report on Army air mobility was the big development in Army aviation in 1962. The report, released late in the year, called for an expansion of the Army aircraft fleet from a total of 5,500 to 10,000 or more. All the aircraft would be organic parts of the Army's divisions and would be controlled by Army ground commanders. The report cited the need for rapid transportation of troops and for surveillance aircraft. The Army's immediate demands in 1962 continued to be largely for helicopters, in the absence of practical VTOL types. The Army's fleet, mostly helicopters, flew an average of 125,000 hours a month during the year. The Army was procuring four different helicopters and two fixed-wing aircraft in 1962. The Grumman OV-1 Mohawk was the Army's workhorse observation plane, and the de Havilland of Canada CV-2B Caribou was its assault transport. Bell was delivering the UH-1 turbine-powered utility helicopter, and Hiller was producing the OH-13. The Boeing-Vertol CH-47A became the Army's mainstay transport helicopter. In development by three teams during 1962 was a light observation helicopter.

VTOL, STOL.—Five vertical and short takeoff and landing (V/STOL) transport programs, including

the tri-service effort under Air Force management, were being developed by the armed services in 1962. The Defense Department had authorized parallel developments as alternatives to the tri-service design in the hope that a breakthrough might be accomplished. Five flying prototypes were being built in the tri-service project, and the other four projects were being limited to two test aircraft each.

Ling-Temco-Vought's Chance Vought Division, Ryan Aeronautical, and Hiller Aircraft were cooperating to develop the tri-service craft. The Navy's program concentrated on a ducted-propeller design for which the Bell Aerosystems Co. was selected over Douglas Aircraft after a design competition. The Army followed two concepts: the General Electric–Ryan lift-fan system and the Lockheed Hummingbird design. Both aircraft are planned to develop maximum low-level speeds of 450 knots per hour. The Army also allocated funds for development of the British Hawker P-1127 V/STOL. A fifth development, the Curtiss-Wright Model 1200, utilized tiltable propellers.

In the helicopter field, the major development of 1962 was the initiation of scheduled passenger flights with twin-turbine helicopters. In September, one of the transport helicopters, the Vertol Model 1-7-II was awarded a supplemental certificate by the FAA to make true vertical takeoffs and landings from building-top heliports. The first application was to be service by New York Airways from the heliport atop the new Pan American World Airways building in New York City, in 1963. The Sikorsky S-62 twin-turbine helicopter was in service with San Francisco and Oakland helicopter airlines on the west coast.

A military helicopter development of 1962 was the Sikorsky CH-53A, a heavy assault transport craft which will carry a capacity load of 63 troops. This aircraft uses many of the same components as the giant Sikorsky S-64 Flying Crane. Among its features are a six-bladed main rotor, twin-turbine engines, external sponsons containing self-sealing fuel tanks, a high-visibility cockpit, a high-speed cargo-handling system, a watertight hull for emergency flotation, a retractable tricycle landing gear, and a low-drag fuselage. The Navy has ordered the CH-53A for the Marine Corps.

Utility and Light Airplanes.—Two new United States companies joined the group offering executive and light aircraft for general aviation use in 1962. North American Aviation reported that it would offer an executive version of its twin-jet Sabreliner for about $750,000. William P. Lear moved his Swiss-American Aircraft Corp. from Switzerland to Wichita to offer his Lear-Jet to the United States executive market. Other executive and corporation jet aircraft offered during the year for future delivery were the Aero Commander Jet Commander and the Lockheed JetStar. Beech Aircraft revealed first details of its Model 120 twin-engine turboprop, which it expects to offer for about $500,000. This aircraft will carry six or eight passengers and a crew of two.

During the first six months of 1962 the United States executive and light aircraft industry shipped 3,526 planes valued at $72,134,000.

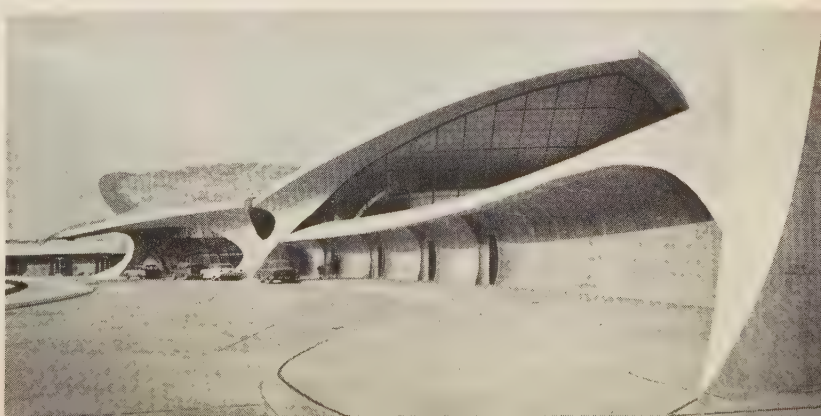
Commercial Transports.—Boeing and Douglas continued to deliver versions of their jet transports to airlines of the world. Both companies have received orders for cargo versions of their turbofan-powered 707's and DC-8's, and are continuing deliveries of the passenger versions. Boeing was proceeding rapidly with production of its Model 727 three-jet aircraft, and Douglas was considering production of a short-range twin-engine jet for the local airline markets. Convair, after suffering large losses in its commercial jet program, was completing deliveries of the 880 and 990 transports in 1962. Lockheed completed deliveries of its turboprop Electra. Fairchild Stratos Corp. was continuing production of its twin-turboprop Friendship F-27, but was having trouble finding customers with sufficient financing.

Making inroads on the American jet transport market during the year was British Aircraft Corp. with its short-range BAC-111 twin-jet aircraft. Mohawk Airlines, Bonanza Air Lines, and Braniff Airways ordered the British transport for service on short routes. Other United States short-range airlines, notably Allegheny Airlines, also expressed keen interest in the BAC-111, as did Continental Airlines, a trunk airline.

Supersonic Transport.—The FAA in 1962 awarded the first contracts for various systems to be used in a supersonic transport. There was much discussion during 1962 about whether the United States should change its development plans from an all-steel Mach 3 supersonic transport to an aluminum Mach 2.2 model, but no final decision was made. The Soviet Union reportedly was working on a supersonic transport in the Mach 1.7 to Mach 2.2 range in order to gain the prestige of being the first to develop the advanced aircraft.

Airports.—Dedication and activation by the FAA of the new Dulles International Airport at Chantilly, Va., highlighted airport development in 1962. The airport features use of the revolutionary "Mobile-Lounge," a huge bus-like vehicle that carries passengers from the airport's terminal building to aircraft parked a mile or more away. Other airport developments in 1962 included New York City's continued search for a location for a new jet airport.

The federal government in 1962 unveiled a plan to couple airport and highway development. The plan would permit construction of small airstrips along highway rights-of-way to allow communities unable to support large airports to build runways for general aviation and local service use.



Designed by Eero Saarinen, the TWA passenger terminal at New York International Airport is a concrete symbol of soaring flight.

TWA BY EZRA STOLLER ASSOCIATES

In connection with this development, the FAA adopted new light-plane airport standards, expected to at least double the number of airports in the United States over the next five years. The new standards would reduce the required width of runways and generally cut land requirements and construction costs.

Project Beacon Report.—The FAA in August 1962 disclosed its long-awaited plan for rebuilding the nation's airways by 1967 around general-purpose computers and radar data acquisition and display. The first new equipment in the system will be installed in the New York area by mid-1963, and ultimately in the 25 busiest terminal areas. The highlights of the report, which is expected to bring air traffic control to a point where it can efficiently handle all predicted air traffic in the nation, included: general-purpose computers, composite radar displays, altitude-reporting beacons, expansion of the approach-control process, terminal-area approach channeling of aircraft of varying speeds, division of controller responsibility, fewer centers, and nationwide positive area control.

HAWKER AIRCRAFT LIMITED

Rotating jet nozzles, which can be pointed straight down for takeoff, allow the British Hawker P-1127, shown here in a test flight, to rise almost vertically from a landing field. For horizontal flight, the nozzles point backward.

U.S. Commercial Air Traffic.—Traffic of United States domestic and international airlines during the first six months of 1962 was higher in all categories than during the first six months of 1961. Totals for the year were expected to be well above those for 1962, despite a damaging strike of the flight engineers against Eastern Air Lines and threatened strikes against other carriers. The most important development among the airlines was the proposed merger of American Airlines and Eastern Airlines, announced at the beginning of 1962. The plan moved through various stages of negotiation by the carriers themselves and the Civil Aeronautics Board (CAB) and other government agencies during the year.

Domestic passenger-miles flown by United States trunk airlines in the first half of 1962 totaled 15,971,858,000, compared with 14,221,263,000 in the first six months of 1961. On international flights, United States airlines flew 4,913,491,000 revenue passenger-miles in the first half of 1962, compared with 4,088,722,000 in the corresponding period of 1961.

The domestic trunk lines had a net loss of $7,556,574 in the first half of 1962, compared with a net loss of $13,586,000 in the first half of 1961. Total operating revenues were $1,125,479,656, and operating expenses were $1,095,690,047; the operating profit in the first six months of 1962 was $23,789,609, compared with $3,022,000 in the first six months of 1961, according to figures filed with the CAB.

United States international carriers reported a net profit of $6,970,000 in the first half of 1962, compared with a loss of $1,036,242 in the first half of 1961. International airlines' total operating revenues were $372,185,246, and operating expenses were $341,949,622, resulting in an operating profit of $30,235,624.

SCHEDULED TRAFFIC OF U.S. AIRLINES

	Full Year 1961	Jan.-June 1962
Domestic Trunk Airlines:		
Revenue passenger-miles	29,702,848,000	15,971,858,000
Revenue plane-miles	680,197,262	357,424,318
Freight ton-miles	384,460,102	224,620,279
Mail ton-miles	144,688,880	78,462,124
Express ton-miles	56,745,706	30,158,407
Total revenue ton-miles	3,435,218,783	1,869,492,919
U.S. Flag International Airlines:		
Revenue passenger-miles	9,554,473,000	4,913,491,000
Revenue plane-miles	163,755,055	81,774,141
Freight ton-miles*	216,759,359	126,461,291
U.S. mail ton-miles	132,930,801	74,149,636
Foreign mail ton-miles	9,087,864	4,894,727
Total revenue ton-miles	1,325,970,618	705,019,393

*Includes express ton-miles. (Source: Civil Aeronautics Board data, compiled by *Aviation Daily*.)

Canada.—The Canadian aircraft industry in 1962 faced a dearth of space and missile work, coupled with a lull in aircraft production and development. Canadair's highly promising swing-tail CL-44D cargo transport was facing a production shutdown unless the company could attract more customers. The turboprop cargoliner was performing successfully for the Flying Tiger Line, Seaboard World Airways, and Slick Airways, but no new customers were placing orders. Sales of the Canadair CL-41 jet trainer were better, however, and production of Canadair-built Lockheed CF-104G's continued throughout the year. The U.S. Army continued buying the de Havilland of Canada AC-1 Caribou as its standard assault transport.

Great Britain.—The Society of British Aircraft Constructors aircraft show at Farnborough, in September 1962, showed a variety of new British jet airliners and other transports, and several military and business planes that hold much promise. British Aircraft Corp. was working on the design of its Mach 2.2 100-seat supersonic airliner as part of its cooperative effort with Sud Aviation of France. The aircraft is slender, with a delta wing, swept-back fin and rudder, and four jet engines in pairs in two nacelles beneath the wings. Medium- and long-range versions will be offered by the BAC-Sud team. BAC was moving swiftly into the world transport market with its BAC-111; Vickers was optimistic about the potentialities of its VC-10 long-haul jet; and de Havilland's Trident and executive jet, the DH-125, were attracting much attention. In the feeder-line category, the Avro 748, although it encountered some pressurization problems, was gaining acceptance. The Handley Page Dart Herald was popular with some short-haul carriers. The British aircraft industry, mainly through its transports, in 1962 made its biggest bid for the world air transport market. Despite the intense competition from United States and French transport builders, the British effort was being felt even in the United States and France.[1]

The British also were making intense efforts to sell military aircraft, particularly to NATO members and other nations. The Hawker P-1127 VTOL fighter, given financial support by the United States and West Germany, shows much promise as a tactical support aircraft. BAC also tried to sell its TSR2 in world military markets. BAC tested the T-188 all-steel research plane which will reach the threshold of space. It is much like the United States X-15 in performance, but able to take off from the ground.

Japan.—The first large airplane designed, developed, and produced in Japan since World War II, the YS-11 turboprop, made its maiden flight in August 1962. The Japanese industry also was engaged in licensed production of various United States designed helicopters and conventional aircraft, and of United States and British engines. Among the aircraft in production in Japan are the T1, the

[1] The British Overseas Airway Corporation (BOAC), Great Britain's state-owned airline, reported on Oct. 7, 1962, that it had sustained a record loss of $40,320,000 for the year ending March 31, 1962. The loss was blamed on a decrease in transatlantic travel, the company's involved financial structure, and a strike of flight engineers in 1961.

first Japanese postwar jet aircraft; the KM-2, a development of the United States Beech Mentor trainer; the Sikorsky S-62 helicopter; the Vertol Model 107; and the Lockheed F-104.

USSR.—No major aircraft developments have come out of the Soviet Union since the memorable Moscow air show in the summer of 1961. The silence, however, did not indicate that activity was lessened. The Soviet Union apparently is strengthening its bomber fleet to increase its mobility and striking capabilities, and a major Russian aircraft effort certainly must be underway in antisubmarine warfare. The Soviet aircraft industry also is busy building fighter craft for its satellite countries, and is even trying to sell advanced MIG fighters to such nonsatellite countries as India. The USSR also is striving for improved mobility of ground troops through the development of assault transport aircraft and helicopters. The An-12, a military version of the An-10 four-engine turboprop transport, was shown in 1962. It has a rear loading ramp that permits vehicles to drive into the aircraft. Helicopters also were being outfitted with missiles and modified to carry armed troops into battle areas on short notice.

It was reported during 1962 that the fleet of Aeroflot, the Soviet airline, consisted of more than 220 turbine-powered aircraft. The big Tu-114 is in service and is capable of nonstop flights from Moscow to Havana. In the Aeroflot turbine fleet are an estimated 130 Tu-104 jets, 5 Tu-114's, 25 An-10's, and 60 Il-18's. A prototype of a new turbojet, the Tu-124A, was flown in June and was scheduled for service with Aeroflot in 1963. This aircraft has two Soloviev D-15 turbofan engines mounted on the vertical tail; the engines develop 28,600 pounds of thrust each. The Tu-124A will carry 68 to 70 passengers. Another Tupolev design has four engines mounted on the tail. This model, which is similar to the British VC-10, was expected to fly for the first time in 1963.

An important development in Russia reported during 1962 is work on developing powerful plasma (ionized gases) engines to power VTOL transport aircraft. The Russians also were reported to be working on the use of free-radical fuels for aircraft propulsion. This type of fuel was considered several years ago in the United States for use in the B-70 supersonic bomber.

(For further references, see the Index entry, *Aeronautics;* and for a summary of flight records, see the article FLIGHT RECORDS.)

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AFGHANISTAN

Having no direct access to the sea, this Asian kingdom is surrounded by Pakistan, Iran, the USSR, and China. It has an area of about 250,000 square miles, and a population of 13,800,000 (1960 est.). Principal cities and populations: Kabul, the capital, 250,000; Kandahar, 100,000; Herat, (80,000); and Mazar-i-Sharif (50,000). More than half of the population are Pashtoons (Pushtuns, Pathans, or Pakhtuns—the so-called true Afghans); other sizable groups are the Tajiks, Uzbeks, Hazaras, and Turkomans. Persian and Pashto (Pushto) are the principal languages.

Government.—Afghanistan is a constitutional monarchy, ruled by a king (Muhammad Zahir Shah; b. 1914, acceded 1933). Parliament consists of the House of Nobles, or Senate (whose members are appointed by the king for life), and the National Assembly (whose members are elected by male suffrage for 3-year terms). Executive power is shared by the king with a council of ministers; the prime minister, Muhammad Da'ud and the foreign minister, Muhammad Na'im, are brothers and first cousins of the ruler.

Education and Religion.—School enrollment, 1961: 193,000 (about 3% of the school-age population). Number of schools (with enrollments), 1959: 803 primary (141,319); 29 secondary (7,973); 27 vocational (4,427); 1 university (1,505). About 85% of the population is illiterate. Principal religion: Islam (80% Sunnis; most of remainder, Shi'ites).

Finance.—Government expenditure, 1961–62 est.: ordinary, 2,364 million afghanis; development, 1,658 million afghanis (the afghani was valued in 1962 on the free market at about U.S.$0.0235). Foreign debt: 115,456 million afghanis in 1960; foreign exchange holdings: 1,753 million afghanis.

Transportation and Communications.—Transport networks (miles): all-weather roads, 3,170, of which about 300 are paved; no railroads; negligible river traffic. National airline: Ariana Afghan Airlines, serving chief towns and neighboring countries. Afghanistan is also served by 3 foreign airlines, using international airports at Kabul and Kandahar. Telephones number 8,000 (1962); radio sets, 63,000 (1962).

Manufactures and Minerals.—Chief industrial products (1959–60): cotton textiles, 16.4 million meters; refined sugar, 4,475 tons; coal, 41,400 metric tons; cement, 34,000; electric power, 82 million kw.-hr.; salt (1960–61), 25,900 metric tons.

Agriculture.—Agriculture is the principal economic activity of Afghanistan, with 19 million acres under cultivation. Sheep raising furnishes the chief source of income for much of the population: Chief crops (thousands of metric tons, average annual production): wheat, 2,210; corn, 696; fruits, 600; barley, 330; rice, 308; cotton, 58; sugarcane, 50; and sugar beets, 39.

Foreign Trade.—Total exports, 1959–60: 1,722 million afghanis; imports, 2,532 million afghanis. Chief exports: karakul skins, fruits, raw cotton, raw wool, and carpets. Karakul skins exported, 1961: 473,807 (326,030 in 1960). Chief imports: manufactured goods, food, machinery and equipment, and mineral fuels. Major trade partners: the USSR, India, United States, Pakistan, Great Britain, Japan, and West Germany.

Events, 1962.—Diplomatic relations with Pakistan, severed by Afghanistan in September 1961, remained strained. In January the United States obtained permission to transship to Afghanistan the material and supplies for United States aid projects which had accumulated in Peshawar and Chaman, Pakistan. In February, Iran and Afghanistan concluded a 5-year transit agreement, providing for the use of Iranian ports for Afghanistan's trade.

PARIS MATCH FROM PICTORIAL PARADE

Pierre Satre, chief engineer of Sud Aviation, holds a model of the Mach 2.2 Super Caravelle, which the French firm is developing in conjunction with British Aircraft Corp. A model of the Satre-designed Caravelle is on the table.

The agreement served to break the monopoly of the USSR as the channel for the commerce of Afghanistan with the rest of the world. At the end of July, Mohammed Riza Pahlavi, the shah of Iran, attempted to mediate the dispute between Pakistan and Afghanistan, but his efforts failed to lead to a restoration of diplomatic relations between the two countries.

In April the second 5-year plan (1962–66), calling for an expenditure of U.S.$700 million, was presented to the National Assembly. Of the proposed expenditure, one fourth is to be allocated to agriculture and irrigation, another fourth to communications, and one third for industrial development, including the construction of oil pipelines, an oil refinery, and small consumer goods factories. On June 11 it was announced that the United States rejected an Afghan request for $350 million to finance half of the development program. The United States announced that it would, however, continue to grant Afghanistan long-term economic aid.

Throughout the year both the USSR and Communist China continued to promote closer relations

with Afghanistan. Although trade between China and Afghanistan is negligible, a protocol was signed between the two countries in July, covering the exchange of goods. The USSR concluded additional agreements for Soviet economic aid, although it too failed to make a firm commitment as to the funds it would make available for the second 5-year plan. In August the king made a state visit to the USSR.

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AFRICA

Africa, the second largest of the continents (area, about 11,695,000 square miles; population, some 254 million) was, as a whole, in 1962 still passing through a manifest historical phase—that of the twilight of colonialism. Not all parts of the continent were at the same stage of this process. In northeastern Africa, comprising Egypt and neighboring countries, no trace of imperial rule remained; and likewise in West Africa, centering about the Gulf of Guinea, an area where as recently as the late 1950's colonial status had been general, all states were now independent. The areas affected by change of status in 1962—or where such change of status was still a hope or a threat (depending on the point of view)—were Algeria, considerable areas in East Africa, and the whole large fraction of Africa south of the Republic of the Congo (Léopoldville).

New States of 1962.—At the beginning of the year there were 29 independent states in Africa (28 without South Africa, which the other African states regard as not one of their number). Four were added to the roster during the year. The small Belgian-administered United Nations trust territory of Ruanda-Urundi (1961 pop. est., 4,980,000) became independent on July 1 as two countries, the Republic of Rwanda and the Kingdom of Burundi. Algeria became independent of France on July 3. Uganda, a neighbor of Ruanda-Urundi, ceased to be under British rule on October 9.

Attitude of European Colonial Powers.—Many, though not all, of the events of 1962 in Africa illustrate the notable change which in recent years has overtaken the attitude of some of the European powers, especially France and Britain, toward their colonial holdings in Africa and elsewhere. Earlier they sanctioned steps toward independence with apparent reluctance, and did not take any moves in that direction until they were fully satisfied that the particular territory was reasonably well-prepared to bear new tasks in self-government. Such an attitude generally has been replaced today, in an amazing turnabout, by a determination to get rid of imperial responsibilities at the earliest possible moment.

The new typical policy of the metropolitan powers, though in harmony with the current of events, is possibly not always likely to be of greater long-term benefit to the world. Essentially, it is equally selfish. The former clinging to imperial rule was an attempt to shore up national greatness by retaining the advantages which colonies were supposed to bring in power and wealth to the mother country. Now scepticism concerning these advantages, which were possibly always illusory in the majority of cases, has been so reinforced by other factors as to produce a startling reorientation of policy.

The result is that what were once spoken and written of as sacred imperial responsibilities are now sloughed off in a manner that partakes of haste. Examples of this are very easy to find in the recent history of Africa, the greatest being that of the Belgian Congo, whose independence (effective June 30, 1960) was decided upon only six months earlier. The year 1962 also exemplifies the new pattern of imperial behavior in several ominous examples. Ruanda-Urundi was hardly, by any impartial standard, ready for independence on July 1, still less as the two separate states of Rwanda and Burundi, each too small to be viable. Even the UN General Assembly's decision of June 27 for partition and independence was evidently made with some misgivings.

Typical Problems of Areas Nearing Independence.—Two different kinds of problems were exemplified in the areas which attained independence in 1962, or which are scheduled to gain it in the very near future. With regard to both, the European powers concerned were showing themselves eager to accept anything that could pretend to be a solution, however arbitrary or temporary, provided only that it let them end their responsibilities.

One type of problem was the mutual animosities of political organizations or territorial blocs within a potentially independent state. This had been exemplified in Ruanda-Urundi. The same sort of thing was to be found in the British colony of Uganda, where there is a three-cornered rivalry among the kabaka of Buganda (the most important of the native monarchs), the other three monarchs, and the nonmonarchical remainder of the colony. These tensions remain as factors in the situation, even though independence was achieved on October 9.

In Kenya, likely to become independent early in 1963, the British government was busy in 1962 trying to patch together a working agreement between the two bitterly hostile parties, the Kenya African Democratic Union (KADU) and the Kenya African National Union (KANU), led respectively by Ronald Ngala and Jomo Kenyatta. Immensely long and difficult negotiations were conducted in London at a constitutional conference held from February 14 to April 6, and compromises on the issues dividing the parties were embodied in an agreement regarding a new constitution. An interim coalition government in which the two rival leaders are both ministers of state, and their parties divide the portfolios equally, was appointed. But this fragile compromise can hardly survive independence, for the two groups quite clearly place their partisan interests before any plans for unity, and the new constitution is as yet merely an outline.

The White Settler Dilemma.—The second type of problem is the presence in some African areas of white settlers in considerable numbers. Such settlers are, or were, to be found in French North Africa, in British East Africa, and in southern Africa, but not at all in West Africa—hence West Africa's speedier achievement of independence. In most cases they are natives of the area in which they live, and have regarded it as their permanent home. They are descended from settlers who went to Africa in most cases with the deliberate encouragement of their home governments. But, of course, they are quite outnumbered by nonwhites, though the ratio differs from one area to another. The hopes of creating "plural societies"—in which white interests would be safeguarded even after independence, and their political predominance ceded only gradually—have been in most areas irretrievably lost.

In most areas of Africa where such situations existed, the governments of the metropolitan countries were purchasing solutions by the sacrifice of

AMERICANA MAP BY DONALD T. PITCHER

the white settlers—precisely those whom until recently they always supported. The glaring example of this pattern in 1962 was Algeria, where a ceasefire was finally achieved between the French government and the National Liberation Front (FLN) on March 18, and a plebiscite on July 1 showed an overwhelming majority for independence, which came two days later. The terrorist campaign of the Secret Army Organization (OAS) was the desperate action of men who had no solution to offer, but who represented about 10 percent of the population before the wholesale emigration to France began.

In Kenya, where the rivalries of KANU and KADU were not the only problem, a situation analogous to that of Algeria was working its way toward its unsatisfactory end. The white settlers of the country could secure no assurances that in an independent Kenya their land titles would be respected, and the gestures which the British government had made toward a compensation scheme were so small that they made no real impact on the problem. As a result, in 1962 the economy of the colony teetered on the edge of disaster, and many white settlers were simply abandoning their homes.

Farther south also, in the Central African Federation (comprising Northern and Southern Rhodesia and Nyasaland), the British government seemed to be heading toward a decision at the expense of settler interests. The future existence of the federation, created in 1953, indeed was problematical. Only in Southern Rhodesia, where the whites form a little less than 10 percent of the 3.2 million population, is there a considerable white settlement; and as Northern Rhodesia and Nyasaland approached nearer to complete self-government, their leaders expressed determination to break away from the federation.

In Southern Rhodesia there was much discontent with white political dominance. In March, Prime Minister Harold Macmillan of the United Kingdom announced that a new ministry—the Central African Office—was being set up to tackle the crisis in the Rhodesias and Nyasaland. The new *ad hoc* administrative creation demonstrated the urgent need felt by the British government to deal with the situation in the federation—a political entity that in policy, as in geography, occupies a midway place between the colonies emerging to independence under Negro rule and the Republic of South Africa with its unmitigated policy of white supremacy.

Groupings and Conferences.—In 1962 there continued to be a distinct cleavage between the two groups of independent African states. Indeed, the split, which had become clear about the beginning of 1961, hardened somewhat, if anything, during the year, despite some cross-currents within the groups. Strenuous and sincere attempts have been made to build bridges between the two blocs, as for example in the meeting (Dec. 13–16, 1961) in Guinea of Sékou Touré, president of Guinea, and Sir Abubakar Tafawa Balewa, prime minister of Nigeria. Most African leaders are uncomfortable that such a breach should divide the ranks of the newly free.

The two groups are now customarily known as the "Casablanca" and "Monrovia" groups. Put very briefly, and with some oversimplification, the former is the more friendly toward the Soviet Union, the latter toward the West. The core of the Monrovia group is the 12 ex-French possessions—the "Brazzaville Twelve"—now described as *états africains d'expression française*, a tactfully noncommittal phrase which has in effect replaced

Main building of the University of Algiers is burned on June 7 as the Secret Army Organization engages in a bitter anti-independence program of terrorism.

PARIS MATCH

references to the semidefunct French Community. The Brazzaville states are, however, still on excellent terms with France and have close economic and other relations with her; their leaders are all deeply imbued with French culture, and in several cases have actually held cabinet office in governments in Paris.

The "Twelve" comprise Cameroun, Central African Republic, Chad, Congo (Brazzaville), Dahomey, Gabon, Ivory Coast, Malagasy Republic, Mauritania, Niger, Senegal, and Upper Volta. All are now overseas associates of the European Economic Community (EEC)—an interesting contrast with the attitude adopted in September at the Commonwealth conference in London by the ex-British African states, which refused to have this connection if Britain joined the EEC.

The largest and most impressive meeting of African leaders yet held was the conference at Lagos, Nigeria, Jan. 25–30, 1962. Twenty states were represented, 16 of them by heads of state or government. It was, substantially, a second meeting of the Monrovia group, so named from the meeting at Monrovia, Liberia, May 8–12, 1961. Those who attended the Lagos meeting were the Brazzaville Twelve, plus Congo (Léopoldville), Ethiopia, Liberia, Nigeria, Sierra Leone, Somalia, Tanganyika, and Togo. The five states of the Casablanca group—Ghana, Guinea, Mali, Morocco and the United Arab Republic (that is, Egypt)—were absent, as were Tunisia (which had been at Monrovia), Libya, and the Sudan. There was thus a clear geographical split, with North Africa not represented. Numerically the roster was the same at Monrovia, because Tanganyika and Congo (Léopoldville) were present for the first time. All eight of the absentees had been invited, since the sponsors had hoped for a genuine and comprehensive pan-African meeting. The refusal of the eight was due to the fact that the Algerian Provisional Government was not invited.

Leaders of the "Casablanca bloc" African countries pray at opening of meeting in Cairo, June 15. From left to right, front row, are President Keita of Mali, Premier Ben Khedda of the Algerian Provisional Government, King Hassan II of Morocco, President Touré of Guinea, and President Nasser of the UAR. Ghana is also a member of the Casablanca bloc.

UPI

One of the things made clear at the conference was that the Monrovia states harbor strong suspicions of the territorial ambitions of some Casablanca leaders, notably Gamal Abdel Nasser of Egypt and Kwame Nkrumah of Ghana. The Monrovia group favors cooperation between states, whereas their opposite numbers often speak in terms of unions and mergers. In his opening address, the governor general of Nigeria, Dr. Nnamdi Azikiwe, spoke bluntly of this difference of attitude. He declared that there was a "conspicuous absence" in the Casablanca group's policy declarations of any reference to the fundamental principles of "the inalienable right of African states, as at present constituted, to legal equality, irrespective of their area and population; . . . to self-determination; . . . to safety from interference in their internal affairs. . . ."

At Lagos, considerable steps were taken toward practical cooperation. A draft charter was drawn up for an Inter-African and Malagasy States Organization; this was approved at a meeting of the foreign ministers in Lagos on June 2, but awaits ratifications to become effective.

The Casablanca group held a conference in Cairo, June 15–18, at which formal approval was given to the establishment at Accra, Ghana, of a joint High Command. It was not clear, however, whether there was to be an actual pooling of armies, but this seems improbable.

Political Stability.—Taking into account how violent has been the pace of change in Africa in the past two or three years, and what possibilities of disaster lurk in its poverty and its unstable political structures, 1962 might be regarded as a year of comparative stability. It is true that the problem of provincial (or tribal) separatism still existed within the former Belgian Congo, but at least the central government under Premier Cyrille Adoula

had continued in existence for a year and a half. The alliance of convenience between President Moise Tshombe of Katanga Province and the great mining concern, the Union Minière du Haut-Katanga, continued to baffle Secretary General U Thant of the United Nations, and others.

Stronghold of White Supremacy.—In the extreme south of the continent, beyond what some observers were naming Africa's Mason-Dixon line, white supremacy, only faintly disturbed thus far, continued to be the rule in flat denial of the tendencies victorious elsewhere. The areas of this kind were, in addition to the Central African Federation previously mentioned, the Portuguese colonies of Angola and Mozambique, and the Republic of South Africa. In Angola a sporadic rebellion appeared to be in progress, but little news leaked out. In January, South Africa announced plans for an autonomous Bantu area, the Transkei, thus actually embarking on implementation of its announced policy of separate racial development. Eight such "Bantustans" are contemplated. Observers differ on the significance of this step, some regarding it as meaningless, others as a revolutionary development which will lead to greater self-determination for the nonwhites of the republic.

(See also separate articles on the African countries and the Index entry, *Africa.*)

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AGENCY FOR INTERNATIONAL DEVELOPMENT. See Foreign Aid Programs, U.S.

AGRICULTURAL RESEARCH SERVICE

This service (ARS), an agency of the U.S. Department of Agriculture, conducts basic and applied research to develop better methods of farming, improved varieties of plants and breeds of livestock, and new and improved uses for farm products. Other research is aimed at ways of improving human nutrition and consumer use of food, fiber, and other products. The ARS also conducts regulatory programs to keep meat wholesome, to prevent foreign pests and diseases from entering the United States, and to attempt to eradicate or control pests and diseases already present.

Crops Research.—The isolation of an immature form of tobacco mosaic virus (TMV) from leaves of infected tobacco plants by an ARS scientist has opened the way to new understanding of how viruses develop and cause disease in plants. These smallest and least complex organisms, which have shown activity only within a host, have remained perhaps the most mysterious of living things.

The discovery of a natural plant growth regulator, abscisin, in immature cotton bolls may aid development of more effective chemical defoliants. Abscisin is the first natural material known to promote leaf and fruit drop.

Plant breeders again released dozens of improved varieties of a wide range of food and feed plants. A new disease-resistant safflower breeding line was developed to assist this increasingly important oilseed crop in the United States.

For shippers and shoppers, breeders developed new hybrid onions that package well in retail containers, and geneticists found a way to subdue the characteristic that makes potatoes turn green when exposed to light. A wild rose highly resistant to most forms of black spot provided breeding material that may eventually lead to the development of rose varieties resistant to this costly disease.

A widespread disease of tobacco, weather fleck, was definitely linked to concentrations of ozone in slow-moving, polluted air. Ozone, a chemically modified form of oxygen, causes injurious lesions on growing tobacco leaves, resulting in economic loss in cigar-wrapper tobacco grown in the Connecticut River Valley. Plant injury from weather fleck was reported in other eastern states.

UNITED NATIONS

Under United Nations protection since August 1961, Baluba tribesmen who lived in the Elisabethville area of the Congo's Katanga Province were returned to their tribal lands in mid-1962. Above, Swedish troops of the UN Force help a group of refugees board a plane at the Kamina airbase in Katanga for a flight to Luluabourg, Kasai Province, from which the Baluba were transported to their home villages.

Entomology Research.—Entomologists at the new ARS boll weevil research laboratory for the first time extracted the substance that makes cotton appetizing to boll weevils. If scientists can chemically analyze the substance (called an arrestant) and then synthesize it, they may be able to use it to treat plants other than cotton and make boll weevils lay eggs on plants where newly hatched larvae would starve; or they may be able to breed cotton varieties that do not contain the arrestant.

Kafir-type grain sorghums proved more resistant to European corn borer damage than milo-type sorghums in a screening program for varieties useful in breeding borer-resistant sorghums.

The discovery of insecticides that effectively control the aphids that carry bean yellow mosaic virus, a disease that seriously reduces seed production of yellow lupines, may permit production of this valuable legume again in the southeastern United States.

Several South American insects showed promise as controls for alligatorweed, a costly aquatic pest of waterways in the southern United States. The use of insects against weeds can be an effective biological method of controlling some weeds.

Livestock Research.—Laboratory strains of drug-resistant coccidia, microscopic organisms that cause the poultry disease coccidiosis, were developed and studied by ARS scientists to learn if such resistance can be overcome. These parasites gradually acquired resistance to every drug tested. Scientists plan to classify drugs in terms of how quickly coccidia can build resistance to them, so that farmers will know the most effective drugs to use in combating coccidiosis outbreaks in flocks already receiving a drug.

Research efforts to improve livestock feeds and to learn how animals can use such feed most efficiently for maximum meat and milk production continued. Tests showed that high-nitrogen molasses, a byproduct of an experimental sugar-refining process, could become a valuable source of nitrogen in livestock rations.

By properly packing and sealing conventional

upright silos, researchers produced low-moisture alfalfa silage equal in feeding value to baled hay, the standard against which other forages are judged. Combined drylot feeding and grain-pasture grazing proved better for fattening steers in the South than drylot feeding alone.

Agricultural Engineering Research.—An experimental wall panel, made of a 2-inch layer of plastic between half-inch layers of reinforced portland cement, was developed for use in farm buildings. The panels are light enough to be handled by two or three men, and no special tools or equipment are needed to erect a one-story building with them.

Sheet coverings of high-density polyethylene and of Teflon—a plastic already used to line frying pans made for cooking without fat—both proved able to keep soil from sticking to plows.

Plastic solar heat collectors were developed experimentally for drying grain, and also showed other potential uses, such as warming animal shelters and helping to heat rural homes. Transparent plastic admits sunlight at the top and sides, and black plastic on the ground absorbs heat. The warmed air is drawn out of the collector by a fan.

Soil and Water Conservation Research.—Tests showed that plant roots fail to grow well in compacted soil layers just below tillage depth because they cannot penetrate the layers, not because of lack of air or moisture, as was previously suspected.

In the western United States, new low-cost chemical treatments used experimentally gave 80% control of water seepage for about 10 cents a square yard—one tenth the minimum cost of efficient conventional canal- and ditch-lining materials. Seepage is a major cause of losses of irrigation water in the arid West.

A new type of plastic liner for mole drains and improved equipment for installing it may make possible the use of low-cost subsurface drainage systems by agriculture and the construction industry.

On waterways used to carry flood runoff from terraced and contour-cropped fields, roadways, and airports, glass fiber mat was found to give grass seeds efficient protection from rain runoff until the grass roots take hold,

Utilization Research.—Seeking new uses for abundant agricultural products, scientists for the first time successfully blended cereal pulp with wood pulp to improve paper quality. The mixture appeared better than all-wood pulp for papers that require extra strength. Use of dialdehyde corn starch also strengthened paper and board pulps. Utilization scientists worked out a better industrial process for adding the starch to give paper wet strength, and combined the starch with casein to make a paper coating adhesive highly resistant to abrasion and moisture. The starch increased both the wet and dry strength of insulating board and improved its insulating value.

Chemical research is helping cotton and wool to compete better with synthetic fibers. Three methods for manufacturing all-cotton stretch yarns and fabrics were developed to make cotton more useful in automobile upholstery and linings, knit garments, hosiery, and furniture slipcovers. A single treatment was developed that gave cotton wash-and-wear properties, permanently dyed and starched the fabric, and added other fabric-finishing agents. A new formaldehyde treatment also improved wash-and-wear characteristics of cotton.

New processes which make wool garments highly resistant to shrinking and permit permanent creasing and pleating were developed successfully through the pilot-plant stage.

Experiments showed that citrus byproducts can be substituted for an expensive chemical (beta-ionone) used to produce beta-carotene, which supplies vitamin A for pharmaceuticals and animal feeds.

Nutrition and Consumer-Use Research.—Measurements of specific activities by homemakers in using and caring for equipment and furniture, and of such basic movements as walking, bending, and reaching, were used to develop space standards for household activities. Architects, builders, and home owners will use these cooperative research findings in planning and remodeling houses.

The fatty portions of beef, lamb, and pork give these meats their distinctive flavors; the lean portions all taste about the same, chemists concluded from basic research on meat flavors. A fresh lean pork roast can be as juicy and tender as one with a thick fat covering, however, and it requires less roasting time. High fat content is not essential to good eating quality of lamb. (See also FOOD RESEARCH.)

Foreign Research.—Since 1958, the U.S. Department of Agriculture has made more than 300 research grants to institutions in foreign countries. Sale of surplus farm commodities for foreign currencies finances this long-range research, which aims at benefiting agriculture in the United States as well as in other countries. For example, scientists in Finland have found that many plants of the mustard family contain a thiocyanate ion that prevents the thyroid of animals feeding on these plants from absorbing iodine. The animals do not develop goiter, however, and it was found that cows on a mustard-family diet do not pass along enough iodine-blocking ions in milk to cause goiter in man.

Polish scientists have found that unpalatable but more productive varieties of blue lupines get their bitterness from high levels of alkaloids, and that seeds of desirable sweet varieties are low in these alkaloids and high in free arginine, an amino acid. This knowledge will aid in breeding high-producing sweet varieties.

Regulatory Programs.—Among large-scale programs to eradicate several animal diseases and pests from the United States was a program to eradicate screwworms from large areas of the southwestern United States, employing methods that have proved effective in the southeastern states. A dozen states began programs to eradicate scabies, a costly sheep disease; 29 states were entirely free of sheep scabies.

A campaign against brucellosis in swine gained impetus, and by August 1962, almost three fifths of the states and three fourths of the counties had achieved a low incidence of the disease in cattle.

The red tick, a potential carrier of several animal diseases, was eradicated from the United States. This African parasite was found on zoo animals in two states in 1960.

Greater emphasis was given to regulation of pesticides, under laws intended to protect the public from losses and possible personal injury through faulty, misbranded, or adulterated products. Broadened regulations brought under federal surveillance many additional chemicals used for destruction or repelling of pests.

Plant pest-control programs continued to retard the spread of unwanted diseases and insects. The number of sweet potato weevils was reduced to a 20-year low in the southeastern United States by a concentrated grower-state-ARS campaign to kill overwintering weevils, aided by a severe January freeze.

A newly developed attractant bait for the imported fire ant, extensively field-tested in the southeastern United States, requires only one seventh of an ounce of insecticide to the acre.

The Mediterranean fruit fly again invaded Florida, and an all-out state-federal campaign was begun to eradicate this pest from the state.

Changes were made in import regulations of animals, animal byproducts, and related materials, to give greater protection against foreign livestock and poultry diseases. More than a million foreign animals—a 72% increase over the previous year—were inspected and allowed to enter the United States in the year ending June 30, 1962. More than 65,000 were rejected for entry. More than a billion pounds of imported animal products were inspected.

Quarantine workers inspected 137,000 airplanes, 60,000 ships, 25 million motor vehicles, and 64,000 railway cars at United States ports and borders during the same period. They intercepted damaging insects, nematodes, diseases, and other plant pests 36,000 times, and found 385,000 lots of prohibited plant material, much of it in the 24 million pieces of travelers' baggage inspected.

The first year of administration of the federal Humane Slaughter Law (ended June 30, 1962) saw more than 100 million animals dispatched humanely. Some 107 million animals passed ARS meat inspection standards; almost 280,000 were found unfit for food.

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AGRICULTURE

Despite the smallest acreage planted and harvested in half a century, United States farm output reached another new high in 1962.

Crop production was estimated in November 1962 to be about the same as in 1961, though 2% below the record high of 1960. Livestock production, however, was the highest ever, sending farm output overall to a new record.

Crop yields per acre scored another advance. The composite yield-per-acre index covering 28 leading crops was 111 (1957–59 = 100), compared with 109 in 1961, the previous high. Corn and tobacco reached new highs for per-acre yields, while grain sorghums and peanuts were exceeded only once before.

Farm prices for the first 10 months of the year averaged about 1% above those of 1961. October prices stood about 2% higher than in the same month a year earlier. The cost of goods farmers buy was also 1.3% higher in January–October 1962 than a year earlier.

Food consumption per person in the United States during 1962 remained about 13% above that of 1935–39. Total consumption of food increased slightly, keeping pace with the population increase of 1.6%. Retail food prices averaged about the same as in 1961, with prices for foods from crops slightly higher and those from livestock a little lower.

Farm Production.—The corn crop for grain was estimated in November at 3.6 billion bushels, about 35 million bushels below 1961 and 8% less than the record crop of 1960. The grain sorghum crop —490 million bushels—was a little above 1961 but 21% below the 1960 high. Production of soybeans, 669 million bushels, was 3% below 1961 but the second highest in history and 60% above the 1951–60 average.

The wheat crop was 11% below that of 1961 and 3% under the 1951–60 average. Barley, rice, rye, cotton, tobacco, hay, peanuts, dry beans, dry peas, potatoes, sugar beets, sugarcane, apples, grapes, peaches, cranberries, and cherries were all above the 10-year averages, while output of oats, flaxseed, hops, sweet potatoes, apricots, pears, and pecans was relatively smaller.

Acreage.—Major crops were planted on only about 300 million acres and harvested on about 288 million in 1962, both the smallest since record keeping began in 1909. Harvested corn acreage was down 2%, soybean acreage was up 2%, and cotton and barley were about the same as in 1961. Wheat acreage was down 15%, and oats, 4%; but acreage in sorghums was up 3%.

Food and Feed Grains.—Production of the four major feed grains (corn, grain sorghums, oats, and barley), was estimated at 141 million tons, a little above the 140.6 million of 1961 but about one tenth below the 1960 record. The reduction since 1960 is due principally to the feed grain programs of 1961 and 1962, under which growers of corn and grain sorghum (and barley in 1962) received government payments for taking acres out of production.

Wheat production in 1962 was estimated to be 1,095,225,000 bushels, compared with the 1961 crop of 1,234,705,000 bushels; the 10-year (1951–60) average was 1,128,563,000. The smaller 1962 crop resulted from a wheat program similar to that for the feed grains.

Wheat supplies for the 1962–63 marketing year were estimated at 2,405 million bushels, about one tenth below the level of the two previous years. The supplies are made up of the 1962 crop, carry-over stocks of about 1,300 million bushels, and a small expected quantity of imported wheat. Domestic needs for wheat in 1962–63 may total about 605 million bushels, and exports may be about 600 million bushels. This would reduce the carry-over on July 1, 1963, to about 1,200 million bushels.

Producers narrowly approved acreage allotments and marketing quotas for 1963 wheat in a referendum held in August 1962. Congress later provided a voluntary diversion program for 1963 wheat and a permanent, two-price certificate program to start in 1964 if it is approved by two thirds or more of the producers voting in a referendum. The two-price program provides price support at a higher level for wheat used for domestic food and some exports than that for wheat used for feed.

Corn production for 1962 was estimated at 3,590,238,000 bushels, compared with 3,624,313,000 in 1961 and the 1951–60 average of 3,128,197,000 bushels. The all-corn yield of 62.4 bushels per harvested acre was 0.6 bushel higher than the previous record of 1961. The corn supply for 1962–63 was estimated to be about 5.2 billion bushels, about 400 million less than a year earlier.

Congress enacted a voluntary feed grain program for 1963 crops of corn, grain sorghum and barley similar to the 1961 and 1962 programs. The major difference is a provision for making a payment to corn producers of 18 cents a bushel in addition to a corn loan of $1.02 a bushel for price support purposes. This 18-cent payment would be in the form of marketable certificates. In the 1961 and 1962 programs, the price support loan was $1.20 per bushel. The direct payment provision will keep noncooperators from benefiting from the higher market prices brought about by the loan support level of $1.20 per bushel. (See also Grains.)

Cotton.—A cotton crop of a little more than 14.5 million bales was forecast for 1962, a little less than in 1961 but about 4% larger than the 1951–60 average of just under 14 million bales. Cotton consumption in 1961–62 was about 14 million bales, 9 million for domestic uses and 5 million for export. This resulted in an increase in carry-over on Aug. 1, 1962, to 7.8 million bales, 600,000 more than a year earlier. Cotton requirements for 1962–63 may be only 8.6 million bales for domestic use and 5 million for export. This would produce a further increase in carry-over on Aug. 1, 1963. (See also Cotton.)

Other Crops.—The rice crop of 63.6 million 100-pound bags in 1962 was 19% above 1961 and 24% above the 10-year average.

Production of fall fresh vegetables was expected to be about 5% below that of 1961. The tonnage of nine important vegetable crops for processing, however, was 13% larger than in 1961. Output of noncitrus fruits was 1% smaller than in 1961, but 5% above the 10-year average. Citrus production was slightly higher than in 1961. Combined production of edible nuts was only two thirds that of 1961. Potato production—264,877,000 bushels—was 29 million bushels less than the 1961 crop but 30 million above the average. (See also Fruits; Vegetables.)

Tobacco production was estimated at 2,200,340,000 pounds, compared with 2,058,302,000 in 1961 and the 10-year average of 2,040,358,000. (See also Tobacco.)

Livestock.—Production of livestock and livestock products in 1962 was at an all-time high. Larger output of dairy products and meat animals more than offset a decline in output of poultry. Aggregate production of beef, veal, lamb, mutton, and pork reached a record 28,930 million pounds, compared with 28,585 million in 1961. About 2.5 million head of cattle and calves were added to numbers on farms during 1962, so that the total

as of Jan. 1, 1963, was expected to reach about 102 million, exceeding 100 million for the first time.

The hog slaughter in 1962 was estimated at 82.7 million head, compared with 82.1 million a year earlier. The spring pig crop in 1962 was a little smaller than in 1961, and the fall crop was a little larger.

The 1962 lamb crop, about 20.4 million head, was 4% smaller than in 1961. The number of sheep and lambs has been declining since 1959, and the inventory of sheep and lambs at the end of 1962 was probably the smallest since 1950. The number on farms was estimated to be 33.4 million at the beginning of 1962.

The poultry industry had its first production downturn in years. Both broiler and turkey output decreased, with turkeys down 15% from the record 1961 crop. Nevertheless, the 92 million birds produced during 1962 constituted the second highest production on record. Egg production was slightly above that of 1961. However, the per-capita consumption of eggs continued the uninterrupted decline that began in 1952.

WIDE WORLD

Signing the Food and Agriculture Act of 1962 on September 26, President Kennedy gives the first pen to Sen. Ellender (La.), head of the Senate Agriculture Committee. Also shown (l. to r.) are Rep. Cooley (N.C.), Agriculture Secretary Freeman, Vice President Johnson, Sen. Humphrey (Minn.), Harry Caldwell, head of the National Agricultural Advisory Commission, and Reps. Gathings (Ark.) and Poage (Texas).

Milk production for 1962 was about 126.5 billion pounds, a new record, surpassing by 1 billion pounds the previous high of 1961. Milk production per cow continued its steady climb, reaching 7,325 pounds, compared with the 1961 average annual output of 7,211 pounds. (See also DAIRY PRODUCTS.)

Agricultural Income and Prices.—Farm net income, after rising $1.1 billion dollars in 1961, to $12.8 billion, remained at this level in 1962. Gross income (cash receipts, plus the value of home-consumed farm products, rental value of farm dwellings, and government payments) was about $40.5 billion. Farm production expenses were about $27.7 billion. Both farm gross income and production expenses in 1962 were about $0.6 billion more than in 1961. But while farm net income remained stable, income from off-the-farm sources continued to increase. Per capita income of farmers from all sources probably exceeded $1,400 in 1962, a record figure but still only about 60% of the per capita income of nonfarm persons.

The index of prices received by farmers in October 1962 stood at 245% of the 1910–14 average. This contrasted with 240% for the corresponding month of 1961 and the high of 313% in February 1951.

Prices paid by farmers in October 1962 were more than triple the 1910–14 average, the index standing at an all-time high of 307, compared with 301 a year earlier.

In terms of the parity ratio (parity being the price at which farm products would have the same buying power as in 1910–14), farm prices in relation to farm costs stood at 80%, the same as a year earlier, but far short of the record high of 123% in October 1946.

Consumption of Food.—Domestic food utilization in 1962 continued at a high level. Civilian consumption of food per capita was at the same level as in the three preceding years, about 13% above the 1935–39 average. Record per capita quantities of meat (red meats and poultry) were consumed, as well as record amounts of cheese, frozen fruits, and frozen and canned vegetables.

Civilian consumption of beef, at about 89 pounds per person for the year, exceeded 1961 consumption by about 1 pound. Pork consumption was about 63 pounds, three fourths of a pound more than in 1961. The annual per capita consumption of red meats—beef, veal, pork, lamb, and mutton—was 162.5 pounds. Consumption of 37.2 pounds of poultry meat brought the total per capita figure to 199.7 pounds, 1 pound more than in 1961.

With heavy production during 1962, large numbers of animals on farms, and ample feed supplies, prospects for 1963 were for still larger consumption of meat and dairy products. (See also MEAT INDUSTRY.)

Farmers' Share of the Food Dollar.—Farmers received 38 cents out of the average dollar spent for food in the family "market basket" during 1962. This was the same as in 1961, but 2 cents below the 1957–59 average and 9 cents less than a decade earlier. Part of the decline is due to the preparation of food by the marketing system in more convenient form for consumers to use.

Agricultural Assets.—The physical assets of United States agriculture increased by perhaps 3% during 1962. Total assets as of Jan. 1, 1962, were calculated at $207.5 billion, compared with $200 billion a year earlier. Assets at the end of 1962 were probably about $214 billion. While farm indebtedness also increased, the rise was less than that of assets, so that proprietors' equities were probably about $185 billion at the year's end.

Land Values.—Market values of farm real estate resumed their upward trend during 1961 and 1962. The total market value of farmland and buildings was estimated at almost $141 billion on July 1, 1962, which was about $7 billion above a year earlier.

Agricultural Exports.—The value of United States agricultural exports reached a new peak of $5.1 billion in the fiscal year ended June 30, 1962. This was 4% more than the previous year's record of $4.9 billion. Most of the increase was brought about by wheat and feed grains, the leading United States farm surplus commodities. Wheat exports totaled a record 716 million bushels.

Cotton was the only major export commodity for which exports declined. The decrease was sharp —more than 2 million bales from the 7 million shipped in 1960–61.

The European Economic Community (Common Market) caused United States agricultural

leaders increasing concern during the year, as Common Market leaders considered erecting high tariff barriers against farm products from outside nations. Western Europe is the best customer for United States agricultural products. Secretary of Agriculture Orville L. Freeman and other leaders made strong efforts during the year to persuade the European governments to adopt and maintain liberal trade policies toward United States farm and other products. (See also EUROPE.)

Agricultural Employment.—An average of 6,770,000 persons—including full- and part-time farm operators, full- and part-time hired workers, and unpaid family labor—worked on United States farms in 1962. Comparative figures were 6,990,000 in 1961 and 9,149,000 in 1952. Farm output per man-hour of work was 123% of the 1957–59 average. The composite hourly wage (an average of all wage rates on a per-hour basis, excluding allowances for room and board) was 86 cents, compared with 83 cents in 1961 and 66 cents in 1952.

Other Highlights.—A major effort to expand development activity in rural areas was made in about 1,600 counties in all 50 states during 1962. Some 50,000 persons in rural and small town communities were involved in rural development planning and other activity. About 2,700 rural area development projects had been planned in the fall of 1962, and 900 were already being put into operation.

The Department of Agriculture loaned farmers and other rural persons a record $637 million during the fiscal year 1962—61% more than a year earlier and more than double the figure for the fiscal year 1960. More than 200,000 families were using such credit in 1962.

The Agriculture Department approved 242 electrification loans totaling $261 million during the fiscal year. The five-millionth electric consumer was served with electric power during the fiscal year 1962, and the billionth dollar in principal was repaid on rural electrification loans.

The Pilot Food Stamp Program, begun in eight areas in 1961, was being expanded into 25 additional localities in 1962 and early 1963.

About 14.2 million children in 65,000 schools participated in the National School Lunch Program. The Special Milk Program operated in 88,000 schools and other institutions and served 2.4 billion half-pints of milk.

Department of Agriculture food distribution programs served one out of every six persons in the United States. About 2 billion pounds of food were distributed, 50% more than a year earlier.

Much attention was given to the potentialities of recreation as a "farm crop." Legislation was enacted authorizing loans to farmers to help them develop the recreational potential of their land and water for use by urban dwellers in search of life in the outdoors. That recreational facilities are in great demand is indicated by the increasing number of visits to national forests. Such visits increased from 92 million in 1960 to 102 million in 1961 and 112 million in 1962.

(See also CONSERVATION OF NATURAL RESOURCES; FARM SERVICES; FOOD SUPPLY; STANDARDS OF LIVING.)

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AIR FORCE, U.S.

The total number of combat wings in the Air Force rose from 88 to 97 in 1962, comprising both aircraft and missiles. Most of the increase centered in the tactical air forces and reflected a growing emphasis on limited warfare and support of ground forces with conventional weapons.

Tactical Forces.—The Tactical Air Command (TAC) was involved in two new developments in 1962—the newly established unified air-ground command, United States Strike Command (USSTRICOM), and counterinsurgency or anti-guerrilla operations.

On Sept. 19, 1961, Secretary of Defense McNamara established USSTRICOM with temporary headquarters at McDill Air Force Base, Fla. Headed by an Army Commander-in-Chief with an Air Force deputy and chief of staff, USSTRICOM included two component commands—the Air Force Strike Command (AFSTRIKE) and the Army Strike Command (ARSTRIKE).

The Air Force devoted a major effort to counterinsurgency. On April 27, 1962, the Special Air Warfare Center was established at Eglin AFB, Fla., with two operational organizations under it—an Air Commando Group to improve techniques for use of aircraft in counterinsurgency measures,

WIDE WORLD

In an attempt to force cattle prices upward, members of the National Farm Organization meet at Indianapolis Stockyards, September 13, to dissuade farmers from selling their stock.

and a Combat Application Group to develop, test, and evaluate new tactics and equipment.

During 1962, TAC aircraft logged about 17 million miles of operational flying, with an average of about 500 aircraft deployed at all times. Almost every one of the 53,000 men in TAC participated in at least one of the 25 training exercises conducted.

Exercise Red Hills, held at Fort Campbell, Ky., during the first two months of 1962, simulated the deployment of Army and Air Force units to overseas bases for joint airborne operations against an aggressor. Exercise Banyan Tree III, held in Panama during February and March 1962, tested the deployment of a USSTRICOM task force, employing it in combat operations, and returning it. Exercise Clear Lake, held at Eglin AFB from May 25 to June 10, 1962, refined the techniques of air-ground support with conventional weapons.

Strategic Forces.—The Strategic Air Command (SAC) in 1962 had more than 2,600 combat aircraft, including B-47's, B-52's, B-58's, and a tanker fleet of KC-135's and KC-97's. During the year, four heavy bomber squadrons were equipped with B-52H's, and three heavy tanker squadrons with KC-135's. The missile force was increased by three Atlas and five Titan I squadrons.

REPUBLIC AVIATION CORP.

The F-105D can be armed with 4,000 different combinations of the nuclear and conventional weapons shown in display.

To increase the effectiveness of the B-52 force, 23 squadrons were modified to carry the GAM-77 Hound Dog air-to-ground missile, which can reach out some 600 miles ahead of the bomber's course. Meanwhile, testing of the GAM-87A Skybolt air-launched ballistic missile began at Eglin AFB on April 19, 1962. Skybolt will have double the range and far greater speed than Hound Dog.

The B-52H demonstrated its intercontinental capability when, on Jan. 10, 1962, it flew from Kadena Air Base, Okinawa, on a nonstop, nonrefueled flight to Torrejon Air Base, Spain. The bomber broke two world distance records and nine course speed records. Elapsed time for the 12,519-mile flight was 21 hours, 52 minutes, and 42 seconds, for an average of 575 mph. On March 5, 1962, a B-58 Hustler earned the Bendix Trophy for a cross-country flight from Los Angeles to New York in 2 hours and 56.8 seconds, averaging 1,214.71 mph. The plane also set a New York-to-Los Angeles record of 2 hours, 15 minutes, and 48.6 seconds—more than 41 minutes faster than the earth's rotation—and averaging 1,081.77 mph. A quick aerial turn-around enabled the aircraft to set a new round-trip record of 4 hours, 41 minutes, and 11.3 seconds, averaging 1,044.96 mph.

Missiles contributed increasingly to the deterrent force. SAC accepted its last Atlas E squadron in November 1961, several weeks ahead of schedule. On April 18, 1962, the first Titan I operational squadron entered the SAC inventory, and four additional squadrons were added by the end of June.

Atlas continued to demonstrate its operational reliability. On Feb. 15, 1962, a missile combat crew launched Operation Big John from Vandenberg AFB, initiating a new program of proficiency launches. On March 23, SAC demonstrated its operational missile capability to President Kennedy when a combat crew counted down an Atlas D and launched it to an impact accuracy of eight tenths of a mile. On July 12 another proficiency launch impacted an Atlas D on target in the Philippine Sea after a 7,000-mile flight from Vandenberg AFB. SAC fired two Atlas ICBM's in quick succession on August 9 for the first multiple countdown and launch. Both weapons impacted on target 5,000 miles downrange.

Both Titan II and Minuteman were also proving their reliability. On March 16, 1962, the Titan II made its first test flight, streaking 5,000 miles downrange and achieving all test objectives. Titan II has a jam-proof all-inertial guidance system and faster reaction time than Titan I. It will be fired from inside the silo rather than elevated to the surface, as is Titan I.

Of 16 firings of the SM-80 Minuteman completed by June 30, 1962, all but two were successful. In December 1961, the Air Force canceled development of a mobile version of the Minuteman in order to increase the total number of missiles in hardened sites. In May 1962 research and development began on an improved Minuteman with greater range, payload, and accuracy. (See also Missiles.)

Air Defense.—The Air Defense Command (ADC) in 1962 improved its capability to support the North American Air Defense Command (NORAD). Approximately 70% of the men and equipment of NORAD come from ADC, including more than 110,000 personnel and a capital investment of nearly $8 billion. The Continental Aircraft Control and Warning System (416L), which includes the Distant Early Warning (DEW) Line, the Semi-Automatic Ground Environment (SAGE) System, the Canadian Air Integration North (CADIN), and other elements, was about 80% complete at the end of the fiscal year 1962. To further extend its early-warning capability, ADC took over, on July 1, 1962, the radar stations and fighter-interceptors stationed in Iceland.

The SAGE System, completed in late 1961, ties together the 21 direction centers housing computers and automated equipment, communication lines, radar stations, and radio sites into an interconnected system. Early in the fiscal year 1962 the Air Force began work on a back-up interceptor-control system (BUIC) to provide an alternative capability should SAGE centers be destroyed. Phase I, which would provide a manual capability based on 100 radar stations, was 80% operational at the end of the fiscal year 1962. In March 1962 the Air Force began Phase II, which would provide a semiautomatic back-up control system based on 34 alternate control centers.

The last of eight Bomarc missile sites in the United States became operational in January 1962 at Niagara Falls, N.Y. The F-102 began operation with a new nuclear air-to-air missile, the GAR-11 (Falcon).

In a three-part agreement aimed at improving the air defense capability of Canada, the Air Force transferred 66 F-101B's to Canada. In return, Canada took over operation and funding of 11 Pinetree radar sites. The first site, at Beausejour, Manitoba, was transferred to Canada on Oct. 1, 1961. Three other sites had changed hands by June 30, 1962. The third part of the arrangement involved the procurement in Canada of F-104 aircraft for the North Atlantic Treaty Organization (NATO). Canadian radar technicians and F-101 pilots were being trained by ADC.

While most of these developments related to ADC's capability against manned aircraft and atmospheric missiles, the capability in space also improved. On Jan. 1, 1962, the 9th Aerospace Defense Division assumed control of the two Ballistic Missile Early Warning System (BMEWS) sites at Clear, Alaska, and Thule, Greenland. To operate these and a third site at Fylingsdale Moor, England (expected to be completed in 1963), the 71st Surveillance Wing was activated.

To survive against a surprise attack, the Air Force in the summer of 1961 began building an impregnable underground shelter for the NORAD Combat Operations Center (COC). Excavation has been completed, and the design and testing of equipment is under way.

Airlift.—The Military Air Transport Service (MATS) participated in exercises with Army and Navy units involving joint airborne training and tests of strategic mobility and general war plans. Exercise Long Thrust IIA, held in January 1962, was a test of strategic mobility in which MATS employed its new C-135 jet transports to deploy a USSTRICOM battle group. The jets flew nonstop from McChord AFB, Washington, over the North Pole to Rhein-Main, Germany, in approximately 10½ hours, in contrast to the 32 to 36 hours required by piston-driven aircraft. In Exercise Great Shelf, in February 1962, MATS deployed a USSTRICOM battle group from Fort Campbell, Ky., to the Philippines. MATS also supported NATO in Exercise Checkmate, designed to test defensive capabilities of air, ground, and naval forces. This involved the airlift of a USSTRICOM battle group and the support for a Composite Air Strike Force from the United States to the Middle East.

MATS also carried out a number of special assignments. In support of Operation Deep Freeze Sixty-Two, it airlifted over 1,800 tons of supplies and equipment to McMurdo Sound, the South Pole, and other sites in Antarctica. In support of Project Mercury, MATS moved items to Cape Canaveral and airlifted the tracking personnel and their equipment to sites around the world. Other special assignments included continued support of the United Nations operation in the Congo; the airlift of more than 1 million pounds to resupply troops in remote areas of Pakistan; and mercy missions, such as airdropping 1,549 tons of maize in a flooded area of Tanganyika.

The modernization program made progress in 1962 with the delivery of 41 C-135's. The C-135 can fly twice as many missions in a five-day period as older transports, and its ton-mile capability per flying hour is about 2½ times as great. The first C-135B, with more powerful turbofan engines, entered the MATS inventory in March 1962. The first two turboprop C-130E's were accepted in April 1962.

The Air Rescue Service (ARS) of MATS assumed responsibility on Oct. 1, 1961, for base rescues by helicopters. During the remaining nine months of the fiscal year 1962, ARS helicopters flew 4,917 missions, saved 74 lives, and assisted 796 distressed persons. During the entire year ARS fixed-wing aircraft saved 201 lives and assisted 540 people in distress.

Research and Development.—The Air Force Systems Command (AFSC), staffed by 26,650 officers and airmen and 37,000 civilian employees, is accountable for all Air Force aerospace systems. It directs the spending of about 40% of the Air Force budget (more than $7 billion in the fiscal year 1962) and handles some 54,000 contracts annually.

AFSC's Maj. Robert M. White piloted the X-15 rocket plane to an altitude of 314,750 feet on July 17, 1962. He became the first aircraft pilot to earn astronaut wings, reserved for those who have flown higher than 50 miles.

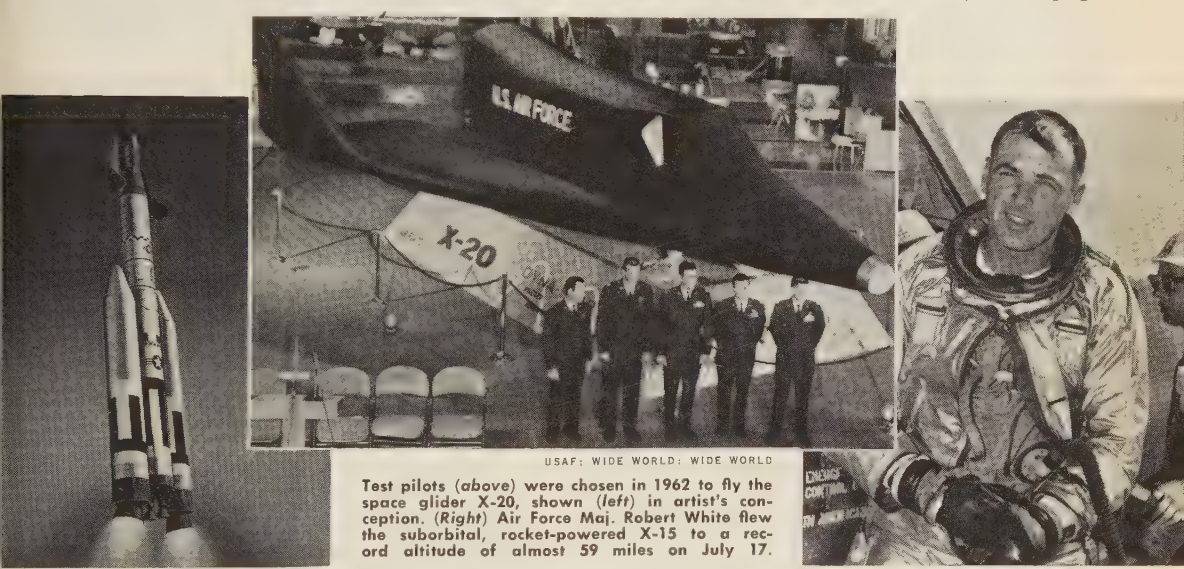
The first live test of a rocket-powered escape capsule was conducted Jan. 31, 1962, when a chimpanzee was safely ejected from a B-58 traveling at 650 mph. at a 20,000-foot altitude. On February 28 the first manned test was also successful when a man was ejected from an altitude of 20,000 feet while the B-58 was flying at 565 mph.

Space Research.—In February 1962 the Department of Defense directed the military departments to assist the National Aeronautics and Space Administration (NASA) in achieving common civil and military space objectives pertaining to lunar expeditions. The Air Force was assigned responsibility for supporting specific NASA projects by handling research, development, test, and engineering of satellites, boosters, space probes, and associated systems. In April an office was set up in AFSC to manage this supporting effort.

In May, military efforts in the field of communication satellites were realigned, with major responsibilities shifted from the Army to the Air Force. The Air Force will develop the satellite vehicle (including the payload), the launch vehicle, and the ground control system. The Defense Communications Agency was designated to manage and integrate the entire system.

The Air Force continued to launch Discoverer satellites into orbit and recover them, gaining invaluable data that could be applied to future systems. Each of two Discoverers has carried a 10-pound Oscar (Orbiting Satellite Carrying Amateur Radio), designed and built by "ham" operators to investigate radio propagation phenomena.

For manned military operations in space, a pilot must be able to return from a wide range of earth orbits, maneuver within the atmosphere, and land at a suitable base. The Air Force, with the assistance of NASA, is developing an experimental delta-winged, multi-orbit, piloted space glider, the X-20 Dyna Soar. Prototypes of most of the X-20 subsystems are in various stages of testing. The Air Force and NASA are also working closely to achieve the capability for rendezvous in space. (See also SPACE FLIGHT.)



USAF: WIDE WORLD: WIDE WORLD

Test pilots (*above*) were chosen in 1962 to fly the space glider X-20, shown (*left*) in artist's conception. (*Right*) Air Force Maj. Robert White flew the suborbital, rocket-powered X-15 to a record altitude of almost 59 miles on July 17.

Reserve Forces.—The 1962 strength of the Air National Guard (ANG) and the Air Force Reserve (AFRes) dropped well below that of June 1961 because about 21,700 recalled Guardsmen and about 5,600 AFRes members recalled to duty in late 1961 were still on active duty on June 30, 1962. On that date, the number in the Ready Reserve was 253,795, as compared with 284,766 a year earlier. The new figures included 51,863 in the ANG and 201,932 in the AFRes. Standby reserve strength fell from 265,593 to 184,766.

The mobilization reduced the aircraft inventory of the reserve forces as well as its personnel. Aircraft in the ANG inventory numbered 1,216 on June 30, 1962, or 783 below the total a year earlier; the AFRes inventory fell to 704, or 99 less than the previous year.

Air Force Academy.—The U.S. Air Force Academy graduated its fourth class on June 6, 1962, and, with the admission of the 750 members of the class of 1966 later in June reached its full authorized strength of 2,512 cadets. More than 800 graduates of the academy are now serving as Air Force officers.

Flight Safety.—The following summary indicates the improvement in every aspect of flying safety in 1962 as compared with 1961: major accident rate per 100,000 flying hours, 5.8 (compared with 6.3); major aircraft accidents, 390 (440); aircraft destroyed, 294 (306); and fatalities in accidents, 296 (347). There were 118 aircraft accidents in which one or more persons were killed (122), and 13 midair collisions (16).

Personnel Strength.—Air Force military manpower increased because of the 1961 Berlin crisis, rising to 884,025 on June 30, 1962, from 821,151 a year earlier. The 1962 figure included 134,908 officers and warrant officers and 749,117 airmen, of whom 3,310 officers and 22,385 airmen had been recalled from the reserve forces in October and November 1961. Approximately 26,200 officers and 193,100 airmen were stationed overseas on June 30, 1962. The number of direct-hire civilians rose from 303,376 to 306,181.

Budget.—The Air Force budget request for the fiscal year 1963 sought $19.757 billion in new obligational authority, including $831 million for military construction. The Department of Defense appropriation bill passed by Congress in August 1962 gave the Air Force $19.390 billion, and a separate bill provided $866.8 million for military construction.

(See also AERONAUTICS; NATIONAL SECURITY.)

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AIR POLLUTION. See Index entry.
AIR RECORDS. See FLIGHT RECORDS.
AIRCRAFT AND AIRLINES. See AERONAUTICS.

ALABAMA

A South Central state of the United States, Alabama ranks 29th among the states in area (land, 51,060 square miles; inland water, 549) and 19th in population (3,358,000 on July 1, 1962, a 1.1% increase from the 1960 census figure of 3,266,740). Urban places with populations above 15,000 in 1960:

Anniston	33,657	Huntsville	72,365
Auburn	16,261	Mobile	202,779
Bessemer	33,054	Montgomery (*capital*)	134,393
Birmingham	340,887	Opelika	15,678
Decatur	29,217	Phenix City	27,630
Dothan	31,440	Prichard	47,371
Fairfield	15,816	Selma	28,385
Florence	31,649	Talladega	17,742
Gadsden	58,088	Tuscaloosa	63,370
Homewood	20,289		

Government.—Chief executive and judicial officers in 1962 included John M. Patterson (Democrat), governor, serving a four-year term; Albert Boutwell, lieutenant governor; Mrs. Bettye Frink, secretary of state; Mrs. Agnes Baggett, treasurer; Mrs. Mary Garner, auditor; MacDonald Gallion, attorney general; W. A. LeCroy, superintendent of education; and J. Ed Livingston, chief justice of the seven-member Supreme Court.

The Alabama Legislature, which convenes in odd-numbered years, in 1962 comprised 35 Democrats in the Senate and 106 Democrats in the House of Representatives.

Legislation, 1962.—On June 12, after a United States district court threatened to reapportion the Alabama Legislature, Governor Patterson convened a special legislative session. Just before the date for a court hearing on the matter, the Legislature passed two reapportionment measures. One was a constitutional amendment, subject to ratification by the voters of the state, giving one senator to each county and changing representation in the lower house by taking one representative from each of 19 smaller counties and increasing the representation of Jefferson County from 7 to 17, of Mobile County from 3 to 8, and of four other counties from 2 to 3.

The other measure was a "stand-by" statute, to take effect only if the constitutional amendment failed to be ratified. It redefined some senatorial districts to eliminate extreme disparities, thereby admitting 27.6% of the population to control of the Senate instead of 25.1% as previously. For the lower house, the statute took 12 members from smaller counties and gave them to larger counties. Both of these measures were subsequently declared unconstitutional by the district court (see below, *Events, 1962*).

The session also enacted 92 general laws and 42 local or special laws, most of which dealt with routine governmental affairs. A constitutional amendment was proposed to permit voting in Alabama after only one year of state residence. This and four amendments concerning government finances were ratified in the November elections.

Finance.—In the 1961 fiscal year, revenue of $466,415,885 included $275,812,953 from state taxes and $145,733,224 in federal funds. Chief tax yields were the 3% general sales tax ($91,483,082), taxes on motor fuels ($74,314,287) and individual incomes ($25,792,139), and licensing ($20,969,722). Spending of $673,874,905 included $239,417,478 for education, $112,676,173 for health, welfare, and safety, and $131,558,344 for highways.

Education.—In the 1960–61 school year, public elementary schools staffed by 15,625 teachers enrolled 469,233 pupils; 12,302 teachers taught 204,142 junior high school and 125,957 senior high school pupils; and private and parochial schools reported 1,248 teachers and an estimated 25,506 pupils. College enrollment (fall 1961) totaled 47,967 in 5 junior colleges and 22 senior colleges and universities.

Public school spending in the 1961–62 school year (National Education Association estimates) totaled $206,370,000, including current expenditures of $185.7 million ($250 per pupil) and capital outlays of $19 million. Revenue of $209 million was drawn chiefly from state funds ($128 million) and local districts ($58 million). Teachers' salaries averaged $4,435 (high school, $4,630; elementary, $4,275). State expenditures for higher education (1960–61) totaled $52,876,000.

Public Assistance.—In the 1962 fiscal year, public assistance payments to a monthly average of 138,593 persons totaled $94,058,182. This amount included $74,578,468 for the aged and $11,366,189 for dependent children.

Transportation and Communications.—Approximately 1,175 miles of highway construction and reconstruction were completed in the 1962 fiscal year. Highways and roads as of Dec. 31, 1961, totaled 65,550 miles (27,773 paved). These served 1,309,167 motor vehicles (as registered during fiscal year 1962), including 1,025,876 automobiles. Operating in the state were (1961) 27 railroads (using 5,071.14 line miles of track) and (1962) 5 regularly scheduled airlines and 92 commercial and municipal airports.

Communications media included (1962) 115 AM and 20 FM *radio* stations; 7 VHF and 5 UHF *television* stations; (1961) 20 daily *newspapers* (circulation, 686,925); and (Jan. 1, 1962) 247,200 business and 691,100 residential *telephones*.

Labor Force.—The state's labor force in July 1962 included 97,200 agricultural workers. Nonagricultural employment totaled 936,700, compared with 945,100 a year earlier and an average of 946,400 for the 12 intervening months. Of nonfarm employees, 25% were in manufacturing, 17.2% in government services, and 15.4% in trade. Unemployment in July 1962 stood at 67,500, compared with 86,200 a year earlier.

Manufacturing.—Manufacturing engaged 229,337 workers in 1960, including 187,513 in production, and provided a payroll of $982,403,000. Adjusted value added by manufacture totaled $1,961,767,000. (See also below, *Events, 1962.*)

LEADING ALABAMA MANUFACTURES, 1960

Industry group	Total employees	Total payroll (in thousands)	Adjusted value added by mfr.[1] (in thousands)
Primary metals	39,249	$241,697	$472,032
Textile mill products	38,999	124,938	223,923
Food and kindred products	19,169	73,169	185,477
Chemicals and products	8,141	41,036	157,278
Paper and allied products	10,824	62,637	134,058
Apparel and related products	24,929	59,616	113,633
Transportation equipment	12,880	69,856	107,895
Fabricated metal products	12,388	60,031	105,038
Rubber and plastics products	6,023	36,916	102,518
Lumber and wood products	22,200	51,061	87,903
Stone, clay, glass products	8,132	32,844	85,461

[1] For definition, see footnote 1 in the article *Industrial Production.*
(Source: *1960 Annual Survey of Manufactures.*)

Mining.—In 1961, Alabama ranked 20th among the states in the value of its mineral output, with 1.18% of the national total. It was third in output of asphalt, bauxite, iron ore, and scrap mica. Production of coal and iron ore and the manufacture of cement accounted for 73% of the value of minerals produced in 1961. Total employment in the industries declined 3% due to decreases of 11% at coal mines and of 18% at metal mines.

Agriculture.—Cash farm income for the first nine months of 1962 (excluding government payments) totaled $340,769,000, compared with $301,138,000 for the corresponding period of 1961. For the full year 1961, income comprised $301,849,000 from livestock, $212,478,000 from crops, and $19,540,000 in government payments. Principal income sources in 1961 were cotton lint, $103,534,000; broilers, $87,532,000; cattle, $85,319,000; and eggs, $44,732,000.

ALABAMA MINERAL PRODUCTION, 1961

(In short tons, except as noted)

Mineral	Quantity	Value
Cement:[1]		
Portland (376 lb. bbl.)	12,445,000	$ 39,027,000
Masonry (280 lb. bbl.)	2,006,000	6,156,000
Clays[2]	1,787,000	2,068,000
Coal	12,915,000	90,903,000
Coke	3,949,927	83,340,000[3]
Iron ore, usable (long tons)	3,597,000	20,510,000
Iron, pig	3,584,637	202,946,000[3]
Lime	579,000	6,871,000
Petroleum, crude (1,000 bbl.)	6,932[4]	19,063,000[4]
Sand and gravel	5,800,000	6,452,000
Stone[5]	13,651,000	19,909,000
Other minerals	...	7,923,000
Total	...	$214,411,000[3,6]

[1] Excludes certain cement; value included in "Other minerals." [2] Excludes certain clays; value included in "Other minerals." [3] Values for processed materials are not included in the total. [4] Preliminary. [5] Excludes certain stone; value included in "Other minerals." [6] Total adjusted to eliminate duplications in value of clay and limestone used in cement and lime. (Source: U.S. Bureau of Mines.

The state's 116,000 farms in 1959 had an acreage of 16,543,000 (13,715,000 in harvested cropland). Livestock on farms on Jan. 1, 1962, included 1,689,000 cattle, 933,000 hogs, 9,516,000 chickens, and (1961) 198,146,000 commercial broilers. An average of 109,000 family and 33,000 hired workers engaged in farming during 1961.

ALABAMA CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Corn for grain (1,000 bu.)	44,097	48,335	35,235
Cotton lint (1,000 bales)	773	617	695
Cottonseed (1,000 tons)	310	254	283
Peanuts (1,000 lb.)	188,626	207,475	196,950
Potatoes (1,000 cwt.)	2,430	2,264	2,482
Soybeans (1,000 bu.)	2,172	3,504	3,040

(Source: U.S. Department of Agriculture.)

Events, 1962.—Former Circuit Judge George C. Wallace of Barbour County was elected governor of Alabama in the November 6 elections. Candidates committed to support the national party recovered control of the state Democratic Executive Committee from a "States Rights" faction of the party. Incumbent U.S. Sen. Lister Hill narrowly won reelection in the face of an all-out effort by the Republican Party to establish a two-party system in the state. Hill defeated Republican James B. Martin by about 6,000 votes, a margin of only 1.6% of the total ballot.

In a suit brought by Birmingham citizens for legal relief from legislative malapportionment, a federal district court postponed decision until after July 16 to give the state a last chance to reapportion itself. Ensuing measures adopted by a special session of the Legislature were ruled constitutionally inadequate and void (see above, *Legislation, 1962*). The court then, on July 21, ordered election to the 1963 Legislature held on the basis of the arrangement of senatorial districts provided for in one of the invalid acts (the stand-by measure), and the distribution of representation in the lower house formulated in the other.

The court's action, based on the U.S. Supreme Court decision of March 26 (see LAW), was the first of its kind in the nation. Emphasizing that the remedy ordered was provisional in nature, the court retained jurisdiction of the case for further judicial relief should the next Legislature fail to complete fair reapportionment. The legislative realignment—the first in Alabama in 61 years—required a special Democratic primary, which was held on August 28. (See also REAPPORTIONMENT AND REDISTRICTING.)

The state's worst racial difficulties of the year occurred in Birmingham. Officials closed the city's parks in January after a federal court enjoined their segregated operation. Birmingham Negroes conducted a campaign of selective buying to combat employment policies of some businesses; and the city government retaliated against Negro demands for civil rights by withdrawing relief funds for distributing food to needy families. Birmingham voters decided in a November referendum to replace the city's commission form of government with a mayor-council plan.

Year-end reports on business developments in Alabama during 1961 disclosed 246 new or expanded industrial installations, representing new capital investment of $218 million and providing 8,998 new jobs. Reports for the first six months of 1962 listed 139 new plants and expansions costing $49.7 million and creating 7,586 new jobs. Department store sales and consumer credit indicated retail business continuing to reach record highs in the state. Alabama remained the largest tree-farming state with 6 million acres in 2,000 farms, and an estimated 4,000 forestry-allied businesses. The George C. Marshall Space Flight Center at Huntsville reached an employment level of 25,000, with an annual payroll of $200 million.

After racial strife erupted in the fall at the University of Mississippi, trustees of the University of Alabama declared that similar events would not be tolerated on the Alabama campus.

"Legislation" and "Events" by: C. DALLAS SANDS, *Professor of Law, University of Alabama.*

ALASKA

Northernmost of the states of the United States, Alaska was admitted to the Union on Jan. 3, 1959. Known as "The Great Land," it ranks first in area and last in population among the 50 states. Its most southerly point on the Canadian boundary lies approximately 535 miles by air from the 48 conterminous states, and its westernmost point on the Seward Peninsula is separated from Siberia by the 55-mile-wide Bering Strait.

Area.—Alaska's area of 586,400 square miles (land, 571,065; inland water, 15,335) includes the many islands of southeastern Alaska in the Alexander Archipelago, Kodiak Island, the Aleutian Islands, the Pribilof Islands, Nunivak Island, and St. Lawrence Island. The Aleutians extend some 1,200 miles westward from Alaska's mainland.

Population.—The state's population on July 1, 1962, was estimated at 246,000, an increase of 8.7% over the 1960 census figure of 226,167. Included in the population are approximately 16,000 Eskimos, 14,000 Indians, and 4,000 Aleuts.

The population is a young one: 45% of the people are under 21 years of age, and only 2.4% are 65 years of age or older. The birth rate is 31.7 per 1,000 population, and the death rate is 5.4, compared with 23.4 and 9.3 per 1,000 for the rest of the United States. In 1960 there were 132.3 males to 100 females, compared with 97.1 males to 100 females in the United States as a whole.

Government.—Chief executive and judicial officers in 1962 included William A. Egan (Democrat), governor, serving a four-year term; Hugh J. Wade, secretary of state; George H. Hayes, attorney general; Robert Isaac, commissioner of education; and Buell A. Nesbett, chief justice of the three-member Supreme Court.

The Alaska State Legislature, which convenes annually, comprised 13 Democrats and 7 Republicans in the Senate in 1962, and 23 Democrats and 17 Republicans in the House of Representatives.

Legislation, 1962.—The second session of the 1961–62 legislature, which lasted 80 days, approved an operating budget of $69.4 million for the fiscal year 1963, along with supplemental appropriations of $7.7 million. Among the measures approved were the creation of a new Department of Industrial and Economic Development; codification and revision of the laws relating to criminal and civil procedures; and an antidiscrimination provision for free and equal enjoyment by all persons, regardless of race, color, or creed, of accommodations, amusements, conveyances, and business establishments.

In matters affecting education, the lawmakers took the first steps toward establishing a foundation program for state support to independent school districts; approved sabbatical leaves for public school teachers; and made the bachelor's degree a teaching prerequisite in state schools. The legislature also adopted a plan whereby each high school in Alaska will send one student annually to observe a session of the legislature for a one-week period. All

expenses will be paid by the legislature, and the student writing the best paper on the legislature will receive a one-year scholarship at the University of Alaska.

Successful labor legislation provided for payment of time-and-a-half for overtime work, and an increase in the minimum wage to 50 cents above the prevailing federal standard. (The cost of living in Alaska remains higher than in the other states.) Salary increases amounting to about 5% were granted to state employees, and the sum of $500,000 was appropriated to aid depressed areas.

Finance.—In the 1962 fiscal year, revenue of $106,900,737 included $35,161,271 from state taxes and $30,115,501 in federal funds. Chief tax yields were individual income ($12,212,269), corporate income ($1,769,150), motor fuels ($6,070,994), and licensing ($3,700,981). Spending of $114,216,020 included $26,816,159 for education, $17,012,347 for health, welfare, and safety, and $21,370,060 for highways.

Of the total receipts, general fund revenues for the fiscal year 1962 accounted for $71,882,195, an increase of $29,715,994 over those of the previous fiscal year. Receipts from bonus bids for oil leases totaled $21,335,301, compared with $1,727,423 in 1960–61.

Education.—In the 1961–62 school year, public elementary schools staffed by 1,589 teachers enrolled 50,226 students; secondary schools with 637 teachers enrolled 10,115; and private and parochial schools with 101 teachers enrolled 2,009.

Operating expenditures totaled $25,472,566 ($565.67 per pupil), and capital outlays amounted to $6,317,275. School revenue was drawn chiefly from state funds ($12,635,256) and local districts ($6,878,994). Teachers' salaries averaged $7,346.25.

Public higher education is furnished by the University of Alaska on its campus at College, near Fairbanks, and through its facilities at military bases and at community colleges in Anchorage, Juneau, Ketchikan, and Palmer; and by Alaska Methodist University in Anchorage and Sheldon Jackson Junior College at Sitka.

Public Assistance.—In the 1962 fiscal year, public assistance payments to a monthly average of 6,816 persons totaled $3,883,855. This amount included $1,678,000 to dependent children and $1,157,440 for the aged.

Transportation and Communications.—Because of limited surface transportation facilities, the state relies heavily on air service for internal and external transport of passengers, mail, and freight. Fifteen regularly scheduled airlines were operating in the state in 1962 (four of them providing jet service from the Pacific Northwest), in addition to many bush pilots. There were approximately 319 commercial and municipal airports.

With 169 miles of new highway construction completed in 1961, roads and streets as of August 1962 totaled 4,283 miles (1,223 miles hard-surfaced). These served 86,311 motor vehicles (1961 registration), including 72,269 passenger cars. State and federal spending for highways in 1961 totaled $22,406,635. The single rail line, Alaska Railroad, connects Seward and Whittier with Fairbanks over a mainline track of 470 miles.

Communications media included (1962) 14 AM radio stations and 2 FM stations, 5 VHF television stations, (1961) 6 daily newspapers (circulation 53,514), and 7 other newspapers (circulation 10,039).

Labor Force.—The state's labor force in March 1962 totaled 70,300. Nonagricultural employment totaled 51,400, compared with 49,600 a year earlier and an average of 55,500 for the calendar year 1961. Of nonfarm employees, 43.8% were in government, 15.2% in wholesale and retail trade, and 14.2% in transportation and communications. Unemployment in March 1962 stood at 10,500, compared with 10,800 a year earlier.

Manufacturing.—Lumber and pulp production and the processing of seafood are the chief manufactures. In 1961 there were 370 manufacturing plants in the state, engaging 5,144 workers and providing a payroll of $40,085,628. A total of 2,440 persons, earning $17,424,564, were employed in seafood processing, and 1,616, earning $14,131,690, were engaged in logging and in lumber and pulp mills.

There were 91 fish canneries in 1961. Approximately 159,456,486 pounds of fish, valued at $106,798,688, were canned, chiefly 3,211,962 cases of salmon, valued at $99,352,358 (up 36% from 1960).

Fisheries.—Total value to fishermen of the fish and shellfish catch of 1961 was $46,469,600 (up 12% from 1960). Salmon, of which the state is the nation's leading producer, totaled 264,814,300 pounds valued at $35,740,710. Alaska is also the nation's leading producer of halibut (33,477,400 pounds; $4,887,810) and king crab (43,411,600 pounds; $3,913,700). Other important species are shrimp, herring, and dungeness crab.

Mining.—Mineral output in 1961 was valued at $36,566,000 (an increase of 62% over the previous year), accounting for 0.19% of the national total and ranking Alaska 41st among the states. A sharp rise in the value of petroleum and natural gas production, almost 13 times that of 1960, was responsible for the overall increase. Alaska ranked first among the states in platinum production, and third in mercury and gold. On Dec. 31, 1961, 1,695 persons were employed in the mineral industries.

ALASKA MINERAL PRODUCTION, 1961

Mineral	Quantity	Value
Petroleum, crude (barrels)	6,325,000	$17,647,000
Coal (short tons)	737,000	5,868,000
Sand and gravel	...	5,200,000
Gold (troy ounces)	114,000	3,997,000
Mercury (76-pound flasks)	4,129	817,000
Natural gas (Mcf.)	434	105,000
Other minerals, including lead, platinum, stone, and uranium	...	2,018,000

Agriculture.—About 10% of the food requirements of Alaska are supplied by its own farmlands, located chiefly in the Matanuska and Tanana valleys. They covered 888,331 acres in 1960, of which 15,591 acres were in harvested cropland. The total 1960 value of all farm land and buildings was $17,125,321 (average value per farm, $46,663). Of the 367 farms, 90% had electricity and 53% had telephone service.

Cash farm income in 1960 comprised $3,114,800 from livestock and livestock products and $1,257,600 from crops. The total value of forestry products in 1961 was $48,000,000.

Events, 1962.—For the second time in three years, Alaskan voters were asked to decide whether the state capital should remain in Juneau or be moved to the Anchorage area. This issue, which has aroused a good deal of controversy, first arose in 1960 when voters defeated an attempt to effect the transfer. In 1962 a new initiative petition was filed with the secretary of state, providing that the capital be moved, beginning in 1968, to a site in western Alaska no closer than 30 miles to Anchorage. In the general election the second initiative was defeated by a vote of 31,933 to 26,324, with a majority vote against the move in all districts outside of Anchorage. Democratic incumbents Gov. William A. Egan, Sen. Ernest Gruening, and Congressman Ralph Rivers were re-elected. The lower house of the Alaska Legislature has 20 Republicans and 20 Democrats, but the Senate is Democratic by a big margin.

In April the state became involved in an international incident when Governor Egan directed the seizure of two Japanese catcher boats, part of a commercial herring fleet, in Shelikof Strait. Alaska claims jurisdiction over the strait, which separates Kodiak Island from the mainland, on the ground that it constitutes an inland body of water. The matter was settled when the Japanese agreed to halt fishing operations in this area.

The three 500-passenger and 100-car ferries which will provide daily service in southeastern Alaska were launched during the year and are scheduled to begin operations in the spring of 1963. The vessels will connect Prince Rupert, British Columbia, with cities in southeastern Alaska and points as far north as Haines and Skagway. Jet air service was instituted in the spring between Seattle, Wash., and Fairbanks, Anchorage, and Juneau.

Economic developments included the discovery of new beryllium ore deposits on the Seward Pen-

insula, about 70 miles northwest of Nome. A rush of prospectors to the site was touched off by news of the find, made by U.S. Geological Survey engineers. Construction began in June on a $10 million oil refinery, located about 70 miles south of Anchorage. In the face of declining production of other minerals, the nascent petroleum industry is considered to be a very important factor in the future of the state's economy. (See also above, *Mining.*)

A $6 million psychiatric institute was dedicated by the state in August. The new facility is located in Anchorage.

The big game harvest in 1961 was the greatest in Alaskan history. Not including marine mammals and bears, the record bag contributed about 12 million pounds of meat to the state's larders, or an average of 45 pounds per capita.

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ALBANIA

A Balkan country of southern Europe, the Albanian People's Republic has an area of 10,629 square miles and a population (July 1, 1961 est.) of 1,660,000. The capital is Tiranë (Tirana; 1961 est. pop., 150,000). Albanian is the official language; Ghegish and Toskish dialects are spoken in the north and south, respectively.

Government.—A Communist-type people's republic since Jan. 11, 1946, Albania is ruled by the Albanian Party of Labor (Communist Party), headed by Enver Hoxha, first secretary of its Central Committee. The nominal head of state is Haxhi Lleshi, president of the Presidium of the People's Assembly, the unicameral legislature which is elected every four years by universal suffrage. In the elections of June 3, 1962, the 214 candidates for the Assembly on the single-list ballot of the Communist-led Democratic Front received over 99.99% of the vote (see below *Events, 1962*). Mehmet Shehu, premier since 1954, was called upon on July 14, 1962, to head again the Council of Ministers.

Education and Religion.—School enrollment, 1960: about 300,000 (about 56% of the school-age population). Number of schools (with enrollments), 1959: 2,685 primary (211,546); 35 secondary (5,177); 36 technical (6,842); 12 teacher-training (3,062); 2 higher (1,943). Principal religions: Islam (Sunni and Bektashi), 70%; Greek Orthodox, 20%; Roman Catholic, 10%. Since August 1951 the Albanian Catholic Church has been separated from Rome. The world headquarters of the Bektashi sect is located in Albania.

Finance.—Government revenue, 1962 est.: 29,000 million leks (24,650 million in 1961); expenditure, 28,510 million leks (27,700 in 1961). The lek is equal to U.S.$0.02. It is estimated that 69.5 billion leks will be invested in the third 5-year plan (1961–65).

Transportation and Communications.—Transport networks (miles, 1960): railroads, 106; roads, 1,677. The merchant marine totaled 11,000 tons in 1961. It was announced in December 1961 that a joint-stock shipping company would be organized by Albania and Communist China. The airport at Tiranë is served by Soviet, Hungarian, and Czechoslovak airlines. Radio sets numbered 43,000 in 1959.

Agriculture.—Over 43% of the population is engaged in agriculture. It was announced on Feb. 27, 1962, that 86% of the cultivated soil was collectivized, compared with 14.5% in 1955. Chief crops (metric tons, 1958): wheat, 101,000; rye, 9,000; corn, 160,000; barley, 7,000; oats, 13,000; cotton seed, 13,000 (in 1960). It was announced that agricultural production in 1961 totaled 4.9 billion leks more than in 1960.

Manufactures and Minerals.—About 38% of the population is engaged in manufacturing, mining, and other industry. Production (metric tons, 1960): lignite, 300,000; crude petroleum, 603,000; sugar, 14,000; cotton yarn, 900 (1959); chrome ore, 201,252 (1958); copper, 88,406 (1958); woven cotton, 24 million meters (1959); electric power, 175 million kw.hr. (1959).

Foreign Trade.—Total exports, 1959: 1,700 million leks; imports, 4,350 million leks. Principal exports: crude petroleum, bitumen products, chrome ore, blister copper, tobacco leaf, wine, medicinal plants. Chief imports: oil and mining equipment, industrial machinery, coke, fertilizers, paper and cardboard, fabrics. Chief customers and suppliers: USSR, Czechoslovakia, East Germany, Poland. Communist China's share of Albania's trade was expected to rise from 28% to 59% in 1962. Despite the worsening political situation with the socialist countries of eastern Europe, trade agreements were concluded in 1962 with East Germany, Czechoslovakia, Bulgaria, Hungary, Rumania, and Poland. In addition to increasing its trade with Communist China, Albania sought in 1962 to increase its trade with North Korea, North Vietnam, Cuba, Ghana, Iraq, Yugoslavia, and Austria.

Events, 1962.—Albania's relations with the Soviet Union, broken in December 1961, remained strained throughout 1962. Following the Soviet lead, Czechoslovakia, East Germany, and Hungary broke off diplomatic relations in late December 1961. The evacuation of the Soviet submarine base at Vlonë (Valona) was completed in 1962. Russian technical and economic experts that were withdrawn following the rupture of friendly relations were replaced by experts from Communist China.

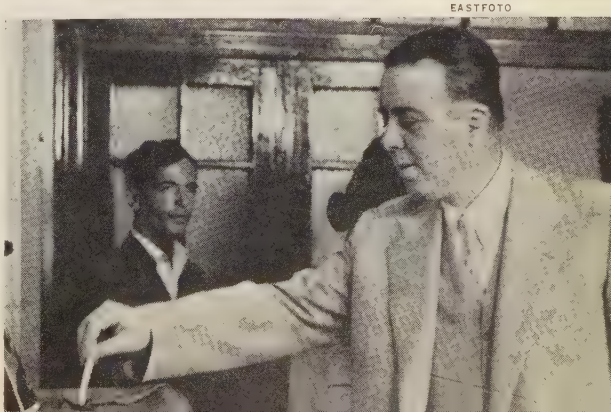
During the year Soviet propaganda organs attacked the Albanian government and the Albanian Communists as dogmatist, separatist, and deviationist. On January 9, *Zeri i Popullit* (*The Voice of the People*), organ of the Albanian Communist Party, declared its loyalty to the memory of Stalin and attacked Soviet Premier Nikita Khrushchev as anti-Marxist. On March 5, Albania's Communists paid tribute to the memory of Stalin and attacked Khrushchev as a revisionist, and accused him of seeking a modus vivendi with the United States at the expense of the revolutionary movements of Africa and Latin America.

Having lost its political allies in eastern Europe, Albania sought to establish more friendly relations with Austria, Italy, and Greece. In June about 40 Greeks, who were abducted by Greek Communist guerrillas during the Greek civil war and sent to Albania, were repatriated. Albania called on Greece to declare that the state of war existing between the two countries since 1940 is over, without Albania's having to sign a peace treaty with Greece. On June 13, a trade and cultural agreement with Ghana was ratified.

Premier Shehu claimed in a speech before the People's Assembly in July that gross industrial production was 71% higher in 1961 than in 1957. From 1950 to 1961, he said, national revenue increased by an annual average of 9.1%. The State Planning Commission report for the first half of 1962 indicated that the industrial production plan had been fulfilled by 102%, with significant increases from 9% to 32.8% in the production of chrome ore, iron, copper, coal, and spare parts. Milk consumption increased 9.7%; rice and beans, 13.3%; soap, 17.4%, textiles, 7.4%, and footwear, 5.7%. Nevertheless, there were serious shortages of consumer goods, especially foodstuffs, despite the aid received from Communist China. According to the third 5-year plan, 69.5 billion leks will be invested in development projects, a sum equal to the combined investment in the first and second 5-year plans.

Enver Hoxha, head of the Albanian Communist Party, casts his ballot in the Albanian parliamentary election, June 3.

EASTFOTO



In the parliamentary elections held in June (see also above, under *Government*) the government claimed that out of a total of 889,868 persons, only 47 did not vote for the government party. This compared with 37,000 dissenting in 1946, 11,573 in 1950, 959 in 1954, and 311 in 1958.

Earthquakes occurred on March 18 in central and southern Albania, resulting in five persons killed and 77 injured. About 2,700 houses were damaged, and about 1,000 others were rendered uninhabitable.

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ALBERTA

Canada's fourth largest province, Alberta covers an area of 255,285 square miles, of which 6,485 square miles are water. It is bounded by Saskatchewan on the east, British Columbia on the west, Montana on the south, and the Northwest Territories on the north.

Population.—The population according to the 1961 federal census was 1,331,944; by national origin (1951 census) it was 48% British, 17% American, 11% German, 9% Ukrainian, 7% Scandinavian, and 5% French. Principal urban centers are Edmonton, the capital (281,027), Calgary (249,641), Lethbridge (35,454), Medicine Hat (24,484), Red Deer (19,612), Grande Prairie (8,352), Camrose (6,939), and Wetaskiwin (5,300).

Government.—The lieutenant-governor is appointed by the Canadian government to administer the province. He is advised by the Legislative Assembly of 65 members, 13 of whom are members of the Cabinet or Executive Council. J. Percy Page was lieutenant-governor in 1962, and Ernest C. Manning was premier. The Social Credit Party, which came to power Aug. 22, 1935, was returned with 61 seats in the provincial election of June 19, 1959. The province is represented in the federal Parliament by 17 members elected to the House of Commons, and by 6 appointed Senators.

Finance.—Estimated revenue for the 1962–63 fiscal year was $354,981,520; expenditure was estimated at $354,920,430. Alberta's debt at the beginning of the fiscal year was listed as $23,042,853. A debt reorganization program calls for complete retirement of debt by 1973.

Education.—There are 4,174 school districts grouped in 59 school divisions or counties; in addition there are 179 city, town, village, rural, and separate school districts. Classrooms numbered 10,741 in 1961, and school enrollment totaled 294,435. The Department of Education also maintains a correspondence school branch with an enrollment of 11,177 for the benefit of those without organized school facilities in Alberta and the Northwest Territories. There are 53 recognized private schools with 6,237 pupils. Teacher training is supervised by the Faculty of Education at the University of Alberta in Edmonton. The university offers degrees in the arts and sciences. The Southern Alberta Institute of Technology is located at Calgary, and schools of agriculture are administered by the Alberta government at Olds, Vermilion, and Fairview.

Transportation and Communications.—Alberta is served by three railway systems—the Canadian National, the Canadian Pacific, and the Northern Alberta Railway; five major airlines provide passenger and freight service to the United States, the Orient, Europe, and all other parts of Canada. Of Alberta's highways, 3,663 miles are now paved. The telephone system is owned and operated by the province, except at Edmonton. Most rural telephone lines are operated by mutual companies.

Production.—The value of field crop production in 1961 was $442.7 million, an increase of $35.9 million over the previous year. The value of livestock production was up almost $20 million from 1960, to $225 million. Slaughtering and meatpacking constitute the largest industry, with a production value of $156.6 million in 1961.

The value of mineral production in 1961 was $463.7 million, of which $44.3 million was from natural gas sales and $354.7 million from the sale of crude oil. Natural gas production totaled 497,925,000 Mcf., with production of petroleum totaling 157,650,000 barrels. Total value of lumber and forestry products in 1961 was $21.3 million.

Manufacturing.—The gross value of goods manufactured in Alberta in 1961 amounted to an estimated $942 million, showing a continuing upward trend. Most significant gains were shown in the food and beverage group, with production totaling $382 million; chemicals and allied products, $65 million; and paper products, $40 million. Manufacturing employs more that 40,000 persons.

Trade and Commerce.—Oil, natural gas, petrochemicals, and products of the petroleum industry are sold for local consumption as well as for export to other sections of Canada and to the United States. Lumber products and fish are also exported to United States markets. Retail trade during 1961 amounted to $1,384 million; wholesale trade, $862 million.

Events, 1962.—An announcement of major economic importance to Alberta in 1962 was that the Oil and Gas Conservation Board had recommended that permission be given to an applicant firm to proceed with development of the Athabasca Oil Sands. In a 20,700-square-mile area about 280 miles north of Edmonton lie the oil sands, estimated to contain the world's largest single oil deposit. Reserves are estimated at 100 billion to 250 billion barrels, and production should be under way within four years.

Development of the vast mineral, forest, and agricultural wealth of Canada's north will move closer to reality with the construction of the Pine Point Railway between Grimshaw and Great Slave Lake, which is expected to be completed in 1964.

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ALCOHOLIC BEVERAGES. See BREWING INDUSTRY; DISTILLING INDUSTRY; WINE.

ALEUTIAN ISLANDS. See ALASKA.

ALGERIA

The Republic of Algeria, situated on the Mediterranean coast of Africa, attained independence from France on July 3, 1962, after a cease-fire agreement concluded on March 18 had ended the seven-year war in Algeria between French and Algerian Moslem forces. The new nation has an area of 917,537 square miles and comprises the former delegation-general of Algeria, previously administered as a part of Metropolitan France with a special status, and the former Departments of the Sahara, previously under the French minister of state.

According to a 1960 census estimate, the population of Algeria proper was 10,197,000, and of the Saharan Departments, 588,000. The total population of 10,785,000 included a large majority of Moslem Arabs and Berbers, about 1 million Europeans (80% born in Algeria), mostly French, and some 125,000 native Jews. In the first ten months of 1962, however, about 750,000 Frenchmen and other Europeans left the country for France. Algerian Moslem refugees residing in Morocco and Tunisia in early 1962 numbered about 250,000, most of whom returned to Algeria by the end of the year.

The Algerian flag has a red star and crescent inscribed on a field consisting of equal halves of white and green, the latter being located on the staff's side.

Government.—The last French delegate-general (civilian and military governor) in Algeria was Jean Morin (appointed Nov. 23, 1960), who served until the Algerian peace settlement took effect on March 19, 1962. Christian Fouchet was French high commissioner for Algeria from that date until Algeria's independence was formally proclaimed on July 3. Sovereignty over the former French departments of Algeria was then transferred to the temporary 12-member Algerian Transitional (Provisional) Executive, which had been installed on April 7; this body exercised official authority until September 25. The separate Algerian Provisional Government, political executive or cabinet of the rebel National Liberation Front (FLN), transferred its own authority on August 7 to a new 7-member Political Bureau, led by Ahmed Ben Bella. The Political Bureau selected the candidates who were elected unopposed in national elections of September 20 to the 196-member National Assembly. Ben Bella was elected premier by the Assembly on September 26. The parliamentary body of the rebel FLN is the 54-member National Council of the Algerian Revolution, which along with the FLN executive body, the Political Bureau, continued in existence after formation of the new Algerian government. (See also below, *Events, 1962.*)

Education.—About one fifth of the school-age population attends school. School enrollments by educational levels, 1960: primary, 839,100; secondary, 81,282; technical, 34,722; and teacher-training, 1,675. The University of Algiers had 7,537 students in the 1960–61 academic year.

Finance.—The governmental budget for 1960 was balanced at 2,689 million new francs; the 1962 budget was estimated at 5,439 million (the new Algerian franc, introduced in 1960, equals 100 old francs; 4.937 new francs equal U.S.$1). France provided about 25% of Algeria's budget revenues in 1960, and also supplied about 70% of expenditure for industrial development under the Constantine Plan (1959–63), which cost an estimated 5,500 million new francs in 1962.

Transportation and Communications.—Transport networks (miles, 1959): railways (mostly state-owned), 2,610; roads, 34,387, including 5,460 miles of national highways. Merchant marine tonnage (1960): 72,953. The port of Algiers handled 21.5 million metric tons of freight in 1960. French airlines operate scheduled services to Algiers and Oran. Motor vehicles: 245,000 (1960); telephones, 195,123 (1960); radios, 600,000 (1961); television sets, 62,000 (1961).

Agriculture.—About 70% of the population is engaged in agriculture. Chief cereal crops and 1961 estimated outputs: wheat, 633,000 metric tons (1,505,000 metric tons in 1960); barley, 15.0 million bushels (39.0 million); and oats, 1.5 million bushels (3.4 million). Other agricultural products (metric tons, 1961): wine, 1,313,600 (exported); oranges, 254,000; vegetables, 69,400 (exported); dates, 18,500 (exported); olive oil, 18,000; and tobacco, 3.7 million pounds. Livestock numbers (1961): sheep, 5,360,000; cattle, 623,000.

Manufactures and Minerals.—General index of industrial production (1953 = 100): 161 in 1961 (163 in 1960). Principal manufactures (1961): electric power, 1,358.1 million kw.-hr. (up 4% from 1960); cement, 1,071,700 metric tons (up 1%); rugs and carpets, 407 metric tons. Chief minerals (metric tons, 1961): petroleum, 14,484,000 (up 65% from 1960); iron ore, 2,867,200 (down 16%); calcium phosphates, 425,300 (down 22%); and zinc ore, 70,900 (up 8%).

Foreign Trade.—Total exports, 1961: 1,814 million francs (down 7% from 1960); imports, 5,057 million (down 19%). Chief exports (in million francs, 1961): wine, 937; citrus fruit, 135; iron ore, 108; and fresh vegetables, 50. Chief imports: machinery, vehicles, metal products, petroleum products, and other manufactures. In 1961, France took about 81% of Algeria's exports, and provided about 82% of imports.

Events, 1962.—The seven-year war in Algeria between French forces and Algerian Moslem rebels was ended on March 18 with the signing of a truce accord by representatives of France and the rebel National Liberation Front (FLN) at Évian-les-Bains, France. The long conflict, which had begun on Nov. 1, 1954, had resulted in at least 194,000 deaths on both sides and had cost an estimated $20 billion in war expenditure and property damage. Total casualties included an estimated 141,000 rebels killed, 20,000 French Army troops killed and missing, and 32,837 Moslems and Europeans killed and missing as the result of terroristic acts.

Peace negotiations were conducted in secret at Évian-les-Bains from March 7 to 18 and, earlier, from February 11 to 18, at Les Rousses, France, where a preliminary agreement was reached that was later approved by the French government and by the FLN cabinet and National Council. The official cease-fire in Algeria went into effect on March 19.

Terms of the true agreement represented a compromise between the views of the French government, which wished to preserve sovereignty over the Sahara and firm ties between France and Algeria, and those of the Moslem rebels, who desired complete independence. The accord provided for an independent Algeria with close links to France, depending on the outcome of a self-determination referendum to be held within three to six months. According to the agreement, armed hostilities were to cease immediately, prisoners on both sides would receive amnesty, and France was to withdraw her military forces by stages over a three-year period. A transitional executive under a French high commissioner was to be established to rule during the interim period prior to independence, and French citizens resident in Algeria after independence were to be considered "French nationals exercising Algerian civil rights." France was to retain its existing mining rights in the Sahara, but would share equally with the new Algerian government the future exploitation of oil deposits and other minerals there. It was also agreed that Algeria would lease to France for 15 years the air and naval base at Mers-el-Kébir, and France would retain for five years its airfields and nuclear and rocket testing installations in the Sahara.

As was expected, ultranationalist Europeans who had insisted that Algeria remain part of Metropolitan France bitterly opposed the truce accord. They were led by the illegal Secret Army Organization (OAS), a grouping of diehard French Army elements and European extremists estimated to number about 4,000 activists. The organization resorted to a campaign of terror in a last effort to prevent Algeria's independence. Early in the year, on January 4, the OAS proclaimed the "mobilization of all Algerians" to prevent a peace settlement, and OAS terrorists indiscriminately shot and bombed Moslems, as well as some Europeans, virtually every day in Algiers, Oran, and other large cities. The death toll from terroristic acts ranged from a few dead on some days to as many as 110 deaths on May 2, and totaled an estimated 5,450 deaths in the first half of the year.

The purpose of the OAS campaign of terror was to goad the Moslem masses into committing acts of reprisal against Europeans and thereby to cause the French Army to align itself with the OAS against the Moslems. The strategy failed when FLN leaders succeeded in restraining the mass of Moslems from seeking revenge against the European populace. The belief held by Europeans that the French Army would not employ force against them was shattered after OAS terrorists in Algiers fired on French troop units and killed 15 soldiers on March 23. This outrage proved to be a major miscalculation on the part of the OAS, for the French Army moved promptly to seal off the Bab-el-Oued quarter where the murders occurred and to arrest some 3,500 suspected terrorists. When a mob of European demonstrators attempted to march into the same quarter on March 26 and broke through a military cordon, French troops fired into the crowd, killing at least 70 Europeans. The tragic incident marked a turning point in the Algerian struggle by making clear that the French Army was resolved to preserve order and implement French government policies at all costs.

The OAS staged a general strike in Algiers and other large cities on the day the cease-fire took effect, and on March 28 declared an "all-out" war against French forces. The organization's continued assassinations and bombings, however, appeared to lose for it much of the sympathy it had previously commanded among officers of the French Army, in France itself, and within the French community in Algeria. In a national referendum of April 8, French voters overwhelmingly endorsed the truce accord, and the size of the affirmative vote—17,866,423 ballots as against only 1,809,074 negative votes—apparently convinced many European Algerians that they were fighting a losing battle in their efforts to prevent Algeria's independence.

The rabid OAS alone was still unconvinced, but the organization was weakened by the campaign waged against it by French authorities. French security forces captured Edmond Jouhaud, second-in-command of the OAS, in Oran on March 26, and Raoul Salan, former French general and the OAS commander, in Algiers on April 20. A

French military tribunal in Paris condemned Jouhaud to death on April 13 (the death sentence was later commuted), then sentenced Salan on May 23 to life imprisonment because of unspecified "extenuating circumstances." Despite the loss of its top leadership, however, the OAS continued to terrorize the Moslem population by means of sporadic assassinations of innocent victims, including many Moslem women and children.

French and Algerian Moslem authorities cooperated in implementing the peace agreement. A French diplomat, Christian Fouchet, was named French high commissioner for Algeria on March 19, and on April 7 he officially installed at Rocher Noir a 12-member Transitional Executive, consisting of nine Moslems and three Europeans, and headed by Abderrahmane Farès as president. The truce was observed immediately in rural areas, and French and Moslem rebel troops were regrouped in preassigned areas without incident.

As the date (July 1) set for the self-determination referendum approached, most OAS members seemed to realize that they were fighting for a lost cause, and their leaders declared a halt to the daily terrorism from June 1 to 6 while they held negotiations with Moslem leaders. After the negotiators failed to reach agreement the OAS resumed its "scorched earth" campaign on June 7 by blowing up public buildings in Algiers, Bône, Constantine, and Oran. New negotiations were then held in secret, and a truce agreement was announced on June 17 by Dr. Chawki Mostefai, an FLN leader and member of the Algerian Transitional Executive. The agreement called for public recognition of the OAS, a general amnesty for OAS terrorists, and European participation in forming new Algerian security forces. A cease-fire was proclaimed by the OAS in Algiers. Militant OAS leaders in Oran and Bône rejected the truce, but their attempts to renew terrorist activities collapsed. The political leader of the OAS, Jean-Jacques Susini, declared on June 27 that the truce was in force throughout Algeria.

In the self-determination referendum held on July 1, Algerians overwhelmingly chose, by a vote of 5,975,581 to 16,534, independence for Algeria in close cooperation with France. President de Gaulle formally proclaimed Algeria's independence on July 3, and transferred sovereignty over the former French departments of Algeria to the Algerian Transitional Executive. As of that date the office of high commissioner for Algeria was dissolved, and Jean-Marcel Jeanneney was appointed France's first ambassador to Algeria. The United States and other nations immediately recognized the new Algerian state.

Enthusiastic independence celebrations were held without incident in Algiers and other cities, but in Oran, the last stronghold of the OAS, jubilant Moslem crowds clashed with Europeans on July 5. At least 20 Europeans and 73 Moslems were killed in the violent fighting. The tragic outbreak was the final major incident of violence between Moslems and Europeans in Algeria.

The attainment of independence was of course a great victory for the Algerian Moslem nationalist leaders, but it was ironic that their moment of victory was marred by a bitter political conflict

PARIS MATCH FROM PICTORIAL PARADE; WIDE WORLD; WIDE WORLD; UPI

Violence and dissension mar Algeria's road to independence. (*Top to bottom*): (1) French soldier examines damage caused by Secret Army Organization terrorists in Oran, April 15. (2) Captured Muslim soldiers loyal to Premier Ben Khedda are guarded by forces of dissident Vice Premier Ben Bella in Oran, July 11. (3) Mohammed Khider (l.), secretary general of the ruling Political Bureau, confers with opposition leaders Belkacem Krim and Mohammed Boudiaf, August 11. (4) Algerian women cast their votes in referendum of July 1, which approved immediate independence for the country.

that brought their country to the verge of civil war. The political struggle was between two principal factions of the Moslem leadership, and its outcome decided which group was to lead Algeria after independence. One faction comprised those leaders who had actually fought the war in Algeria, and included guerrilla leaders of the National Liberation Army (ALN) and a majority of ministers of the Provisional Government of the Algerian Revolution, headed by Premier Benyoussef Ben Khedda. The other group consisted of Algerian nationalists who had lived outside of Algeria during the war, and included the general staff of the ALN stationed in Morocco and Tunisia, and those nationalist leaders who had been imprisoned in France. The latter faction was led by Ahmed Ben Bella, vice premier of the Provisional Government and one of five ministers who had been freed by France on March 18 after five years' imprisonment.

The political struggle was precipitated on June 30 when Premier Ben Khedda dissolved the general staff of the ALN. The chief of staff, Col. Houari Boumedienne, and Ben Bella immediately denounced the Provisional Government's action and refused to accept the military dismissals. Ben Bella returned to Algeria on July 11 and, with other dissident political leaders, announced on July 22 that a seven-member Political Bureau had been formed to supplant the Provisional Government. Negotiations between the rival political factions resulted in an agreement whereby the government accepted the authority of the Political Bureau, provided that the National Council approved the bureau's membership. The Political Bureau, dominated by Ben Bella and his supporters, assumed political power on August 7.

Civil war was threatened in late August and early September when fighting broke out between military forces supporting the rival factions. Many commanders of guerrilla units refused to accept the authority of the new Political Bureau and deployed their forces to resist the advance of the 45,000-man National Liberation Army (the name was later changed to National Popular Army), which poured into Algeria after independence from wartime bases in Morocco and Tunisia. After a major military clash occurred in Algiers on August 29, the Algerian people themselves took the initiative in preventing civil war; thousands of angry Moslems demonstrated in Algiers on August 31 and September 1 to demand peace and unity, and an end to the power struggle among their leaders. Bowing to popular pressure, the rival factions negotiated a cease-fire agreement on September 4, but more than 100 soldiers were killed in fighting that continued until September 6 in the Algiers area. Under the cease-fire accord, guerrilla forces supporting Premier Ben Khedda withdrew from Algiers, and Colonel Boumedienne led 4,000 troops of his National Popular Army into the city on September 9. The effect of the settlement was to establish Ben Bella's faction as the dominant political force in the country.

Ben Bella's leadership was later confirmed by the results of the national elections. His Political Bureau picked the official list of 196 candidates to stand unopposed for election to the Algerian Na-

AFP FROM PICTORIAL PARADE; UPI; UPI; WIDE WORLD

Ahmed Ben Bella wins the fight for power in free Algeria. (*Top to bottom*): (1) Provisional Premier Ben Khedda (left) and Vice Premier Krim arrive in Algiers, July 3. (2) Vice Premier Ben Bella (left), accompanied by Mohammed Khider, is greeted in Oran, July 12. (3) Weary of political struggles which threaten advantages of independence, crowd in Algiers demonstrates for peace, August 31. (4) Firmly entrenched in power, Premier Ben Bella (left) heads delegation to United Nations, October 8, with Permanent Representative Chanderli and Foreign Minister Khomisti (right).

tional Assembly. Premier Ben Khedda and 52 other persons who had opposed the actions of the bureau were purged from the list, although Belkacem Krim and Mohammed Boudiaf, members of the Provisional Government and opponents of Ben Bella, were permitted to stand as candidates. More than 80% of the electorate participated in the elections of September 20 and overwhelmingly approved the official list of candidates. The new National Assembly convened in Algiers on September 25 and elected Ferhat Abbas, former premier of the Provisional Government (which was officially dissolved as of that date), as its speaker. As expected, the Assembly designated Ben Bella as premier, and he formed an 18-member cabinet which was approved by the Assembly on September 29.

Premier Ben Bella defined the policies of his one-party, strongly centralized government as socialist in economic affairs, and "neutralist and nonengaged" in foreign relations. He declared that Algeria's immediate goals were to effect agrarian reform, initiate rapid industrialization, expand educational facilities, and cooperate with France on a basis of equality. Cooperation with the latter was assured by agreements concluded on August 28 that provided for French economic and financial assistance to the new nation, and for joint exploitation of mineral deposits in the Sahara. The new government, which is strongly anticolonialist and firmly endorses African nationalism, apparently aspires to play an important role in the Arab world; Algeria was admitted to the Arab League on August 16.

Despite his government's protestations of neutrality in the struggle between the free and Communist worlds, Premier Ben Bella displayed a rather ambivalent attitude during and after a visit in October to the United States, where he addressed the United Nations and witnessed Algeria's admission to that organization on October 8. He received a warm and friendly welcome from the United States government, and on October 15, during cordial discussions with President Kennedy, reportedly received general assurances of expanded United States aid. Ben Bella then paid a 24-hour state visit to Cuba, where he and Cuban Premier Castro issued a joint communiqué on October 17 that pledged Algerian support for the Castro regime and demanded United States withdrawal from its naval base at Guantanamo, Cuba. The latter development was interpreted as a gesture of gratitude by Ben Bella for Cuban aid rendered to the Algerian rebels and as a bid to retain the support of extreme left-wing elements in Algeria, but it also aroused speculation that Algeria may pursue an anti-Western and leftist course in international affairs.

After returning to Algeria, however, Ben Bella took steps which indicated that his government would not necessarily adopt pro-Communist and anti-Western policies. He declared on November 3 that the small Algerian Communist Party would have to submerge itself within the National Liberation Front because the nation could not afford to have more than one political party. The government officially banned the party on November 29. The National Assembly had previously rejected proposals by leftist deputies that the Assembly model itself on the pattern adopted by Communist countries.

The Algerian government also attempted to maintain good relations with France and other Western countries. Premier Ben Bella on November 9 called for revision of the peace settlement with France, and negotiations between Algerian and French representatives on their future relations were held in Paris late in the year.

The Algerian government faced great difficulties as the result of a severe economic slowdown during the year. In late 1962 more than one third of the labor force was unemployed; Algiers' port activity was reduced by about 20% from a year earlier; and much private capital had left the country. Because of the political upheaval, taxes had not been collected since March, and Algeria's balance-of-trade deficit continued to rise. The flight from the country of about three fourths of the French population had reduced the number of administrators, educators, technicians, skilled workers, and businessmen desperately needed by the new nation. The only bright spot in the gloomy economic picture was the normal output of the year's crop harvest, but there were still severe food shortages.

Despite the economic dilemma, however, the Algerian people and leaders, conscious of the tremendous obstacles they had overcome in their triumphant struggle to attain independence, looked forward with hope and confidence to their country's future.

(See also FRANCE.)

W. R. F.

ALIENS. See Index entry.

ALLERGIES. See Index entry.

ALLIANCE FOR PROGRESS. See INTER-AMERICAN AFFAIRS and the Index entry, *Alliance for Progress.*

ALUMINUM

Production of primary aluminum in 1961 amounted to 1,903,711 tons in the United States and 663,173 tons in Canada. Total United States production in 1962 was expected to exceed the previous 1960 record and to pass the 2 million-ton mark for the second time. Canadian production in 1962 was expected to be the second highest in history, about 5% higher than in 1961 but still 10% less than the 1960 record.

Industry Growth.—Consolidated Aluminum Company, a Swiss firm, in 1962 was building a 20,000-ton-capacity smelter on the Tennessee River near New Johnsonville, Tenn. Operations were scheduled to begin in 1963. The firm will become the seventh producer in the United States.

Another new producer, Aluminio, S.A. de C.V., started construction in 1962 of Mexico's first aluminum smelter at Veracruz. Partially owned by an American producer (Aluminum Company of America), the Mexican producer is expected to start operations at its new 22,000-ton-capacity plant in mid-1963.

Shipments and Markets.—Shipments of aluminum products to consuming markets by the United States industry in 1962, including imports, were expected to exceed 2.6 million tons for the first time. Total shipments were expected to top the previous 1959 record of 2,530,000 tons by more than 10%, and to be about 15% higher than in 1961.

The largest single market for aluminum in the United States in 1962 continued to be the construction industry, which accounted for 25% of total shipments in 1961. Approximately one of every four industrial and office buildings now uses aluminum curtain wall panels. The average new home contained more than 235 pounds of aluminum in 1962, compared with 50 pounds in 1950. Aluminum siding is the fastest-growing use for the metal in residential construction.

The transportation industry continued as the second largest market for aluminum in 1962, just as in 1961, when it accounted for 22% of total product shipments. Trailers of all types used in-

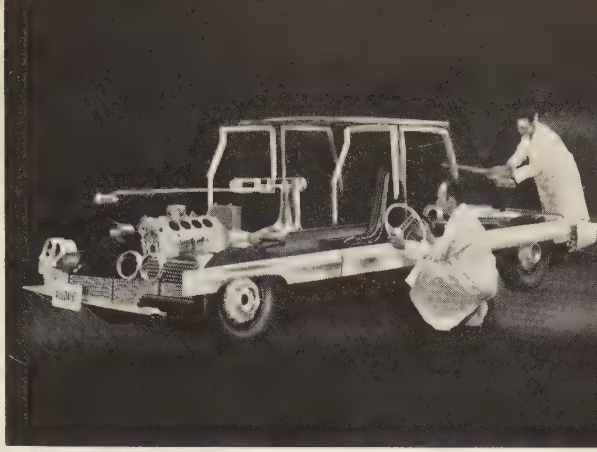
creasingly greater quantities of aluminum in 1962. The Alweg Monorail at the Century 21 Exposition and World's Fair in Seattle, Wash., employed aluminum car bodies to carry passengers from downtown to the fairgrounds. The automobile industry consumed a record quantity of aluminum in 1962. An average of 67 pounds of aluminum was used in 1962 model passenger cars, compared with less than 30 pounds in 1955.

The fastest-growing market for aluminum is the container and packaging field, which in 1961 accounted for 7% of total product shipments. The outstanding application in this field is the aluminum can, which is now used to package a variety of food products.

Exports.—The free world's largest exporter of primary aluminum in 1961 was Canada (487,000 tons), followed by Norway (160,900), France (136,500), the United States (128,300), and Cameroun (52,000). Leading free-world exporters of semifabricated aluminum products in 1961 were the United Kingdom (64,000 tons), Belgium-Luxembourg (57,000), West Germany (46,200), Canada (34,800), the United States (34,600), and France (30,400).

(See also MINERAL PRODUCTION.)

STANLEY V. MALCUIT,
Chief Economist, Aluminum Company of America.



ALUMINUM COMPANY OF AMERICA

Skeleton model shows the diversity of aluminum parts used in various car models—an average of 66.5 pounds per car.

AMBASSADORS AND ENVOYS

The following is a list of ambassadors and envoys from and to the United States as of December 1962 (A = ambassador extraordinary and plenipotentiary; C = consul; CA = chargé d'affaires; CE = counselor of embassy; CG = consul general; E = envoy extraordinary and plenipotentiary).

Country	From the United States	To the United States
Afghanistan	John M. Steeves (A)	Mohammed Hashim Maiwandwal (A)
Algeria	William J. Porter (A)	
Argentina	Robert McClintock (A)	Dr. Roberto T. Alemann (A)
Australia	William C. Battle (A)	Sir Howard Beale (A)
Austria	James W. Riddleberger (A)	Dr. Wilfried Platzer (A)
Belgium	Douglas MacArthur II (A)	Louis Scheyven (A)
Bolivia	Ben S. Stephansky (A)	Dr. Emilio Sarmiento Caruncho (CA)
Brazil	Lincoln Gordon (A)	Roberto de Oliveira Campos (A)
Bulgaria	Mrs. Eugenie Anderson (E)	Kiril Chterev (CA)
Burma	John S. Everton (A)	U On Sein (A)
Burundi	Donald Dumont (E)	
Cambodia	Philip D. Sprouse (A)	Nong Kimny (A)
Cameroun	Leland Barrows (A)	Jacques Kuoh Moukouri (A)
Canada	W. Walton Butterworth (A)	Charles S. A. Ritchie (A)
Central African Rep.	John H. Burns (A)	Jean-Pierre Kombet (A)
Ceylon	Frances E. Willis (A)	Jan H. O. Paulusz (CA)
Chad	John A. Calhoun (A)	Adam Malick Sow (A)
Chile	Charles W. Cole (A)	Walter Müller (A)
China	Adm. Alan G. Kirk (A)	Dr. Tingfu F. Tsiang (A)
Colombia	Fulton Freeman (A)	Ignasio Mesa (CA)
Congo, Rep. of	W. Wendell Blancké (A)	Emmanuel Damongo Dadet (A)
Congo, Rep. of the	Edmund A. Gullion (A)	Mario Cardoso (CA)
Costa Rica	Raymond Telles (A)	Gonzalo J. Facio (A)
Cyprus	Fraser Wilkins (A)	Zenon Rossides (A)
Czechoslovakia	Outerbridge Horsey (A)	Dr. Miloslav Růžek (A)
Dahomey	Robinson McIlvaine (A)	Louis Ignacio Pinto (A)
Denmark	William M. Blair, Jr. (A)	Count Kield Gustav Knuth-Winterfeldt (A)
Dominican Rep.	John Bartlow Martin (A)	Andrés A. Freites (A)
Ecuador	Maurice M. Bernbaum (A)	Dr. Neftalí Ponce-Miranda (A)
El Salvador	Murat W. Williams (A)	Dr. Francisco R. Lima (A)
Estonia	...	Johannes Kaiv (acting CG)
Ethiopia	Arthur L. Richards (A)	Berhanou Dinke (A)
Finland	Bernard A. Gufler (A)	Richard R. Seppälä (A)
France	Charles E. Bohlen (A)	Hervé Alphand (A)
Gabon	Charles F. Darlington (A)	Jules Mbah (A)
Germany	Walter C. Dowling (A)	Heinrich Knappstein (A)
Ghana	William P. Mahoney (A)	Osei Tutu (CA)
Great Britain	David K. E. Bruce (A)	Sir David Ormsby Gore (A)
Greece	Henry R. Labouisse (A)	Alexander A. Matsas (A)
Guatemala	John O. Bell (A)	Carlos Alejos (A)
Guinea	William Attwood (A)	Dr. Seydou Conté (A)
Haiti	Raymond L. Thurston (A)	Dr. Louis Mars (A)
Honduras	Charles R. Burrows (A)	Dr. Céleo Dávila (A)
Hungary	Horace G. Torbert, Jr. (CE)	János Radványi (CA)
Iceland	Matthew H. McCloskey (A)	Thor Thors (A)
India	J. Kenneth Galbraith (A)	Braj Kumar Nehru (A)
Indonesia	Howard P. Jones (A)	Dr. Zairin Zain (A)
Iran	Julius C. Holmes (A)	Hossein Ghods-Nakhai (A)
Iraq	Rodger P. Davies (CE)	Najdat Fathi Safwat (CA)
Ireland	Edward G. Stockdale (A)	Thomas J. Kiernan (A)
Israel	Walworth Barbour (A)	Avraham Harman (A)
Italy	G. Frederick Reinhardt (A)	Sergio Fenoaltea (A)
Ivory Coast	James Wine (A)	Konan Bédié (A)
Jamaica	William C. Doherty (A)	Neville Noel Ashenheim (A)
Japan	Edwin O. Reischauer (A)	Koichiro Asakai (A)
Jordan	William B. Macomber, Jr. (A)	Saad Juma (A)
Korea	Samuel D. Berger (A)	Gen. Il Kwon Chung (A)
Kuwait	Parker T. Hart (A)	Abdul Rahman Al-Ateeqy (A)
Laos	Leonard Unger (A)	Tiao Khampan (A)
Latvia	...	Dr. Arnolds Spekke (CA)
Lebanon	Armin H. Meyer (A)	Ibrahim Husayn El-Ahdab (A)
Liberia	Charles E. Rhetts (A)	S. Edward Peal (A)
Libya	Harrison M. Symmes (CA)	Dr. Mohieddine Fekini (A)
Liechtenstein	John B. Holt (CG)	...
Lithuania	...	Joseph Kajeckas (CA)
Luxembourg	William R. Rivkin (A)	Georges Heisbourg (A)
Malagasy Rep.	Frederic P. Bartlett (A)	Louis Rakotomalala (A)
Malaya	Charles F. Baldwin (A)	Dato Ong Yoke Lin (A)
Mali	William J. Handley (A)	Oumar Sow (A)
Mauritania	Philip M. Kaiser (A)	Souleymane Ould Cheikh Sidya (A)
Mexico	Thomas C. Mann (A)	Antonio Carrillo Flores (A)
Monaco	Harold W. Moseley (C)	...
Morocco	John H. Ferguson (A)	Ali Bengelloun (A)
Muscat and Oman	Stephen C. Campbell (C)	...
Nepal	Henry E. Stebbins (A)	Matrika Prasad Koirala (A)
Netherlands	John S. Rice (A)	Dr. J. Herman van Roijen (A)
New Zealand	Anthony B. Akers (A)	George R. Laking (A)
Nicaragua	Aaron S. Brown (A)	Dr. Guillermo Sevilla-Sacasa (A)
Niger	Mercer Cook (A)	Abdou Sidikou (A)
Nigeria	Joseph Palmer II (A)	Julius M. Udochi (A)
Norway	Clifton R. Wharton (A)	Paul Koht (A)
Pakistan	William P. McConaughy (A)	Aziz Ahmed (A)
Palestine	Eric C. Wendelin (CG)	...
Panama	Joseph S. Farland (A)	Augusto Guillermo Arango (A)
Paraguay	William P. Snow (A)	Dr. Juan Plate (A)
Peru	J. Wesley Jones (A)	Fernando Berckemeyer (A)
Philippines	William E. Stevenson (A)	Amelito R. Mutuc (A)
Poland	John M. Cabot (A)	Edward Drozniak (A)
Portugal	C. Burke Elbrick (A)	Dr. Pedro Theotónio Pereira (A)
Rumania	William A. Crawford (E)	Petre Băläceanu (E)
Rwanda	David J. S. Manbey (CA)	...
San Marino	Merritt N. Cootes (CG)	...
Saudi Arabia	Parker T. Hart (A)	Sheikh Abdullah Al-Khayyal (A)
Senegal	Philip M. Kaiser (A)	Dr. Ousmane Socé Diop (A)
Sierra Leone	A. S. J. Carnahan (A)	Dr. Richard E. Kelfa-Caulker (A)
Somalia	Horace G. Torbert, Jr. (A)	Dr. Omar Mohallim Mohamed (A)
South Africa	Joseph C. Satterthwaite (A)	Dr. Willem C. Naudé (A)

Spain	Robert F. Woodward (A)	Antonio Garrigues (A)
Sudan	William M. Rountree (A)	Dr. Osman El Hadari (A)
Sweden	J. Graham Parsons (A)	Gunnar Jarring (A)
Switzerland	Robert M. McKinney (A)	August R. Lindt (A)
Syria	Ridgway B. Knight (A)	Omar Abou Riché (A)
Tanganyika	William K. Leonhart (A)	...
Thailand	Kenneth T. Young (A)	Visutr Arthayukti (A)
Togo	Leon B. Poullada (A)	Dr. André Akakpo (A)
Trinidad and Tobago	Robert G. Miner (CA)	Ellis E. I. Clarke (A)
Tunisia	Francis H. Russell (A)	Habib Bourguiba, Jr. (A)
Turkey	Raymond A. Hare (A)	Turgut Menemencioğlu (A)
Uganda	Olcott H. Deming (CA)	...
USSR	Foy D. Kohler (A)	Anatoli F. Dobrynin (A)
United Arab Rep.	John S. Badeau (A)	Dr. Mostafa Kamel (A)
Upper Volta	Thomas S. Estes (A)	Jean-Baptiste Tapsoba (CA)
Uruguay	Wymberley DeR. Coerr (A)	Bautista Ochoteco (CA)
Venezuela	C. Allan Stewart (A)	Dr. Carlos Pérez de la Cova (CA)
Vietnam	Frederick E. Nolting, Jr. (A)	Tran Van Chuong (A)
Yemen	Parker T. Hart (E)	Assayed Ahmad Ali Zabarah (CA)
Yugoslavia	George F. Kennan (A)	Veljko Micunovic (A)

AMERICAN ACADEMIES AND ASSOCIATIONS. For organizations whose titles begin with the word American (except American Library Association, which is reviewed below), see SOCIETIES AND ORGANIZATIONS.

AMERICAN FEDERATION OF LABOR AND CONGRESS OF INDUSTRIAL ORGANIZATIONS. See LABOR.

AMERICAN LIBRARY ASSOCIATION

The American Library Association (ALA), an organization of libraries, librarians, trustees, and friends of libraries, is the oldest and largest national library association in the world. Its membership was over 26,000 in 1962 for the first time in its 86-year history. The second wing of the association's new headquarters building in Chicago neared completion at the end of the year. The International Relations Office (IRO) under an additional grant from the Council on Library Resources, Inc., increased its staff and intensified its efforts on behalf of libraries abroad.

Income.—The total income of ALA in 1961–62 was again more than $2,200,000, of which $500,000 was from membership dues, the remainder from endowment income and grants for special projects. The association received 55 such grants in 1962, the income from which was nearly $850,000.

Conferences.—The 81st annual conference was held in Miami Beach, Fla., June 17–22, with the theme "The Librarian and Society." The 3,527 registrants conferred the first honorary ALA membership in six years on John M. Chancellor in recognition of outstanding service to the adult education movement in public libraries. The midwinter business meeting was held January 29–February 3 in Chicago. Future conferences were scheduled for Chicago, July 14–20, 1963, and St. Louis, June 28–July 4, 1964.

Officers.—Officers installed at the end of the Miami Beach conference were: president, James E. Bryan, director of the Newark (N.J.) Public Library; first vice president and president-elect, Frederick H. Wagman, director, University of Michigan Library; second vice president, Edmon Low, librarian, Oklahoma State University Library. Arthur Yabroff, business director of the Detroit Public Library, continues as treasurer.

Membership Policy.—Following action of 1961 in amending the Library Bill of Rights, the membership, at the Miami Beach conference, adopted a strong statement on membership. In part, it declares that "The American Library Association holds that so long as one librarian is unable to make his full contribution to the library profession by reason of racial, religious, or personal belief, and so long as one individual citizen cannot realize his full potential as a useful member of society because of such artificial barriers, the welfare of the nation is diminished." Individual members are called upon "to work . . . so that discrimination . . . may cease and that all people may have equal access to the tools of learning." Chapters are required to certify that they have not denied the basic rights and privileges of membership to each member, and institutional members are urged "not to discriminate among users on the basis of race, religion, or personal belief. . . ."

Library Technology.—The Library Technology Project is engaged in improving and standardizing library supplies and equipment. In 1962 the project completed the development of a new and more economical system of recording the lending of library books. A 12-month study of photocopying equipment resulted in the publication of *Photocopying from Bound Volumes*, which evaluated such equipment for scholars and librarians. Microfilm reader-printers were evaluated and the report prepared for publication. Also completed and nearing publication were reports of the study of fire and insurance protection for libraries, and a systems study of catalog card reproduction systems. Work continued on an improved book-labeling system, while a new design for pamphlet boxes was offered to manufacturers. *The Testing and Evaluation of Record Players for Libraries* was published as the result of a testing program.

Publications.—In 1962 the ALA published: *Southwest Missouri Library Service, Inc.; Vocations in Biography and Fiction; Friends of the Library; Language of the Foreign Book Trade* (2d ed.); *American Library Resources, suppl. 1950–61; Films for Libraries; Subscription Books Bulletin Reviews: 1960–62.*

Awards, Citations, and Scholarships.—*For distinguished service to the profession.*—The Joseph W. Lippincott Award ($1,000 and a medal) for distinguished service to the profession was made in 1962 to David H. Clift, executive director of the American Library Association. The Melvil Dewey Medal for creative professional achievement of a high order went to Leon Carnovsky of the Graduate Library School, University of Chicago, in recognition of his long-standing achievements as editor, author, teacher, and consultant in bibliographical matters. The Clarence Day Award ($1,000 and a print), in recognition of outstanding accomplishment in encouraging the love of books and reading, was presented to Lillian H. Smith of the Toronto Public Library. Mrs. Raymond A. Young, trustee, State Library of Jefferson City, Mo., and S. L. Townsend of the Suwannee River (Fla.) Regional Library Board, received the annual Trustee Citations of Merit.

For outstanding achievement in special areas.—The Beta Phi Mu Award ($50) for distinguished service to education for librarianship was won by Mrs. Florrinell F. Morton, director of the Library School, Louisiana State University, for service to "the Board of Education for Librarianship and the Committee on Accreditation with distinction through the years in which the present standards and the program of accreditation were developed and implemented." Mrs. Alice Brooks McGuire, librarian, Casis Elementary School, Austin, Texas, won the Grolier Society Award ($500) for unusual success in stimulating and guiding the reading of children and young people. The Isadore Gilbert Mudge Citation for achievement in reference librarianship was presented to Mrs. Frances Neel Cheney, associate director, Peabody Library School, George Peabody College for Teachers, Nashville, Tenn. Wyllis Wright, librarian of Williams College, Williamstown, Mass. won the Margaret Mann Citation for significant professional achievement in the fields of cataloging and classification.

For published works.—The H. W. Wilson Company Library Periodical Award ($100) was presented to the *North Country Libraries*, a joint publication of the New Hampshire State Library and the Vermont Free Public Library. Mrs. Elizabeth George Speare won the 41st Newbery Medal for *The Bronze Bow* (Houghton), judged to be the most distinguished contribution of 1961 to children's literature. The 25th Caldecott Medal for the oustanding children's picture book of 1961 was won by Marcia Brown for her *Once a Mouse* (Scribner). A Scarecrow Press Award for library literature went to Sarah K. Vann for the outstanding contribution to library literature during 1961 for her *Training for Librarianship Before 1923.*

For study and special research.—The Dutton-Macrae Award ($1,000) went to Pennie Ellene Perry, librarian, Second Ward High School, Charlotte, N.C., to study the possible effects on the science achievements of students in high schools in which National Defense Education Act

funds have been used to improve science collections and services in the school library. The Grolier-Americana Scholarships ($1,000) for professional education of school librarians were made available to the Graduate School of Library Science of the University of Illinois and the University of Arizona, College of Education, for presentation to students of their choice. Mary E. Bogan of Saratoga Springs, N.Y., won the Frederic G. Melcher Scholarship for graduate study in the field of library work with children.

(See also LIBRARIES.)

FORREST F. CARHART, JR.
Assistant Director, Library Technology Project, American Library Association.

AMERICAN LITERATURE

The death of William Faulkner (q.v.) on July 6, 1962, brought to a close a great career and marked the end of an era of unusual achievement in American fiction. With F. Scott Fitzgerald and Ernest Hemingway, Faulkner had led a resurgence to high levels of achievement not reached in American fiction since the time of Hawthorne and Melville. At the time of his death, the first citizen of Oxford, Miss., was generally regarded as the foremost American novelist of the 20th century, his claim to eminence firmly based on a personal style that was capable of power and beauty, a deep moral vision, and a solid body of work.

Faulkner's best fiction was laid in an imaginary northern Mississippi region which he called Yoknapatawpha County. The characters and events of this microcosm became familiar in a brilliant burst of creative energy beginning in 1929 with the publication of *Sartoris* and *The Sound and the Fury,* and continuing with *As I Lay Dying* (1930), *Light in August* (1932), *Absalom, Absalom!* (1936), *The Unvanquished* (1938), *The Hamlet* (1940) and *Go Down, Moses* (1942). In 1950, Faulkner was awarded the Nobel Prize for Literature.

The Reivers,[1] published shortly before his death, was one of the most successful of Faulkner's recent novels. The story of the adventures of a boy and two men who run off with one of Yoknapatawpha County's first automobiles, and are later involved with a recalcitrant racehorse, *The Reivers* is a funny but moving return to the earlier mood of *The Hamlet* and such memorable stories as *Was, Shingles for the Lord,* and *Barn Burning.*

The Novel.—The year produced an unusually large number of new works by established novelists, but on balance it was disappointing. Katherine Anne Porter's long-awaited *Ship of Fools* was finally published and spent much of the year at the top of the best-seller lists. Written in Miss Porter's polished and flawless prose, *Ship of Fools* is a perceptive allegory dealing with a group of travelers and their transatlantic voyage in 1932. Most of the reviews were complimentary, but some contained a suggestion of disappointment because Miss Porter was unable or unwilling to evoke sympathy for her uniformly unpleasant characters.

Among the successful novels published during the year were three by craftsmen of limited but steadily growing reputation. Edward Loomis, in *The Mothers,* told another of his unsentimental, tragicomic stories of ordinary people unwilling to accept the knowledge of their own mortality. Like his earlier books, *The Mothers* is written in a low key, but it is a finished work of art. J. F. Powers, known best for his short stories, portrayed with wit and compassion the struggles of a very human priest in *Morte D'Urban.* James Yaffe, in *Mister Margolies,* dealt sympathetically with a man doomed to be second-rate who is brought to face the bitter knowledge of his own inadequacies.

Among the younger writers of wide reputation, George P. Elliott showed a continuing development in *David Knudsen.* A moral drifter whose struggles to be honest with himself never quite succeed, Elliott's hero is portrayed with great skill and subtlety. Philip Roth, a former National Book Award winner, was less successful in his first novel, *Letting Go.* The title, unfortunately, aptly reflects the book's lack of control. Roth's fine satirical sense makes *Letting Go* intermittently amusing, but the author spins out at interminable length the slender story of three lifelike but very dull young people. In the end, Roth's impressive talent is unable to overcome the apathy the reader feels toward these characters and the problems they create for themselves.

A welcome note of humor enlivened several of the year's offerings. Vladimir Nabokov's *Pale Fire* was an extended lampoon of literary scholarship and other ornaments of our culture. Of broader appeal was Wright Morris' *What a Way to Go,* a wild and irreverent excursion into the world of love, lighter in tone than most of Morris' previous work but given distinction by his perceptiveness and his sense of the ridiculous. A quieter humor helped gain critical approval for *A Long and Happy Life,* by Reynolds Price, the most widely acclaimed first novel of the year. In subdued but sensitive prose, Price describes the coming-of-age of a charming girl who in getting her man must change more than she had realized.

Two novels about World War II deserve mention. Joseph Heller's *Catch-22* (1961) is a broad and hilarious satire given special force because the action is set against a realistic depiction of war. One of the most unusual books of recent years, *Catch-22* catapulted Heller into the front rank of American satirists. James Jones' new novel, *The Thin Red Line,* also incorporated humor into its story of the final days of the battle for Guadalcanal. Like Jones' earlier work, this novel received harsh critical treatment because of its emphasis on brutality and the horrors of war.

Topical political novels continued to throng the best-seller lists. In *A Shade of Difference,* Allen Drury changed his setting from the Capitol (*Advise and Consent,* 1959) to the United Nations, without changing his unfortunate propensity for making dull fiction out of exciting events. Fletcher Knebel and Charles Bailey imagined a military conspiracy to overthrow the United States government in *Seven Days in May,* and Eugene Burdick and Harvey Wheeler in *Fail-Safe* provided a graphic warning of accidental nuclear war.

The most controversial novel of the year was James Baldwin's *Another Country.* Many were repelled by its relentless emphasis on sex and its use of obscene language. At the same time, Baldwin's undeniable ability to make the reader share his anguish and his anger stamps him as a writer of rare power in an age accustomed in its fiction to the quiet Jamesian tone. Whatever his technical shortcomings, Baldwin at his best is probably the most powerful of the young American writers.

Short Fiction.—The most interesting books of short stories were produced by young writers. John Updike followed the success of *Rabbit, Run* (1960) with *Pigeon Feathers, and Other Stories.* Some of these are merely sketches, but in others Updike demonstrates a maturity of insight to match his considerable talent. As Arthur Mizener observed, "*Pigeon Feathers* is not just a book of very brilliant short stories; it is a demonstration of how the most gifted writer of his generation is

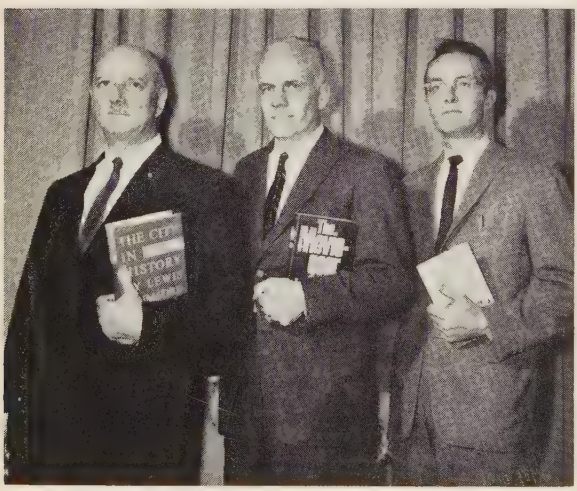
[1] Unless otherwise noted, all books mentioned in this article were published in 1962.

coming to maturity . . ." (*The New York Times Book Review*, March 18, 1962).

The development of another fine talent was demonstrated in Richard Yates' *Eleven Kinds of Loneliness*. Less fluent than Updike, Yates shows in this volume that he is no less perceptive and no less skilled at delineating the crucial moments in his characters' lives. In such a story as *Builders* he displays both compassion and insight.

Other volumes of interest included several by familiar figures. *The Pat Hobby Stories* do not show Scott Fitzgerald at his best, but they are amusingly and skillfully done, and they provide an interesting if melancholy sidelight on Fitzgerald's unhappy last years in Hollywood. Delmore Schwartz published *Successful Love and Other Stories* (1961); Mark Van Doren assembled the work of several decades in *The Collected Stories of Mark Van Doren;* and the critic Leslie Fiedler produced *Pull Down Vanity, and Other Stories*.

Poetry.—Robert Frost has indicated that *In the Clearing* is to be his final book of poems. If this proves to be the case, the book is an appropriate final statement by our most widely acclaimed living poet. The title reflects the mood of the book, in which Frost examines from the perspective of



NATIONAL BOOK COMMITTEE

Winners of the 1962 National Book Awards were: (from left) Lewis Mumford, *The City in History*, nonfiction; Walker Percy, *The Moviegoer*, fiction; and Alan Dugan, *Poems*, poetry. The awards were announced in New York on March 13.

age the paradoxes which have always concerned him. If these poems lack the lyric intensity which distinguishes Frost's most successful work, they are marked by a compassionate and mellow wisdom.

Waterlily Fire was a collection of the vigorous poetry of Muriel Rukeyser. Like many other modern poets, Miss Rukeyser is stylistically indebted to Whitman, but, as this volume shows, she has always succeeded in conveying her own deep concern for humanity. Among the work of other established poets, there were John Ciardi's entertaining and irreverent *In the Stoneworks* (1961), Horace Gregory's *Medusa in Gramercy Park* (1961), and a recreation by H. D. (Hilda Doolittle) of the myth of Helen and Achilles, *Helen in Egypt* (1961).

Younger poets also made important contributions. James Dickey's poems, in *Drowning with Others*, at their best have a moving intensity; at times, however, the poet strains to invent metaphors or becomes excessively abstract. Denise Levertov's handling of loose modern verse techniques was consistently skillful in *The Jacob's Ladder* (1961), confirming her as one of the most talented of the younger poets. Irving Feldman devoted himself to the theme of the Wandering Jew in *Works and Days, and Other Poems* (1961). Lawrence Ferlinghetti moved away from his earlier lyricism to a hard, concise style in *Starting from San Francisco* (1961), and Brother Antoninus (William Everson) produced more of his gnarled, Hopkins-like religious verse in *The Hazards of Holiness*.

Literary History and Criticism.—An unusual number of important critical works made their appearance in 1962. Outstanding among them were the second and third volumes of Leon Edel's exhaustive biography, *Henry James*, which shed new light on the writer's life between 1870 and 1895. This definitive study will alter many traditional ideas about James; its only drawback is Edel's sometimes excessive reverence for the work of the master.

The literature of the American Civil War received its most illuminating study in another work of major importance, Edmund Wilson's *Patriotic Gore*. Some reviewers quarreled with Wilson's introductory comments on the causes of war, but few had anything except praise for this distinguished veteran critic's analysis of the work of such writers as George Washington Cable, John William DeForest, and Harriet Beecher Stowe.

Mark Twain continued to be the subject of critical attention. Charles Neider collected and annotated 74 essays, sketches, articles, tales, and other material by the author in *Life as I Find It* (1961); Lewis Leary edited an interesting collection of essays by various critics, *A Casebook on Mark Twain's Wound;* and Henry Nash Smith produced a distinguished critical biography, *Mark Twain*. Edgar Allan Poe was the subject of an important work, *Poe: a Biography*, by William R. Bittner.

It was not surprising that, among 20th century writers, Hemingway, Fitzgerald, and Eugene O'Neill received special notice. Lillian Ross produced a *Portrait of Hemingway* (1961), while the same author's youth was described by two members of his family, Leicester Hemingway in *My Brother, Ernest Hemingway*, and Marcelline Hemingway Sanford in *At the Hemingways*. Andrew Turnbull's *Scott Fitzgerald* was a sympathetic narrative of a tragic life, biographical rather than critical in emphasis. Arthur and Barbara Gelb, in *O'Neill*, produced another of the currently fashionable infinitely detailed portrayals of tormented writers. This is a painful study of an unhappy man, but it has the virtue of showing sympathetically how O'Neill managed to come to terms with life through his plays.

Different forces in recent literature were studied in Daniel Aaron's *Writers on the Left: Episodes in American Literary Communism* (1961), a penetrating analysis of the interaction of literature and politics, and in Richard Foster's *The New Romantics*. The latter is a sometimes confusing discussion of the New Criticism, analyzing in detail the work of I. A. Richards, Eliseo Vivas, R. P. Blackmur, and Allen Tate in order to demonstrate the affinities of these men for the romanticism they have attempted to repudiate.

Several distinguished collections of essays were published, most notably Alfred Kazin's illuminating *Contemporaries*. Stanley Edgar Hyman was responsible for *The Tangled Bank: Darwin, Marx, Frazer and Freud as Imaginative Writers;* W. M. Frohock collected essays on Fitzgerald, Cozzens, Kerouac, Dickinson, Millay, and Pound in *Strangers to This Ground* (1961); and Kenneth Rexroth

produced *Assays*. A posthumous collection of essays by Isaac Rosenfeld was entitled *An Age of Enormity*.

History and Biography.—As the centennial moved into its second year, the Civil War continued to hold the center of the stage. Charles M. Segal accomplished the considerable feat of contributing something new to Lincolniana with his edition of *Conversations with Lincoln* (1961). Two new books helped refocus attention on the role of slavery in the prelude to the war: D. W. Dumond's *Antislavery: the Crusade for Freedom in America* (1961), and Basil Davidson's study, *Black Mother: the Years of the African Slave Trade* (1961). Harold M. Hyman brought to completion a biography begun by the late Benjamin P. Thomas, *Stanton: The Life and Times of Lincoln's Secretary of War*.

Two figures from the early years of the nation's history received considerable attention. Broadus Mitchell completed his two-volume study of the first secretary of the treasury with *Alexander Hamilton: The National Adventure, 1788–1804*, while H. C. Syrett and J. E. Cooke edited the third and fourth volumes of *The Papers of Alexander Hamilton*, covering the years 1782–88. William T. Hutchinson and W. M. E. Rachal edited the first two volumes of *The Papers of James Madison*.

The achievements and legacies of the 19th century "empire builders" were sympathetically studied in several books, including Richard O'Connor's *Gould's Millions*, John Tebbel's *The Inheritors*, and E. P. Hoyt's *The Vanderbilts and Their Fortunes*. The international involvements of the United States at the end of the last century were the subject of Ernest R. May's *Imperial Democracy: the Emergence of America as a World Power* (1961).

Our century's world wars accounted for a number of books. Among the most notable were Hanson W. Baldwin's concise and balanced account, *World War I: an Outline History*, and Roberta Wohlstetter's careful and reasonable study of a controversial event, *Pearl Harbor: Warning and Decision*. The dawning of the atomic age was the subject of *The New World, 1939/1946* (first volume of *The History of the U.S. Atomic Energy Commission*), by R. G. Hewlett and O. E. Anderson, Jr., and of Lt. Gen. Leslie R. Groves' *Now It Can Be Told: the Story of the Manhattan Project*.

Other Nonfiction.—One of the less spectacular but nonetheless dangerous threats to life on earth is the indiscriminate use of pesticides, according to Rachel Carson in *Silent Spring*. A well-documented account of how the balance of nature is being upset, this provocative book made an impassioned plea for curbing the use of harmful chemicals.

(See also Book Publishing and Sales; Children's Literature; Theater.)

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AMERICAN SAMOA

Lying between 13° and 15° south latitude and between 167° and 171° west longitude, American Samoa is an unincorporated insular possession of the United States. Its seven islands occupy an area of 76 square miles and have a population of 20,051 (1960 census). The largest and most populous island is Tutuila, on which is located the capital, Pago Pago, with its fine harbor. The other islands are Aunu'u; Ta'u, Olosega, and Ofu of the Manu'a group; Swains; and uninhabited Rose. Villages with over a thousand residents include Pago Pago, Fagatogo, Leone, and Nu'uuli. The people, who are Polynesian and part-Polynesian, are United States nationals. Their customs, when not inconsistent with United States or Samoan laws, are respected.

Government.—The constitution of 1960, effective on October 17 of that year, defines the organization of the government, which consists of a bicameral legislature, an executive, and an independent judiciary. The Code of American Samoa contains all locally promulgated laws.

The Legislature (or Fono) of American Samoa comprises a Senate of 15 members, elected in accordance with Samoan custom from among the chiefs, and a House of Representatives of a maximum of 24 members (17 voting members in 1962), publicly elected by secret ballot.

A governor and a secretary of American Samoa head the executive branch. Both are appointed by the United States secretary of the interior. The executive branch also includes departments of Legal Affairs and Public Safety (attorney general), Agriculture, Administrative Services (treasurer), Public Works, Education, Medical Services, Port Administration, and Local Government (secretary of Samoan affairs).

The judicial branch includes a High Court, with trial, probate, and appellate divisions (presided over by either the chief justice or the associate justice of American Samoa), and five district courts.

Budget and Finance.—American Samoa was granted $5,105,400 in federal funds for use in fiscal year 1962 ($2,648,125 in 1961), and in addition $4,943,400 was allocated as a deficiency budget, making a total of $9,429,950. Construction funds for 1962 rose to $6,917,780 ($1,306,800 for 1961).

Education.—School attendance is compulsory for all children of ages 7 to 15. About 99% of the total population of 10 years of age and over is literate. The villages provide the elementary school buildings (grades 1–6) and the living quarters for teachers, and the territorial government furnishes school buildings, teachers, equipment, and supplies for secondary schools.

In June 1962 there were 44 village elementary schools, seven junior high schools, a demonstration or model school, an elementary dependents' school, an elementary hospital school, a senior high school, a vocational high school, a teacher-training college, and a nursing school, as well as nine private parochial schools. Total enrollment was 7,023. Instruction is in English and in Samoan in the elementary schools, and only English in the secondary schools.

Public Health.—The government maintains a central hospital of 197 beds and a 22-bed leprosarium besides district dispensaries and a number of village public health nurses. American-trained physicians and nurses work with Samoan medical practitioners and nurses. Over 50,000 outpatient visits are made to the hospital clinics annually.

Transportation and Communications.—Pan American World Airways maintains weekly flights to and from American Samoa on its route connecting Honolulu with Nandi, Fiji, and Auckland, New Zealand. TEAL offers weekly service from New Zealand and Fiji to Samoa and Tahiti and return; South Pacific Airlines operates a biweekly service between Honolulu and American Samoa; and Polynesian Airlines, a Western Samoan company, operates daily flights between American and Western Samoa. Matson Lines and General Steamship Lines operate passenger liners and freighters from the United States to New Zealand and Australia via American Samoa. Interisland vessels maintain schedules with Western Samoa. The government operates the telephone system and a small radio station (WVUV). A newssheet in English is mimeographed five times a week, and the Samoan language weekly *Failauga Samoa* and the quarterly *O Le Fa'atonu*, in English and Samoan, are printed locally.

Production and Trade.—Essentially agrarian in economy, American Samoa has approximately 1,500 plantations ranging from 3 to 15 acres. Of the total 47,000 acres in the territory, 32,000 are capable of being cultivated for cash and subsistence crops, 8,000 for forest crops, and 7,000 acres are uncultivable. A total of 10,097 acres are cultivated or partially cultivated.

Subsistence crops consist of bananas, breadfruit, and taro. Other crops include papayas, pineapples, sweet potatoes, tapioca, coffee, cacao, and yams. Swine, cattle, and poultry are also raised. Green foods and processed foods are imported, the latter from the United States and New Zealand. Copra and cacao are the principal agricultural exports. A modern tuna-packing cannery, employing approximately 340 Samoans, is operated by a California concern.

Foreign trade for the 1962 fiscal year comprised imports valued at $4,856,055 and exports worth $7,773,834. Imports were mostly from the United States, Australia, and New Zealand. An increase in tourist travel has accelerated local and export sales.

Events, 1962.—Early in the fiscal year 1962 the governor outlined a 3-year rehabilitation program to strengthen and reorganize every phase of public service and encourage industry and commerce. The first phase of the program was accepted by the Congress, and a total of $9.5 million of federal

funds and $1 million in local funds was appropriated and made available by October 1961. The first year's program was concentrated on completing the following public projects necessary for the Fifth South Pacific Conference, held in Pago Pago in July 1962: a 9,000-foot jet runway; an 800-seat civic auditorium; a new power plant with two 1,000-kilowatt diesel electric generating units; 27 government housing units; 3 new high school buildings; 8½ miles of highway from the airport to downtown Pago Pago; complete renovation of many public buildings; and a general clean-up campaign.

The governor proposed an educational television system as a medium for elementary and adult education. With the completion of the new high school buildings and employment of 40 additional educational personnel, plans were made to enroll all qualified junior high school graduates in high school for the first time in the fall of 1962. Various medical and agricultural development programs also were instituted. In industrial development, a contract was signed for the development of a coconut-processing plant, creating jobs for about 100 persons, and negotiations were virtually completed for a second fish-canning company and an all-Samoan development corporation.

H. Rex Lee,
Governor of American Samoa.

ANDORRA

Located in western Europe between France and Spain, Andorra is an autonomous republic under the joint suzerainty of the president of France and the bishop of Seo de Urgel, Spain. It has an area of 175 square miles, and a population (1962 est.) of 10,000. Andorra la Vella (est. pop., 1,300) is the capital. The country is governed by a 24-member General Council of the Valleys; its president is Julian Reig Ribo. France represents Andorra in foreign affairs. Sheep raising and agriculture are the chief occupations; tourism (700,000 visitors in 1960) and smuggling provide additional sources of income. Andorrans speak Catalan and are of the Roman Catholic faith. French and Spanish currencies are in use.

ANGLING. See Hunting and Fishing; Sports, Games and Shows—*Fly and Bait Casting.*
ANGOLA. See Portuguese Territories.
ANIMALS. See the Index entries *Livestock; Veterinary Science; Wildlife Conservation; Zoology.*

ANTARCTICA

The 50th anniversary of man's first attainment of the South Pole was celebrated during Antarctica's 1961–62 austral summer season. On Oct. 30, 1961, in an official anniversary ceremony at the South Pole, a marble plaque was unveiled honoring the explorers Roald Amundsen and Robert Scott.[1] On it was engraved the names of the 10 men in their respective parties, followed by the inscription: "A Tribute from Great Britain and Norway—Presented to the U.S. Amundsen-Scott South Pole Station."

United States Research.—For the United States, the 1961–62 season was the most ambitious since the end of the International Geophysical Year (IGY) in 1958. All logistic and geographical programs were carried out by the Navy under Rear Adm. David M. Tyree, head of the U.S. Naval Support Forces, Antarctica. Investigations were performed by civilian scientists for the National Science Foundation (q.v.). In addition to annual ship and air logistic support for the main base at McMurdo Sound and for Hallett Station (shared with New Zealand), the Navy's VX-6 aviation unit resupplied the scientific stations at the South Pole, at Byrd, and a few smaller field stations. The Ellsworth Station off the Weddell Sea continued to function on a loan basis from the United States to the Argentine Navy, as did Wilkes Station, on loan to Australia.

Research groups from universities, private institutions, and branches of the government, working in a variety of basic research projects, were based during the austral summer at or near permanent stations from which their field forays originated. Aerial support provided the necessary maintenance for 42 field projects in such areas as glaciology, seismology, biology, geology, magnetism, and ecology.

A permanent research station was set up on Eights Coast at the base of the Palmer Peninsula. A seven-man team from the University of Wisconsin, equipped with three Sno-Cats (tracked vehicles), surveyed the area from the Eights Station and obtained many ground-control points for the first time since it was discovered and photographed on flights by the Ronne expedition in 1947. New seismic sounding data, added to that obtained in adjacent areas, seem to indicate that the huge trench which extends from the Ross Sea has a connection with the Filchner Ice Shelf and the Weddell Sea. The new discoveries suggest that the 2,000-mile-long Palmer Peninsula is the northern part of an enormous island, that the peninsula's base is far narrower than heretofore believed, and that as a result the Filchner Ice Shelf may rival the Ross Ice Shelf as the world's largest floating ice apron.

A U.S. Geological Survey team of five men flown to the eastern Horlick Mountains from Byrd Station found a 70-pound meteorite about 330 miles from the South Pole, the second ever found on the Antarctic continent. Antarctic meteorites are of special interest to scientists because they are a less common type, containing large proportions of nickel, iron, and silicate.

Byrd Station required by far the greatest aerial logistic effort because of the construction of the new station. Some 258 flights carrying 1,040 passengers and 3,000 tons of cargo were made between McMurdo and New Byrd. The old Byrd Station was evacuated on Feb. 13, 1962. The 36-man wintering group then moved into the nearby New Byrd Station, constructed in huge tunnels beneath the surface.

A comprehensive program in aerial photography was conducted in the Queen Victoria and Queen Maud Mountains, and field survey parties obtained indispensable ground-control points for making maps. Forty-four flights were made to the South Pole with 554 passengers and 540 tons of cargo. All flights were made with C-130 turbojet ski-equipped planes.

For the first time in history the atomic age reached the Antarctic. On March 3, 1962, the installation of an atomic reactor at the McMurdo Sound Naval Operating base was completed. After a period of tests, the nuclear power plant began delivering electricity to the base on July 10. With an output of 1,500 kw., it provides an assured source of energy that requires refueling only once every two or three years.

A total of 306 Americans spent the winter at

[1] On Dec. 14, 1911, the Norwegian Roald Amundsen's party of five men and 52 sled dogs reached the pole after sledging 840 statute miles in 55 days. On Jan. 18, 1912, a British team of five men led by Robert Scott arrived at the pole after traveling 940 miles in 76 days. Scott and his men perished on the return journey.

the four United States-operated stations, including four meteorologists each at Ellsworth and Wilkes stations and one biologist at the USSR's Mirny Station.

Research by Other Countries.—Great Britain has decided to change the name of its Falkland Islands Dependencies in the Antarctic, most of which is also claimed by either Chile or Argentina. Starting in 1962, the dependencies became officially known as British Antarctica. Great Britain, Chile, and Argentina continue to occupy their many bases on the Palmer Peninsula and adjacent islands.

From the British Halley Bay Station on the east coast of Queen Maud Land a small party surveyed a trail south to the Tottan Mountains. These mountains, which form the eastern boundary of the Filchner Ice Shelf, were first discovered by flights of an Argentine Army officer from General Belgrano Base in 1955.

Two Argentine naval aircraft landed at the South Pole on Jan. 6, 1962, after an 8½-hour flight from Ellsworth Station. The geographical coverage first made of this area by Capt. Finn Ronne in 1947 and again in 1957 was extended south about 200 miles to the South Pole. After a few hours stop for rest and refueling, the planes returned to Ellsworth where 30 men, including 3 American meteorologists and 1 physicist, continued the scientific recording program.

The Japanese expedition-ship *Soya Maru* returned to Tokyo in April after evacuating the party of 56 men from Showa base in Lützow-Holm Bay. This base had been occupied since its inception in 1956 for the IGY program. The wintering team, the largest ever sent by Japan, made an inland journey and discovered new mountains which were named Yamato Range. The Japanese plan to reopen their station in the 1963–64 season.

The South Africans were forced to evacuate Maudheim (leased from Norway) because of its deterioration, and built a new station a few miles away.

Besides the joint operation of Cape Hallett Station with the United States, New Zealand also conducts scientific work at Scott Station, three miles from the McMurdo Sound base.

The French continue to occupy their Dumont d'Urville Station in Adélie Land, using the Danish ship *Magga Dan* in the resupply mission.

Vostok, one of the permanent USSR stations, was converted to a seasonal base in 1962, and the seasonal station in Enderby Land was abandoned. In 1960 the temperature at inland Vostok Station registered −126.9°F., the lowest ever recorded on earth. In March 1962 it was reported that the USSR had established a new base, Molodezhnaya (Youth Station), on the coast of Enderby Land, and in October the Russians announced that both Vostok and Molodezhnaya would become permanent, year-round stations beginning in the 1962–63 season. At the two other permanently occupied USSR stations—Mirny (where there is an American observer) and Lazarev (Novolazarevskaya) on Princess Astrid Coast—routine scientific work is being conducted.

While resupplying the Mawson and Davis Stations of the Australian Antarctic Research Expedition, the supply ship *Nella Dan* was trapped in the ice 17 miles off the coast of Enderby Land for nine days before being freed.

Of the 12 Antarctic Treaty nations, Norway, Japan, and Belgium were without research stations on the continent during the 1962 austral winter season.

FINN RONNE, *Captain, U.S. Naval Reserve; Antarctic Explorer; and* EDITH RONNE, *Antarctic Specialist.*

ANTHROPOLOGY

In 1962 there were demands for anthropologists to do a greater variety of jobs than ever before, especially in the areas of government and international relations. The announcement in January of plans to send Peace Corpsmen to a dozen more nations in Africa, Latin America, and the Middle East increased the need for anthropologists to conduct training programs, to consult on Peace Corps (q.v.) aims, and to accompany volunteers into the field. The Agency for International Development and the Pan American Union also sought the help of anthropologists.

At the national meetings of the American Anthropological Association, held in Chicago in November 1962, a session was devoted to consideration of the most efficient way in which to engage anthropologists in the work of the United Nations Educational, Scientific and Cultural Organization (UNESCO). Among prospective projects were the study of bilingualism and of the possibility of a world language; the comparative study of law; and a crash program of anthropological research in West New Guinea (q.v.). Most of that island's many people still have had no direct contact with the outside world, yet they are about to undergo rapid culture change as a result of their new political status. Within a single generation isolated village groups using stone tools have become participants in the world economy. New Guinea thus provides an excellent laboratory to test social science theories related to the study of newly developing nations.

As a further manifestation of the concern of anthropologists with international problems, the Social Science Research Council and the American Council of Learned Societies appointed a committee on contemporary China. The objective is to encourage research on the culture and society of China by cultural anthropologists; study also would include Chinese communities overseas and in Taiwan. Cornell University received a grant of $3,250,000 from the Ford Foundation to support its research on China, most of which is conducted by anthropologists.

Conflicts Arising from Urbanization.—The growing world problem of urbanization, resulting from the rapid increase in city populations, led to a proposal by anthropologists that UNESCO sponsor the study of the city of Chicago as typical of the highly industrialized areas which experience problems resulting from the influx of rural peoples of differing ethnic backgrounds. There the problem of assimilating Southern Negroes, Southern whites, Spanish-speaking people, European immigrants, and American Indians has led to many conflicts that need to be examined scientifically. The differences in values, behavior, and cultural expectations that lead to such conflicts would be studied both to help newly arrived city dwellers to adjust to urban culture, and to better understand the cross-cultural sources of misunderstanding and its relation to racial and religious prejudice in the United States and other countries.

Statement on Negroes.—Also related to the problem of race, attention in the nation's press was accorded an announcement by the American Anthropological Association repudiating statements appearing in the United States that Negroes are inferior to whites biologically and in innate ability. It reaffirmed "the fact that there is no scientifically established evidence to justify the exclusion of any race from the rights guaranteed by the Constitution of the United States. . . . All races possess the abilities needed to participate fully in the democratic way of life, and in modern technological civilization."

A Study of Poverty.—National attention also was directed to a book by Oscar Lewis, *The Chil-*

Antarctica's first nuclear-powered reactor, installed at McMurdo Sound by the U.S. Navy, began operating on July 10.

MARTIN MARIETTA CORP

UPI

English anthropologist Louis S. B. Leakey, shown with his wife, displays part of the palate of a 14 million-year-old creature, between man and ape, which he found in Kenya.

dren of Sanchez. This anthropological study of the members of a poverty-stricken Mexican family was acclaimed as one of the best books of the year. The moving account of the effects of grinding poverty on simple, decent people, and the way in which it gradually destroys them, will be the first serious anthropological work ever made into a popular motion picture film.

Discovery of Mastodon Remains.—Mexico was the scene of one of the important archaeological finds of the year. Cynthia Irwin of Harvard University uncovered the remains of a mastodon along with human artifacts approximately 30,000 years old. Scientists have known that early man hunted the mammoth and other large game, but this discovery provided the first evidence that the mastodon was also the prey of early Indians.

Anthropologists Honored.—The Annual Viking Fund Medal and Award of the Wenner-Gren Foundation was presented in 1962 to four anthropologists, who will divide the $10,000 prize. They are Professors Edward E. Evans-Pritchard of England, Robert von Heine-Geldern of Austria, Dr. Louis S. B. Leakey of Kenya, and Professor Sol Tax of the United States.

Meetings.—In addition to the annual meetings of the American Anthropological Association, other important scholarly meetings in 1962 involving anthropologists included the 35th International Congress of Americanists, held in Mexico City in August; and the 1st International Congress of Africanists, held at the University of Ghana in December.

(See also ARCHAEOLOGY and the Index entry, *Anthropology.*)

PETER B. HAMMOND,
Associate Professor of Anthropology, Indiana University.

ANTIBIOTICS. See Index entry.
ANTIGUA. See WEST INDIES FEDERATION.
ANTILLES. See NETHERLANDS ANTILLES.
ANTIMONY. See MINERAL PRODUCTION.
APPLES. See FRUITS.
APRICOTS. See FRUITS.
ARAB LEAGUE. See Index entry.

ARABIA

A peninsula in southwestern Asia with an area of 1,180,280 square miles, Arabia is bounded on the north by Iraq and Jordan, on the east by the Persian Gulf and the Gulf of Oman, on the south by the Arabian Sea and the Gulf of Aden, and on the west by the Red Sea and the Gulf of 'Aqaba. Arabia includes three independent states—Saudi Arabia, Yemen, and Kuwait—and several other states and territories which are under some form of British domination, influence, or protection. The latter are the sheikhdoms of Bahrain and Qatar, the Trucial States or Trucial Oman (7 sheikhdoms), the Sultanate of Muscat and Oman, and Aden Colony and Aden Protectorate (including the Federation of South Arabia). In addition, there are neutral zones between Saudi Arabia and Iraq, and between Kuwait and Saudi Arabia. The total population of the peninsula is estimated at 13 million. (For components of Arabia not discussed in this article, see ADEN, KUWAIT, MUSCAT AND OMAN, SAUDI ARABIA, and YEMEN.)

Petroleum Resources.—In 1961, Arabia supplied about 20% of the crude oil produced in the free world. The estimated proved oil reserves in Arabia as of Jan. 1, 1962, were 126.5 billion barrels, and represented 40.8% of the world's reserves. The oil reserves (in millions of barrels, with percentage of world total in parentheses) were distributed as follows: Bahrain, 245 (0.1); Kuwait, 62,000 (20.0); Neutral Zone, 6,000 (1.9); Qatar, 2,750 (0.9); Saudi Arabia, 52,000 (16.8); and Trucial Coast, 3,500 (1.1). Total petroleum production in 1961 amounted to more than 3,300,000 barrels daily, and royalties in the same year approximated $1 billion.

The Arabian American Oil Company (ARAMCO) holds concessions to explore and exploit some 340,000 square miles in southern and eastern Saudi Arabia, as well as offshore areas in the Persian Gulf. ARAMCO is owned by Standard Oil Company of New Jersey, Standard Oil Company of California, and Texaco, Inc. (30% each), and by Socony Mobil Oil Company (10%). ARAMCO owns the Trans-Arabian Pipe Line Company (TAPLINE), which connects the main oilfields near Dhahran with the port of Sidon in Lebanon. A branch of TAPLINE supplies about 6,000 barrels daily to the El Zerqa' refinery in Jordan, a subsidiary of Ente Nazionale Idrocarburi (ENI) of Italy.

On the west coast of Saudi Arabia near Yemen, Società Anonima Navigazione Eritrea (SANE), wholly owned by the Italian government, in 1958 obtained a concession covering 13,000 square miles.

The Bahrain Petroleum Company, owned equally by Standard Oil Company of California and Texaco, holds the concession for all of Bahrain. The Gulf Kuwait Company, owned by the Gulf Oil Corporation, and BP (Kuwait) Ltd., owned by the British Petroleum Company, have the concession in Kuwait, except for offshore exploitation rights which are held by Royal Dutch Shell.

In the Neutral Zone between Kuwait and Saudi Arabia, equal concessions are held by the American Independent Oil Company (Aminoil) and the Getty Oil Company. Deep offshore rights are held by the Arabian Oil Company, a subsidiary of the

Japan Petroleum Trading Company, 10% of which is owned by Saudi Arabia.

Concessions in Qatar are held by the Qatar Petroleum Company, a subsidiary of the Iraq Petroleum Company (IPC), and offshore rights are held by the Shell Company of Qatar. Petroleum Development (Trucial Coast) Ltd., a subsidiary of IPC, owns the rights in Trucial Oman, except for offshore rights which are held by the British Petroleum Company (66.7%) and Compagnie Française des Pétroles (33.3%).

The concession for Muscat and Oman is held by Petroleum Development (Oman) Ltd., owned by Royal Dutch Shell (82.6%) and Participations and Explorations Corporation (17.4%), except for the concession in Dhofar, which is held by Dhofar-Cities Service Petroleum Corporation and Richfield Oil Corporation. Since 1960 the Pan-American Hadramaut Oil Company, a subsidiary of Standard Oil Company of Indiana, has held oil rights in Aden.

Bahrain.—This sheikhdom, under the rule of Sheikh Isa ibn Salman al-Khalifa (acceded 1961), consists of several islands in the Persian Gulf which are claimed by Iran. The total population (1961 est.) is 182,000. Manama, the capital (1959 pop., 61,837), is located on Bahrain (213 square miles), the largest island in the archipelago, after which the state is named.

By a treaty of 1820, Great Britain protects the sheikhdom and conducts its foreign affairs. The British political resident for the Persian Gulf resides in Manama, and British military headquarters are on the island of Muharraq, which has an international airport. In 1962 the British flag officer for the Middle East moved from Bahrain to Aden. There is little democratic government in Bahrain; three Bahrainis who agitated for the overthrow of the present sheikh's father in 1956 and who were imprisoned in St. Helena, were freed in 1961, and in 1962 each was awarded £15,000 compensation.

About 70% of the total income is derived from oil revenues, which average about $16 million annually. An underwater pipeline carries oil from Saudi Arabia to a refinery on the island of Sitra. The new port of Mina Salman was opened in 1962. It was constructed at an estimated cost of £4 million, and is considered to be one of the best equipped ports in the Persian Gulf region. It has an entrance channel which is 3.5 miles long and 27 feet deep.

Qatar.—This sheikhdom covers a barren peninsula in the Persian Gulf, and has an area of 8,000 square miles and an estimated mid-1961 population of 55,000. The capital, Doha (pop., 30,000), is the residence of the British political agent, who advises the sheikh (Ahmed ibn Ali al-Thani) under a treaty of 1916 guaranteeing perpetual peace with Great Britain.

In 1962, proved oil reserves totaled 2.75 billion barrels. Oil revenue in 1960 amounted to $65 million, three fourths of which went to the sheikh and his relatives. In 1961, Shell Company of Qatar brought in a new offshore oilfield at Idd al-Sharqi, about 52 miles east of Qatar. The older field is at Dukhan, and there is a small refinery at Umm Said, the chief port.

In 1962, Great Britain announced that the island of Halul in the Persian Gulf belonged to Qatar instead of to Abu Dhabi of the Trucial Oman. Qatar has 200 miles of paved roads and about 8,000 motor vehicles. The principal airport, at Doha, is served by the Gulf Aviation Company and by Kuwait Airways.

Trucial Oman or Trucial States.—These seven sheikhdoms cover an area of about 6,000 square miles south and east of Qatar along the Persian Gulf to Muscat and Oman. The largest is Abu Dhabi; the others are Dubai, Sharjah, 'Ajman, Umm al-Qaiwain, Ras al-Khaimah, and Fujairah. The aggregate population (mid-1962) is estimated at 110,000. In 1820, Great Britain agreed to protect the sheikhs, who in return agreed not to war against each other, raid shipping, permit slavery, or make any treaties with other powers—hence the name Trucial Oman. The British political agent resides at Dubai, the principal port.

Oil strikes were made in Abu Dhabi in 1960 by Petroleum Development (Trucial Coast) Ltd. at Murban and Umm Shaif, and deposits were estimated at 3.5 billion barrels. In 1962, oil tankers began loading oil at the island of Das, the terminal for the Umm Shaif offshore oilfields. About 30,000 barrels per day were produced from nine underwater wells. Until 1960 there were no oil revenues accruing to the sheikh of Abu Dhabi (Shakbut ibn Sultan ibn Said), but in 1962 they totaled over $20 million. The Eastern Bank and the Ottoman Bank have opened branches in Abu Dhabi, and in 1962 a new 25-room air-conditioned hotel was opened there.

SYDNEY N. FISHER,
Professor of History,
The Ohio State University.

ARCHAEOLOGY

Highlights in world archaeological research are summarized below in two sections: (1) Western Hemisphere; and (2) Eastern Hemisphere. For related information, see ANTHROPOLOGY and the Index entry, *Archaeology*.

WESTERN HEMISPHERE

The steadily expanding interest in archaeology in North America was well evident in 1962. Although many institutions dispatched parties to join in the salvage operations necessitated by the great Aswân High Dam project in Egypt, American field operations were not curtailed; and in some areas, as on the Plains, they were expanded.

United States and Canada.—Investigation of early man was carried out at two stratified open sites, one in Colorado and one in Wyoming, and at two cave sites in Idaho. In the Fraser Canyon, British Columbia, the earliest culture-bearing stratum has been dated at 7000 B.C., with overlying strata dated by the carbon-14 method at 6150 B.C. These have produced, in addition to chipped flint artifacts of early type, charred wild cherry pits; and nearby fossilized midden deposits, presumably as old, contain salmon bones.

Two new sites in New York State are reported to have produced fluted points and other characteristic paleo-Indian artifacts. Three other comparable sites are known in this general region—in Vermont, Pennsylvania, and Massachusetts. The last has been dated by radioactive carbon at about 7000 B.C., and the New York site may well be as old. Human bones found at a depth of 37 feet in water-laid deposits on Santa Rosa Island, California, were dated by carbon-14 at 8000 B.C. No artifacts were associated with these remains, which are believed to be an accidental burial at the edge of a former marsh.

Levels which may be referred to the Archaic period were present in the Colorado and Idaho sites mentioned above. Other sites yielding Archaic materials are reported from Lyon County, Kentucky, and from cave sites in Arkansas. A stratified rock shelter in Colbert County, Alabama, yielded a sequence beginning with shell-tempered Mississippian pottery in the upper levels. Lower levels carried the sequence through limestone-tempered and sand-tempered wares to the fiber-temper of the earliest ceramics of the area. Below this, and separated from it by a thin sterile zone, was an Archaic occupational level containing Dalton points and an assemblage of tools including uniface scrapers, gravers, and knives. Two samples of charcoal from this level have given dates of 7640±450 B.C. and 6920±400 B.C.

At Etowah Mounds, in Georgia, the excavation of Mound "C," begun in 1881 by Cyrus Thomas, was completed after 11 seasons of work by three institutions. Burials excavated from this mound total nearly 400. Noteworthy artifacts include a wooden plaque carved in a geometric pattern, a shell disc gorget with the design of a bird transfixed by an arrow, and a shell gorget which shows a human figure tied to a scaffold in the "Morning Star sacrifice" style. The major submound feature, a temple floor 111 feet long and 40 feet wide, was completely uncovered and an extensive submound trash pit was excavated.

Historic archaeology, which is rapidly expanding, continued its growth in 1962 and, in addition to the widespread field work, produced some excellent reports, among which may be mentioned those on the excavations of Fort Frederica, on St.

UNIVERSITY OF PENNSYLVANIA

Jade mask (r.) dated at 221 B.C., and pendant, 800 A.D., were taken from Mayan tombs in Tikal, Guatemala, in 1962.

Simons Island, Georgia, and on El Morro at San Juan, Puerto Rico. In 1962, Fort George, an early fur-trading post in South Dakota, was excavated, and a large collection of objects illustrating the life of the period was secured. In Florida, the early British "Negro" fort later reoccupied by Andrew Jackson as Fort Gadsden, on the lower Apalachicola River, was investigated to determine the fortification characteristics of the British fort (built about 1811). The ruin of the exploded powder magazine yielded a quantity of musket balls and a few other artifacts.

In Alabama, excavations were conducted to locate, if possible, the remains of the Prophets fortification at the Battle of Horseshoe Bend (1814), and to locate the extent and character of the Creek village of Tohopeka, in the Horseshoe Bend, and that of Nuyaka, across the river from the battlefield. It was found that erosion has been so extensive that no trace of the fortification could be found. Tohopeka, however, was located in agreement with contemporary maps, and the remains of Nuyaka were found approximately where contemporary sources described them. At the latter site a trash-filled pit yielded considerable quantities of cow, pig, and turtle bones, along with shells of, apparently, hen's eggs.

In California, the site of the original adobe structure built about 1839 by pioneer John Marsh on the north side of Mount Diablo in Contra Costa County was explored. Due to farming activities and road construction, few remains were found. In Georgia, the Highway Salvage Program resulted in excavation of sections of both Union and Confederate trenches on the Resaca battlefield. Excavation confirmed the historical records that during the Atlanta campaign Confederate entrenchments were substantial, while Union entrenchments were superficial.

Mexico and Meso-America.—Probably the most significant archaeological news of 1962 was announced at the 35th International Congress of Americanists in Mexico City, when the results of two years of intensive field work in the Tehuacán Valley (in the states of Puebla and Oaxaca) were reported. Here a primitive maize has been found associated with cultural materials in a dry rock shelter in Coxcatlán. It was announced that the stratum in which the cobs were found has been dated by the radiocarbon method at 3600±250 B.C. The area is now under organized attack on a multidisciplinary basis, with technical consultants from such fields as maize, cucurbits, local flora, palynology, textiles, and geology participating.

Large-scale surveys have been undertaken in this arid valley straddling the Puebla-Oaxaca border, and two more rock shelters have been extensively excavated. A tentative seven-phase cultural sequence has been worked out, covering a period of approximately 11,000 years. Of special importance is the great amount of plant remains recovered, preliminary analysis of which has thrown new light on Meso-American agricultural origins. The suggested plant appearance order for southern Puebla of squash, maize, gourd, pumpkin, bean, and amaranth, appears to differ from that worked out earlier for southern Tamaulipas, suggesting multiple origins for various basic Meso-American food plants.

Mammoth remains were excavated in 1962 in the Valley of Mexico, reportedly from the same geologic level as a nearby site which yields artifacts of an early type.

In northwestern Mexico, a notable find was the discovery of two reasonably well-preserved mummies in caves, one at Zape, the other in the El Rayo cave, Otinapa. A third mummy was later found by a treasure hunter in an unfired clay chest, near Apozol, Zacatecas.

In the Maya area, at Chichén Itzá, the project designed to complete the recovery of artifacts from the Sacred Cenote has been completed. Hundreds of objects were recovered, including bells of copper, tumbaga, and gold; pottery vessels; objects of wood, rubber, and fiber; human bones; copal incense; and jade. Just west of Chichén Itzá the Grotto of Balankanche has been completely investigated. Seventy large appliqued censors, over half of which bore Tlaloc faces, were the most striking of the more than 600 artifacts which had been ritually deposited in the underground chambers during the period of Toltec hegemony in northern Yucatan. This portion of the grotto, with most of the artifacts *in situ*, is to be made into an underground museum. A recent radiocarbon test dates the grotto assemblage at 931±90 B.C.

At the Altar de Sacrificios project in Guatemala, one of the most important developments has been the ceramic analysis of over 300,000 shards. This resulted in the setting up of a basic typology, based on the type-variety system, in which these shards were sequenced into eight local phases extending from the Late Preclassic to the Early Postclassic. In general these correlate closely with those of the classic Uaxactun sequence.

South America.—Individual field projects have continued in various South American countries, but only one large-scale coordinated project has been undertaken. Cornell University, in connection with its applied anthropological project of the study of change from the hacienda to independent land holdings, at Vicos near Huarás, Peru, began intensive archaeological investigations of the highland valley of Marcara. Deep habitation refuse in the Vicos plaza and dry rock shelter deposits in the vicinity have revealed occupation from the Early Formative Chavin period up to the modern Quechua Indians.

At Puerto Hormiga, near Cartagena, Colombia, the Instituto Colombiano de Antropologia discovered and excavated a ceramic-yielding site in which the majority of the pottery is tempered with fibers. Since this trait is early in the Western Hemisphere, a radiocarbon date of 2875±170 B.C., based on a shell sample, seems appropriate. Refuse at the site is principally shell, with some fish and turtle bone, and is arranged in a ring.

GEORGE METCALF,
Scientific Aide, Division of Archaeology, U.S. National Museum.

Eastern Hemisphere

From the viewpoint of the art historian and archaeologist, probably the most exciting discoveries in the year 1961–62 were made on the high plateau of southern Anatolia by Prof. James Mellaart of the University of Istanbul. His British expedition uncovered at Çatal Hüyük amazing colored frescoes dating from about the 7th to 6th millenium B.C., the oldest known murals made on building walls. The site, covering 32 acres, is larger than its correlate of Jericho, in Jordan. Many specialists believe now that Anatolia must be seriously considered as the original locale of settled life.

Europe.—Perennially active excavators in Britain uncovered Roman and Viking remains at York (Roman Eboracum), which was at its height of development in the 3d and 4th centuries A.D. Clues from Saxon and Norman manuscripts led to the additional discovery of a 7th century Saxon church in Winchester; and the remains of a Saxon great hall were found in London when workmen were excavating a storage tank pit adjacent to 10 Downing Street.

Sweden and Denmark were engrossed with ancient ships recovered from the sea. The 17th century Swedish warship *Vasa*, which sank ingloriously after two hours at sea, has been the focal point of preservation as a museum. Seven Viking ships dating from about 1,000 years ago were recovered by the Danes in a fjord north of Copenhagen. In Switzerland, silver objects dating from Roman times (the "Mildenhall treasure") were found near Basel.

As usual, Greece and Italy were the scenes of numerous discoveries, many of which were accidental finds. A University of Cincinnati expedition found a varied group of remains dating from the 3d to the 1st millenium B.C. on the Greek island of Ceos (Keos) in the Cyclades. Italian government archaeologists are excavating an Adriatic city that was the birthplace of the name Italia, first used there over 2,000 years ago by rebels against Roman rule. At Ostia Antica, near Rome, was found a synagogue believed to date from the 1st century A.D. and to be the oldest in western Europe. Underwater archaeology flourished off Sicily, where many treasure-laden cargo ships have been found.

At a Pleistocene dating symposium in England, it was revealed that the age of that geological period could be extended to between 2 and 3 million years, and that hominid fossils (found at Olduvai Gorge, Tanganyika, in 1959) may be as much as 1.75 million years old. Physical anthropologists view this revised dating as more commensurate with the time considered necessary for man to have evolved. (Another Pleistocene dating conference was organized in the United States. In addition, the Wenner-Gren Foundation for Anthropological Research, in New York, sponsored a symposium on salvage archaeology, a matter of worldwide concern.)

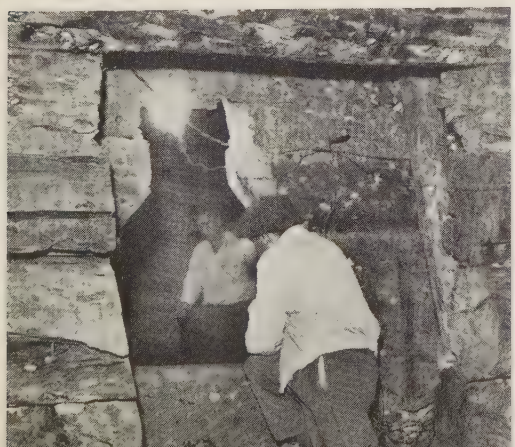
Western Asia.—Classical archaeological expeditions continued work in the Middle East, particularly in Turkey. A Harvard-Cornell expedition at Sardis uncovered a synagogue dating to about 220–250 A.D. Gorgeously decorated with marble and paved mosaics, it was tangible evidence of the importance of Jewish communities in civic affairs under Roman rule during the 3d century. New York University inaugurated its Anatolian Research Project at Aphrodisias in Caria, western Turkey. Aphrodisias was pre-eminent as an artistic, religious, and political center in Late Hellenistic, Imperial, and Byzantine times. Continuing researches under Prof. Rodney Young of the University of Pennsylvania at the burial mound of Gordion, a city of the 7th century B.C. southwest of Ankara, have disclosed climatological information. These data were traced from studies of the tree rings preserved in the tomb said to belong to King Midas. Beautiful carved ivories of Assyrian design dating about 700 B.C. were reportedly discovered by the Turkish archaeologist Tahsin Özgüç at the site of Kul Tepe.

In northern Iraq, British archaeologists continued to recover the vast horde of carved ivories in what seems to have been a military warehouse at Nimrud. Three seasons of work have failed to empty one of the huge rooms of its treasures. The finds date from about the 8th–7th centuries B.C. Iranian government archaeologists discovered an extraordinarily rich royal tomb at Marlik, just south of the Caspian Sea. Dating from about 1000 B.C., the finds included beautiful objects of gold and silver.

In Israel and Jordan, further finds have been made of early Christian Era documents around the Dead Sea. The University of Pennsylvania and the American School of Oriental Research are sponsoring excavations in Jordan. One of these is at the Biblical city of Gibeon, where a rich harvest of Middle Bronze Age artifacts was made. The other was at Biblical Shechem, where messages from the city's Egyptian overlord to the pharaoh were found. Prof. Kathleen Kenyon, of the University of London, began an ambitious project designed to reveal more about the history of Jerusalem. In Syria, government archaeologists have resumed the search for Samira, one of the most important

Changes in climate from 1500 to 700 B.C. were plotted by scientists who studied the pattern of growth rings in logs found in a tomb at Gordion, Turkey. (*Left*) Prof. Rodney S. Young of the University of Pennsylvania works in the tomb as his Turkish assistant watches. (*Right*) Small bowls contained food for journey to the other world. In background are bronze caldrons.

THE NEW YORK TIMES



Designed by Ulrich Franzen, H. D. Towers residence in Essex, Conn., was given merit award by American Institute of Architects.

A.A

Canaanite cities during the second millenium B.C.

Eastern Asia.—Chinese archaeologists discovered Neolithic and Bronze Age artifacts dating to 3,000 years near Shanghai. A capital used by the rich and powerful T'ang Dynasty (618–906 A.D.) and having a perimeter of 22 miles was found at Sian. In North Korea, two mural tombs of the Koguryo Dynasty (37 B.C.–668 A.D.) were uncovered. A significant discovery of Paleolithic implements, estimated to be about a quarter-million years old, was made on Kyushu, Japan. The most ancient tools in that country were previously estimated to be about 30,000 years old. Fossilized human skeletal remains found in a Philippine Islands cave are believed to represent the Proto-Malay type of ancient man.

One of the highlights of the congress of Americanists in Mexico was the revival of the controversial theory of Asian and Central American culture links via the Pacific. Supporters of this theory believe that there is evidence strongly suggesting cultural contacts between the pre-Columbian peoples of Central America and Indo-China, Thailand, China, and Japan. The so-called Aztec calendar stone, according to one of the experts, is a Chinese invention. Most of the arguments produced appear to be based on stylistic and artistic grounds. Many archaeologists are waiting for more conclusive proof of such contacts.

Africa.—In northern Africa, most archaeological work is being done at the site of the future Aswân Reservoir, which will straddle the border of Sudan and Egypt. Five Egyptian temples threatened with submersion by waters behind the Aswân High Dam have already been removed, and plans for safeguarding the huge temples of Abu Simbel and Philae have been completed. Funds needed for the latter work are being accumulated, but the salvage must start well in advance of the dam's first operational stage in 1964. British excavations north of Buhen in the Sudan have pushed back the known date of Egyptian contacts with Nubia to the 4th and 5th dynasties, 600 years earlier than formerly thought.

The Museum of New Mexico and Columbia University are continuing the prehistoric and geological researches begun by Columbia University in 1961–62 in northern Africa. Important findings of the latter expedition include a revision of those made by previous investigators in the area, and a refutation of the glacial-pluvial equivalence theory in this part of the continent. At Alexandria, Egyptian archaeologists are wondering how to recover the colossal statue of Poseidon, the Greek god of the sea, which once surmounted the now destroyed Pharos (lighthouse), built in the 3d century B.C. and considered one of the seven wonders of the ancient world.

On March 22, 1962, the British anthropologist Louis S. B. Leakey announced his discovery at Fort Ternan, Kenya, of a creature, "neither man nor ape," whose remains have been dated by the potassium-argon process to about 14 million years. Found in the summer of 1961 and named *Kenyapithecus wickeri*, it is a supposed link in human evolution.

Ralph S. Solecki,
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ARCHERY. See Sports, Games, and Shows.

ARCHITECTURE

A constant theme at architects' conventions and in the architectural press during 1962 was the question: Why are fine buildings more and more numerous, while our cities grow uglier and more inefficient? At the national convention of the American Institute of Architects, controversy centered on approval of "expanded services," in which the architects' talents would be merged with others' to offer a more complete service to the large-scale developer, who is more and more responsible for the shape of our cities. Meanwhile, Jane Jacobs in *The Death and Life of Great American Cities* (1961), surely the year's most talked-about book among architects, denounced large-scale planned and zoned developments as cold and inhuman, and held up as ideal the lively chaos of New York's Greenwich Village or San Francisco's Telegraph Hill.

Interior of TWA terminal at N.Y. International Airport, designed by Eero Saarinen, captures the mood of flight.

TWA BY EZRA STOLLER ASSOCIATES

Perhaps the year's most notably successful attempt to consider at once the important individual building and the fabric of the city was in the redevelopment of historic downtown Boston, attended by a national competition for a new City Hall. The program for the competition was careful to establish the volume of the large building in accordance with a three-dimensional scheme for the entire area. The winning design, by New York architects Gerhardt Kallmann, Noel McKinnell, and Edward F. Knowles, a very much modified stepped pyramid upside down around a court, carries on the robust 19th century Boston tradition of H. H. Richardson, while its strongly sculptural forms bear close affinities to the new buildings of Le Corbusier, the Swiss-French architect whose work is presently the strongest single influence on young architects.

Meanwhile, just across the Charles River in

DANDELET

The Marin County Civic Center in San Rafael, Calif., was completed in 1962. The building was designed by Frank Lloyd Wright.

Cambridge, Mass., was rising Le Corbusier's first building in the United States (if one does not include the UN Secretariat, which he helped design)—a Fine Arts Center for Harvard University. This is an excitingly sculptural form which seems thus far to bear absolutely no relation to anything around it.

By contrast, the completion of Le Corbusier's Assembly Building at Chandigarh, India, served to make much clearer the grand design for that city's government center, in which the architect's Palace of Justice and Secretariat had already been completed. A separation of levels for automobile and pedestrian traffic is being developed, and large artificial hills—echoes of the Himalayan foothills, visible in the distance—are being formed to control the immense spaces between buildings.

The winner of the American Institute of Architects' annual First Honor Award was also a grand design, in which buildings, the spaces between them, the landscaping, furnishings, and equipment had all been considered together. The award went to Ernest J. Kump and Masten & Hurd, architects of a complete new campus for Foothill College, Los Altos, Calif.

The Century 21 Exposition, or Seattle World's Fair, produced a much smaller architectural ripple than its backers had predicted, though its 600-foot Space Needle with a revolving restaurant on top will remain a landmark in Seattle for some time to come, as will the United States Science Pavilion by Minoru Yamasaki. The pavilion is an overtly Gothic fantasy whose concrete skeletal vaults 110 feet high are reflected in a central pool with fountains. If the fantasy seemed less than fantastic, it was undoubtedly because of the almost complete relaxation of any restrictions against flights of imagination in all kinds of permanent buildings, from houses to banks. For instance, Herb Greene's much published house for his own occupancy, on the prairie near Norman, Okla., soars from cavelike spaces to a powerfully upsurging pinnacle; the curved surfaces are heavily textured, sheathed with shingles inside and out, so that the air of fantasy in this already inhabited house far exceeds that of either of the houses of the future shown at the Seattle Fair.

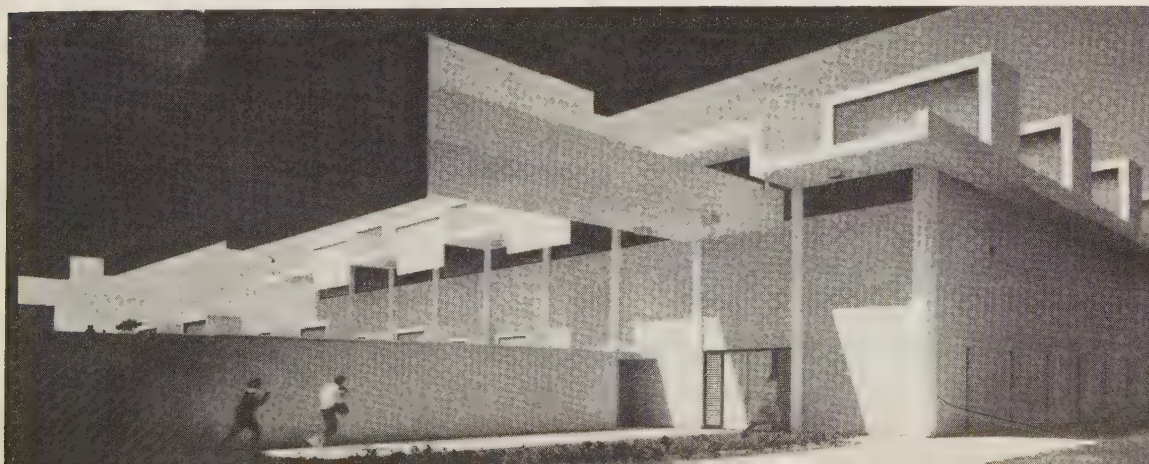
Even banks seemed no longer restricted by a limited vocabulary of forms suggestive of stability or permanence. A new building by Harry Weese for the Irwin Union Bank and Trust in Hope, Ind., acquired a delicate, almost playful character from the 13-foot-square pyramids which roof it, while a thin-shell roof of concrete, swooping down from the center and sweeping up at the corners, almost like a great sail, gave a light and lively silhouette to Meathe, Kessler & Associates' Mt. Clemens (Mich.) Federal Savings and Loan Building.

Eero Saarinen's great curved concrete Trans World Airlines Terminal at New York International Airport, finished in 1962 and meant to look like a bird in flight, brought a similar sense of fantasy to still another building program. Of similar design, Saarinen's terminal building for Dulles International Airport, at Chantilly, Va., went into service on November 19.

The most notable development discernible in the architectural press during the year was a direct result of the increasing number of (by present standards) outstanding buildings now being

This high school in Sarasota, Fla., designed by Paul Rudolph, won an American Institute of Architects merit award in 1962.

EZRA STOLLER



erected. The work produced in several cities became classifiable, and the emergence of a "Philadelphia School" and a "Chicago School" was noted, though the influence of the former, particularly, was seen far beyond the boundaries of Philadelphia itself. The London *Architectural Review* even charged that the important annual Design Awards of *Progressive Architecture* magazine for buildings not yet built had fallen almost entirely into the hands of the "Philadelphia School," though concern did not extend to *Progressive Architecture*'s 1962 First Design Award winner, Vincent Kling, for his Municipal Services Building in Philadelphia.

The late Eero Saarinen's office proceeded with his design for the 38-story CBS Building in New York, which—after Chicago's 60-story Marina City, by Bertrand Goldberg Associates—will be the country's tallest reinforced concrete building. Since the decision to build the CBS tower of concrete came after careful comparison of costs with those of a steel structure, it seemed likely that more and more concrete towers would rise, as new methods of control allow surfaces good enough to be exposed even to severe northern winters.

A number of religious buildings of importance appeared during 1962. Pietro Belluschi and Anderson, Beckwith & Haible's chapel at Portsmouth Priory, Portsmouth, R.I., was a dramatic structure of simple materials and owed a conscious debt to the 6th century Church of San Vitale, in Ravenna. Marcel Breuer's long-awaited church at St. John's Abbey, Collegeville, Minn., similarly achieved high drama with light and shadow on simple materials. But the nonprofessional press was most interested in the completed Coventry Cathedral, in England, the result of a postwar competition won by Sir Basil Spence, and executed with tapestry, mosaics, stained glass, and furnishing by some of England's best-known contemporary artists. Lavish praise was heaped on it, and on Sir Basil's constancy, but many critics failed to find a real purpose to it and doubted whether the singleness of vision that made a medieval cathedral a powerful unified thing was obtainable, or even worth the search, in the mid-20th century.

Acknowledged to be worth the search was a coherent pattern in a whole neighborhood, achieved with increasing frequency. Housing by James Stirling and James Gowan in Preston, England, uses the patterns of the existing city and its inhabitants to achieve this goal. Paul Rudolph, in his Married Students' Housing at Yale University, solves the problem (at least visually) by organizing his complex around a flight of steps; while Toronto's Flemingdon Park, by Irving Grossman, puts parking underground in an integrated complex of high-rise and terrace housing to organize a complete neighborhood.

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ARCTIC EXPLORATION. See Index entry.

ARGENTINA

Wedged between the Andes and the Atlantic Ocean to form the southeastern sector of South America, Argentina extends for 2,300 miles from its northwestern highlands to the bleak, windswept plains of Patagonia in the south. It is a big land (1,072,067 square miles), bounded on the west by Chile, on the north by Bolivia and Paraguay, and on the northeast by Brazil and Uruguay. Leading cities include the capital and port of Buenos Aires (1960 census pop., 2,966,816), the river port of Rosario (1954 est., 616,718), the inland manufacturing city of Córdoba (510,739), and La Plata (357,356), capital of Buenos Aires Province. The population of 20,005,691 (1960 census; 21,078,000, mid-1961 est.) is largely of European descent; its language is Spanish.

Government.—The executive branch of this federal republic of 23 provinces and a Federal District is headed by President José María Guido, who was installed by a military coup in March 1962 (see below, *Events, 1962*). He appoints a cabinet, with considerable military advice under prevailing conditions. The national constitution provides for a bicameral National Congress, with a 46-member Senate (2 from the Federal District and from each province except Tierra del Fuego) and a 192-member Chamber of Deputies. Both senators and deputies serve 6-year terms, but one third of the senators retire every 3 years, as compared with half of the deputies. Congress was dissolved in 1962 by the new military-dominated regime. Provincial governors serve 6-year terms, but their posts were occupied in 1962 by military interventors. The federal judiciary is headed by a 5-member Supreme Court.

Education and Religion.—With a literacy rate of 92%, Argentina is one of the best-educated nations in the world. Education is free, secular, and compulsory for all between the ages of 6 and 14. As of 1959, there were 2,800,560 pupils attending 17,081 primary schools served by 115,564 teachers. Enrollment figures on the secondary level included 135,119 students in the general course (with 18,298 teachers in 653 schools), 270,375 students in 1,566 technical schools (34,327 teachers), and 144,749 in 518 normal schools (15,561 teachers). In the 12 institutions of higher education there were 115,005 students served by 4,822 teachers. The overwhelming majority of Argentines is Roman Catholic.

Finance.—Declining exports and rising imports in 1961 had an adverse effect on government fiscal operations. Central Bank holdings of gold and foreign exchange, which reached a peak of $705 million on March 31, 1961, were reduced by the end of the year to $461 million under the impact of the trade deficit, foreign debt obligations, and business dubiety concerning government policies. In December, Congress approved a budget (government departments and decentralized agencies) for the fiscal year 1962 (ending Oct. 31, 1962) amounting to 180 billion pesos (171 billion in fiscal 1961). About 13.2 billion pesos of the 1962 budget was to be covered by long-term borrowing. At the end of 1961 the public external debt totaled $1.7 billion, and servicing requirements for several years would amount to about $300 million annually, a sum nearly equivalent to 30% of recent annual export earnings. The cost-of-living index (1958 = 100) rose from 272 in 1960 to 309 in 1961.

Many of the conditions of concern evident in 1961 were aggravated by the political upheavals of 1962. The dollar exchange rate of the peso rose from 83.02 on Dec. 31, 1961, to 135 on June 30, 1962, increasing the cost of materials imported to sustain the industrialization program. Meanwhile, the Central Bank's gold and foreign exchange holdings declined to $239 million. Government revenues became so depleted that public payrolls could not be met properly. By June 30, the cost-of-living index had risen to 393. Public and private credit dried up, contributing to a large increase in bankruptcies. Strict import controls were decreed, and many government development programs were cut back. In August, the Central Bank reported that, as of April 30, the foreign debt of the Argentine government and state-owned enterprises totaled $2,620 million, of which $487 million represented interest. The treasury's statement for the first 8 months of the fiscal year showed new obligations of more than 101 billion pesos and cash receipts of less than 65 billion. Part of the deficit was covered by loans from Central Bank and social security funds. The peso continued to decline in value, and on December 5 was quoted at 154 to the dollar.

Transportation and Communications.—The 27,873-mile state railway system is run down and the source of large deficits. According to the International Bank for Reconstruction and Development (IBRD), it would cost $1.4 billion to put the system on a paying basis by 1971. Efforts at rehabilitation were impeded by the 42-day railway strike of 1961 and by the fiscal crisis of 1962.

Argentina has approximately 91,200 miles of federal and provincial roads (12,200 miles paved or improved). The major highway building program that was begun in 1960 made good progress in 1961, but had to be cut back in 1962. Two of Argentina's three private international air carriers went into receivership in 1961, and in November the government decreed that Aerolíneas Argentinas was to be the sole national flag carrier in international service. In May, the two government-owned overseas shipping companies were merged. At the end of the year the merchant marine consisted of 229 vessels aggregating 1,230,713 gross tons.

In 1961 there were 1,295,856 telephones and 6 television stations; in 1960, 63 radio stations.

Economic Conditions.—After four years of effort, in 1961 the policies of the administration of Presi-

Forced from office by the military on March 29, Argentina's President Arturo Frondizi (*l.*) was replaced by José María Guido (*r.*) After dispute between military factions, Gen. Juan Ongania (*center*) emerged on September 23 as army commander in chief, and promised an early election.

WIDE WORLD; UPI; WIDE WORLD

dent Arturo Frondizi seemed to promise correction of some of the economic abuses inherited from the Peronist era of 1943–55. Some progress had been made in ridding the government of deficit-plagued economic enterprises and in cutting down the bureaucracy. Although there was a large trade deficit, imports consisted mostly of capital goods that would contribute to industrial production. Private foreign investment was large and growing. In January 1962, the government claimed an increase in the gross national product for 1961 of 5.7% over 1960, measured in constant 1950 values —which would give Argentina one of the higher rates of growth in the world. To be sure, the gains were registered mainly in petroleum production and in manufacturing, and the great agricultural industry remained in the doldrums into which the dictator Juan Domingo Perón had driven it.

Agriculture.—Production of the principal export grains, which had generally declined in the crop year 1960–61, rose in 1961–62. Output of these and other major crops was as follows, in thousands of metric tons: barley, 827; corn, 5,220; cotton (clean fibers), 120; cottonseed, 227; linseed, 770; oats, 710; peanuts, 300; rye, 530; sorghum, 1,838; sugar, 694; sunflower seed, 820; and wheat, 5,100.

The cattle industry was damaged by drought in 1961. Because of this and other conditions, the slaughter of cattle was 6% higher than in 1960, and by 1962 there was concern that heavy slaughter was cutting into breeding stock. Sheep and hog slaughter declined by 4% and 17%, respectively, in 1961. The output of meat totaled 2,233,000 metric tons in 1960–61, as compared with 2,301,000 in 1959–60. Wool production (greasy basis) declined from 487.4 million pounds in 1960–61 to 460 million in 1961–62.

Industry.—In 1961 the government continued a wide variety of aids to manufacturing enterprises. The general industrial production index (1953 = 100) averaged 128, as compared with 116 in 1960. All groups in the durable goods field registered increases, the greatest gains being made by the vehicle, machinery, and metals industries. A general advance among nondurable manufactures was led by petroleum derivatives, chemicals, rubber, and paper; textiles also improved. The fastest growing industry was the automotive, which produced 136,190 vehicles in 1961, as compared with 89,280 in 1960 and less than 33,000 in 1959. Expansion continued in the steel industry, production of crude ingots rising from 277,200 metric tons in 1960 to 441,600 tons in 1961.

Construction activity improved somewhat in 1961. In July, the government established a Federal Housing Administration to stimulate private housing construction. Meanwhile, shortages of electric power continued to impede industrial operations and expansion. Some foreign credits were obtained to expand power production, including an IBRD loan of $95 million in January 1962.

Mineral Products.—In 1961, Argentina produced small quantities of several minerals, including 344,400 metric tons of coal, and explored the possibility of extending operations. But the major development continued to be in petroleum, with an output of 12,084,000 metric tons, as compared with 9,132,000 tons in 1960. With production in the first 5 months of 1962 about 9% higher than in the same period of 1961, Argentina was nearing self-sufficiency. Yacimientos Petrolíferos Fiscales (YPF), the national petroleum agency, was active in signing new exploration and exploitation contracts, including one in December 1961 whereby Ente Nazionale Idrocarburi (ENI), the Italian state petroleum agency, would invest $100 million. The use of natural gas continued to rise in Argentina, from 134 million cubic feet a day in 1960 to 219 million in 1961.

Foreign Trade.—Argentina had a trade deficit of $496.3 million in 1961, the largest in its history. Imports totaled $1,460.4 million, as compared with $1,249.2 million in 1960. Machinery and vehicles together accounted for 45.4% of the value. The United States was Argentina's principal supplier in the period January–November 1961, furnishing 26.1% of total imports; other leading suppliers were West Germany, 14.5%; the United Kingdom, 9.6%; Italy, 7.1%; France, 5.4%; and Brazil, 5.2%.

The chief factor in the decline of exports from $1,079.2 million in 1960 to $964.1 million in 1961 was the smaller grain harvest of 1960–61. Meat was the leading export in 1961, accounting for 22.6% of total value. Among other exports were wool, hides, and miscellaneous farm products. The United Kingdom was Argentina's principal customer, taking 17.8% of exports by value in January–November 1961; others were the Netherlands, 14.8%; Italy, 11.2%; the United States, 8.6%; and West Germany, 7.9%.

The depressed condition of foreign trade in the major crops led to tax concessions late in 1961 and early in 1962. As a result of these concessions, improved weather, and devaluation of the peso, exports of most grains during the first half of 1962 exceeded those for all of 1961. Total exports for the 6 months rose to $615.1 million, while imports were held to $678.6 million, reducing the unfavorable trade balance.

Events, 1962.—After surviving many crises since 1958, President Frondizi was finally driven from office by his military critics in 1962. The immediate occasion was the election of March 18. The president suddenly allowed the Peronists (largely

labor union members) to offer their own candidates for the first time since the fall of the former dictator in 1955, expecting that this step would prove advantageous to his own Radical Intransigent Party (UCRI). Instead, the Peronists polled 35% of the popular vote, as compared with 28% for the UCRI, 22% for the People's Radical Party (UCRP), and 15% for smaller groups; and captured a number of governorships and provincial offices, and a large minority of the national Chamber of Deputies.

The military, which was strongly anti-Peronist, reacted violently. The election results, coming soon after Frondizi's soft policy on Fidel Castro's Cuba had been exhibited at the Punta del Este Conference of January (see INTER-AMERICAN AFFAIRS), and on top of dissatisfaction with his economic policies, led the military to compel the president to annul the elections won by Peronists in six provinces. The military held many meetings in which, as everyone was aware, they were deciding whether or under what conditions they would permit Frondizi to remain as president. The Peronists called a general strike for March 23. The UCRI tried to effect a union with the UCRP and failed. The military attempted to force Frondizi to resign; this failing, on March 29 they occupied key points in Buenos Aires and imprisoned him (he remained a prisoner at the end of the year). On March 30, they installed the official next in line for the presidency according to the constitution, Senate President Guido.

The new regime was dominated by the armed forces. On April 24–25, the results of both provincial and congressional elections were annulled, and military interventors were put in charge of the provinces. Congress was forced into recess in May (it was dissolved on September 6). The military—especially the army—soon showed itself deeply divided over when and how to return to constitutional government, and especially over the matter of future elections; and over the problem of Peronism. Eventually, two major army groups (each with many subgroups) appeared: the "democrats," who opposed concessions to the Peronists, wanted elections held no earlier than October 1963, and included a large element favoring the erection of a military government; and the "nationalists," who favored earlier elections and civilian constitutional government, and were somewhat less intransigent on the Peronist question. Both groups clearly were essentially anti-Peronist, anti-Communist, strongly nationalist, and determined to exercise some control over civil government. As the debate between military factions went on, it was complicated by a developing economic crisis. By July, unemployment led to violence and to strikes by Peronist-led unions.

The divisions in the army reached a crisis on August 8, when a rebellion was started by "democrat" Maj. Gen. Federico Toranzo Montero to increase his faction's already considerable hold on the administration. Military commanders arrested army officers of opposing factions, and it appeared that civil war might result. Fevered consultations led to the rapid replacement of two ministers of War and to the seating of "democrat" Gen. José Octavio Cornejo Saravia. Ostensibly, these actions were directed toward ensuring sufficiently strong control of Peronists and Communists. Actually, most military disputes were by this time affected by considerations relating to the professional careers of the senior members of the officer corps.

In succeeding weeks serious friction continued between military "democrats" and "nationalists," especially as the former apparently intended to eliminate the latter from important command positions. As a result, the "nationalists," led by Lt. Gen. Juan Carlos Ongania, began a revolt on September 18, assertedly on the ground that it was necessary to prevent the erection of a military dictatorship. During the fighting for the next several days, the tanks of the "nationalist" forces, aided by some air force planes, were victorious. Casualties apparently were not heavy. On September 23, Guido named Ongania commander in chief of the army. "Nationalist" officers were installed in the War Ministry and other top posts.

General Ongania announced that Guido would be allowed more freedom of action; how much remained to be seen. He also promised an early election that would permit participation by all sections of the population. Although Guido immediately began remaking his cabinet, it seemed significant that he retained as minister of the economy Alvaro C. Alsogaray, whose policies of austerity had dissatisfied some military officials as well as most Peronists. On December 4, however, military opposition forced Alsogaray's resignation. Other officials also resigned, amid signs that Guido's position was weakening. An air force revolt was crushed on December 12. Meanwhile, on November 19, it was announced that presidential and congressional elections would be held on June 16, 1963.

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ARIZONA

A Southwestern state of the United States, Arizona ranks 6th among the states in area (land, 113,575 sq. mi.; inland water, 334) and 34th in population (1,509,000 on July 1, 1962, a 15.9% increase from the 1960 census figure of 1,302,161). Urban places with populations above 7,500 in 1960:

Bisbee	9,914	Phoenix (*capital*)	439,170
Casa Grande	8,311	Prescott	12,861
Chandler	9,531	Scottsdale	10,026
Douglas	11,925	Tempe	24,897
Flagstaff	18,214	Tucson	212,892
Glendale	15,696	Winslow	8,862
Mesa	33,772	Yuma	23,974

Government.—Chief executive and judicial officers in 1962 included Paul J. Fannin (Republican), governor, serving a two-year term; Wesley Bolin, secretary of state; J. W. Kelly, treasurer; Mrs. Jewel W. Jordan, auditor; Robert Pickrell, attorney general; W. W. Dick, superintendent of public instruction; and Charles C. Bernstein, chief justice of the 5-member Supreme Court.

The Arizona Legislature, which convenes annually, comprised 24 Democrats and 4 Republicans in the Senate in 1962 and 52 Democrats and 28 Republicans in the House of Representatives.

Legislation, 1962.—Arizona's regular legislative session (January 8–March 22) passed 150 bills, one of which was vetoed by Republican Gov. Paul Fannin. Legislation of special significance concerned mandatory open public meetings (except executive sessions) in all state and local government units and agencies; authorization for county air pollution control districts; creation of Courts of Conciliation for divorce cases at the Superior Court level; salary raises for major state and county officials; repeal of the state antimiscegenation law; mandatory annual inspection of motor vehicles; and a law requiring equal pay to women doing similar work as men in private employment.

In the November general election, five of six issues on the ballot received voter approval. The successful proposals were constitutional amendments providing for the continuity of state and local government operations in periods of emergency; authorizing mandatory primary and general elections to fill vacancies occurring in the state's United States senatorial and congressional seats; delegating to the Legislature authority to determine qualifications for voters in presidential elections; and authorizing licensed real estate brokers and salesmen to prepare legal instruments incident to property transactions. Failing of passage was an initiative proposal to create a State Board of Appraisal for the purpose of directing a survey and reappraisal of property for taxation purposes.

Finance.—In the 1962 fiscal year, revenue of $227,336,324 included $133,911,119 from state taxes and $57,-

287,392 in federal funds. Chief tax yields were the 2% general sales tax ($20,576,063), an educational-excise tax ($25,308,906), and individual and corporate income taxes ($20,074,209). Spending of $235,590,456 included $88,372,684 for education, $47,408,395 for health, welfare, and safety, and $87,149,377 for highways.

Education.—In the 1961–62 school year public elementary schools staffed by 9,684 teachers enrolled 225,462 pupils; secondary schools with 3,279 teachers enrolled 68,574; and parochial schools with 666 teachers enrolled 24,292. College enrollment totaled 38,239 in 7 institutions including 2 public junior colleges and 3 public senior colleges and universities.

Public school spending in the 1961–62 school year totaled $125,778,978 ($427.77 per pupil), from revenues comprising 47% from local districts, 43% from the state, and 10% from federal funds. Teachers' salaries (1962–63) averaged $4,900 (high school, $5,200; elementary, $4,700). Actual spending for higher education (1961 fiscal year) totaled $37,314,000.

Public Assistance.—In the 1962 fiscal year, public assistance payments to a monthly average of 58,928 persons totaled $26,135,842. This amount included $13,019,457 for dependent children and $10,004,560 for the aged.

Transportation and Communications.—With 277 miles of highway construction and reconstruction completed in the 1961–62 fiscal year, *roads and highways* in January 1962 totaled 39,136 miles (16,960 hard-surfaced). These served 751,517 *motor vehicles* (as registered in December 1961), including 518,795 automobiles. Operating in the state in 1962 were 6 *railroads* (using 2,296 line miles of track) and 7 regularly scheduled *airlines*. There were (1961) 51 general and 82 limited service *airports*.

Communications media included (1961) 52 AM and 10 FM *radio stations;* 9 *television stations;* 14 daily *newspapers* (circulation, 389,112) and 90 other newspapers; and (Jan. 1, 1962) 169,000 business and 321,500 residential *telephones*.

Labor Force.—The state's labor force on July 15, 1962, included 36,700 agricultural workers. Nonagricultural employment totaled 421,700, compared with 401,500 a year earlier and an average of 416,100 for the 12 intervening months. Of nonfarm employees, 24% were in trade, 21% in government services, and 15% in manufacturing. Unemployment on July 15, 1962, stood at 24,700, compared with 28,000 a year earlier.

Manufacturing.—Manufacturing engaged 48,020 in 1960, including 34,259 in production, and provided a payroll of $274,376,000. Adjusted value added by manufacture totaled $459,137,000.

Principal industry groups in 1960 were: food and kindred products, with 6,032 employees, a payroll of $30,848,000, and an adjusted value added by manufacture of $70,915,000; primary metals (5,175; $32,151,000; $48,988,000); electrical machinery (4,496; $27,293,000; $46,289,000); and stone, clay, and glass products (2,672; $14,225,000; $31,967,000).

Mining.—Arizona ranked 13th among the states in the value of its mineral production in 1961, with 2.39% of the national total. It was the highest value on record since 1956. The state was first by far in output of copper, with 50% of the national total. It was first in pumice; second in silver; third in asbestos, gold, molybdenum, perlite, and vanadium; and fifth in mercury and uranium.

ARIZONA MINERAL PRODUCTION, 1961
(In short tons, except as noted)

Mineral	Quantity	Value
Clays[1]	[2]	$ 240,000
Copper (recoverable content of ore)	587,053	352,232,000
Gold (troy ounces)	145,959	5,109,000
Lead (recoverable content of ore)	5,937	1,223,000
Lime	167,000	2,686,000
Molybdenum (molyb. content in pounds)	4,878,000	6,232,000
Pumice	745,000	1,893,000
Sand and gravel	21,953,000	24,706,000
Silver (troy ounces)	5,120,000	4,733,000
Stone	3,582,000	4,626,000
Uranium ore	228,225	4,965,000
Zinc (recoverable content of ore)	29,585	6,804,000
Other minerals	...	19,062,000
Total	...	$432,614,000[2]

[1] Excludes certain clays, value of which is included in "Other minerals." [2] Total has been adjusted to eliminate duplication in the value of clays and stone. (Source: U.S. Bureau of Mines.)

Agriculture.—Cash farm income for the first nine months of 1962 (excluding government payments) totaled $276,586,000, compared with $267,480,000 for the corresponding period of 1961. For the full year 1961, income comprised $177,038,000 from livestock, $289,533,000 from crops, and $5,285,000 in government payments. Principal income sources in 1961 were cotton lint, $142,809,000; cattle, $140,726,000; lettuce, $36,038,000; and milk, $22,809,000.

The state's 7,233 farms in 1959 had an acreage of $40,203,000 (1,019,000 in harvested cropland). Livestock on farms on Jan. 1, 1962, included 1,041,000 cattle and 1,031,000 chickens.

ARIZONA CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Barley (1,000 bu.)	9,023	11,220	7,800
Cantaloups (1,000 cwt.)	2,379	1,920	2,206
Cotton lint (1,000 bales)	835	828	885
Cottonseed (1,000 tons)	347	342	372
Grapes (tons)	5,447	9,230	12,100
Hay (1,000 tons)	844	1,209	1,150
Lemons (1,000 boxes)	670[1]	1,540	500
Lettuce (1,000 cwt.)	6,971	10,143	9,429
Oranges (1,000 boxes)	1,089	1,440	1,000
Potatoes (1,000 cwt.)	1,442	2,472	1,955
Sorghum grain (1,000 bu.)	4,453	7,475	6,076

[1] Short-time average. (Source: U.S. Department of Agriculture.)

Events, 1962.—In the November general election, Republican Gov. Paul Fannin won over Democrat Sam Goddard, marking the first time that a Republican has won a third gubernatorial term in Arizona. Elected to the U.S. Congress were incumbent Democrat Sen. Carl Hayden, incumbent Republican John J. Rhodes from the 1st Congressional District, incumbent Democrat Morris K. Udall from the 2d District, and Democrat George F. Senner from the state's new 3d District. The 85-year-old Senator Hayden, who on February 19 marked his 50th year in Congress (a record for longevity), defeated State Sen. Evan Mecham, 38, a conservative Republican.

The year marked the semicentennial celebration of Arizona statehood, and also the participation by the University of Arizona in the centennial observance of the nation's land grant university and college system.

Lack of rainfall in several livestock counties resulted in their classification as drought areas by the federal government. Later in the year storm conditions in southern Arizona flooded agricultural and Indian reservation areas in Pima and Pinal counties, causing property and crop damages estimated in excess of $21 million. Federal emergency assistance was provided in both drought and flood areas.

In Phoenix, the city's new air terminal facilities were opened to the public, and a controversial 2-cent city gasoline tax was levied but was voided by the Superior Court. Several convictions were handed down in the three-year-old case involving mismanagement of Arizona Savings and Loan Association depositors' funds.

In the Tucson area, the world's largest solar telescope was completed and installed at the Kitt Peak National Observatory (see ASTRONOMY). Investigations were initiated and concluded into alleged waste in the Titan missile complex. Controversy continued in city hall politics, resulting in divisions in the Republican-controlled City Council, the hiring of a new city manager, and the death of Tucson's proposed urban renewal program.

The U.S. Supreme Court held reargument on the 10-year-old dispute between Arizona and California over division of the Colorado River's

water. Arizonans anticipated a favorable decision during the 1962–63 court session.

In education, Maricopa County voters approved a proposal to establish a junior college district in the county (involving the transfer of Phoenix Junior College into the state system). Voters in Cochise County approved a capital bond issue and decided a controversy over the location of their junior college by voting to place it at Paul Spur, near Douglas.

In other events of significance, the controversy over revaluation of taxable property held the public's attention, despite the defeat of a proposal at the polls (see above *Legislation, 1962*); the Board of Regents authorized an appropriation request of $160,000 to the Legislature for planning a medical school at the University of Arizona; and construction progressed on the memorial auditorium, designed by Frank Lloyd Wright, on the Arizona State University campus.

"Legislation" and "Events" by:
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ARKANSAS

A South Central state of the United States, Arkansas ranks 27th among the states in area (land, 52,499 sq. mi.; inland water, 605) and 32d in population (1,823,000 on July 1, 1962, a 2.1% increase from the 1960 census figure of 1,786,272). Urban places with populations above 15,000 in 1960:

Blytheville	20,797	Jonesboro	21,418
Camden	15,823	Little Rock (*capital*)	107,813
El Dorado	25,292	North Little Rock	58,032
Fayetteville	20,274	Pine Bluff	44,037
Fort Smith	56,524[1]	Texarkana	19,788
Hot Springs	28,337	West Memphis	19,374

[1] Special census, Aug. 3, 1961.

Government.—Chief executive and judicial officers in 1962 included Orval E. Faubus (Democrat), governor, serving a two-year term; Nathan Gordon, lieutenant governor; Mrs. Nancy J. Hall, secretary of state, Lee Arthur Clayton, treasurer; Jimmie Jones, auditor; Frank Holt, attorney general; A. W. Ford, commissioner of education; and Carleton Harris, chief justice of the 7-member Supreme Court.

The Arkansas General Assembly, which convenes in odd-numbered years, comprised 35 Democrats in the Senate in 1962 and 100 Democrats in the House of Representatives.

Finance.—In the 1962 fiscal year, revenue of $297,341,316 included $181,360,714 from state taxes and $84,291,205 in federal funds. Chief tax yields were the 3% general sales tax ($56,586,643), taxes on motor fuels ($42,991,996), and licensing ($21,985,453). Spending of $291,676,916 included $70,436,551 for education, $69,248,367 for health, welfare, and safety, and $79,432,208 for roads and highways.

Education.—In the 1961–62 school year (according to estimates), public elementary schools staffed by 8,557 teachers enrolled 252,363 pupils; secondary schools with 6,896 teachers enrolled 177,777; and parochial schools with 393 teachers enrolled 10,776. College enrollment totaled 27,719 in 19 institutions, including 2 junior colleges and 17 senior colleges and universities.

Estimated public school spending in the 1961–62 school year totaled $120,693,000, including current expenditures of $99,457,000 ($261.02 per pupil) and capital outlays of $18,189,000. Revenue of $127,555,000 was drawn chiefly from state funds ($50,136,000) and local districts ($50,053,000). Teachers' salaries averaged $3,614 (high school, $3,820; elementary, $3,441). Actual spending for higher education (1961 fiscal year) totaled $28,090,000.

Public Assistance.—In the 1962 fiscal year, public assistance payments to a monthly average of 73,223 persons totaled $46,044,319. This amount included $35,751,998 for the aged and $4,939,963 for dependent children.

Transportation and Communications.—With 480 miles of highway construction and reconstruction completed in 1961, *highways and roads* as of Jan. 1, 1962, totaled 79,176 miles (13,689 hard-surfaced). These served 777,523 *motor vehicles* (as registered Dec. 31, 1961), including 507,612 automobiles. Operating in the state in 1962 were 28 *railroads* (using 3,717 line miles of track) and 6 regularly scheduled *airlines*. There were 13 commercial and municipal *airports*.

Communications media included (1962) 71 AM and 8 FM *radio stations;* 6 VHF *television stations;* 30 daily *newspapers* (circulation, 383,844) and 133 other newspapers (663,444); and (January 1) 135,500 business and 335,500 residential *telephones*.

Labor Force.—The state's labor force in September 1962 included 186,900 agricultural workers. Nonagricultural employment totaled 506,900, compared with 508,200 a year earlier and an average of 500,000 for the fiscal year 1962. Of nonfarm employees, 21.8% were in manufacturing, 16.7% in trade, and 15.3% in government services. Unemployment in September 1962 had dropped to 30,400 from the 37,800 reported in the previous September.

Manufacturing.—Manufacturing engaged 102,657 workers in 1960, including 86,661 in production, and provided a payroll of $362,834,000. Adjusted value added by manufacture totaled $752,096,000.

LEADING ARKANSAS MANUFACTURES, 1960[1]

Industry group	Total employees	Total payroll (in thousands)	Adjusted value added by mfr.[2] (in thousands)
Lumber and wood products	23,031	$69,375	$104,972
Paper and allied products	6,397	34,793	95,519
Food and kindred products	14,290	43,091	93,202[3]
Chemicals and products	3,199	19,476	56,949
Stone, clay, glass products	3,699	16,395	41,324
Electrical machinery	3,765	14,548	41,094
Furniture and fixtures	7,565	24,148	39,329
Leather and products	5,210	13,864	26,719
Printing and publishing	3,005	12,629	25,415

[1] Unless otherwise noted. [2] For definition, see footnote 1 in the article *Industrial Production.* [3] Source: *U.S. Census of Manufactures: 1958.* (Source: *1960 Annual Survey of Manufactures.*)

Mining.—Among the states, Arkansas ranked 25th in the value of its mineral output, with 0.82% of the national total in 1961. It was first in barite and bauxite; and third in bromine. Total mineral value declined 6% from 1960, due mainly to the reduction in output of bauxite. Mineral fuels, providing the largest part of the state's mineral value, declined 3% of the total value.

ARKANSAS MINERAL PRODUCTION, 1961
(In short tons, except as noted)

Mineral	Quantity	Value
Barite	277,855	$ 2,630,000
Bauxite (long tons)	1,178,898	13,462,000
Clays	773,000	1,758,000
Coal	395,000	2,888,000
Lime	192,000	3,168,000
Natural gas (1,000 cu. ft.)	59,547,000	8,039,000
Natural gasoline (1,000 gal.)	27,889	1,640,000
Petroleum (1,000 gal.)	29,249[1]	80,435,000[1]
Petroleum gases (1,000 gal.)	75,157	3,286,000
Sand and gravel	9,389,000	9,074,000
Stone	12,029,000	12,402,000
Other minerals	...	11,465,000
Total	...	$149,138,000[2]

[1] Preliminary. [2] Total adjusted to eliminate duplication in the value of clays and stone. (Source: U.S. Bureau of Mines.)

Agriculture.—Cash farm income for the first nine months of 1962 (excluding government payments) totaled $363,298,000, compared with $329,692,000 for the corresponding period of 1961. For the full year 1961, income comprised $270,660,000 from livestock, $499,299,000 from crops, and $15,644,000 in government payments. Principal income sources in 1961 were cotton lint, $243,325,000; soybeans, $121,444,000; and broilers, $94,574,000.

The state's 95,000 farms in 1959 had an acreage of 16,459,000 (5,325,000 in harvested cropland). Livestock on farms on Jan. 1, 1962, included 1,374,000 cattle, 8,046,000 chickens, and (1961) 229,104,000 commercial broilers. An average of

ARKANSAS CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Cotton lint (1,000 bales)	1,339	1,456	1,450
Cottonseed (1,000 tons)	551	606	608
Peaches (1,000 bu.)	1,458	1,500	1,020
Pecans (1,000 lb.)	6,015	6,100	3,600
Rice (1,000 cwt.)	11,940	13,440	15,825
Soybeans (1,000 bu.)	27,813	48,526	58,200
Strawberries (1,000 lb.)	17,668	17,280	9,450
Tomatoes (1,000 cwt.)	183	286	290
Wheat (1,000 bu.)	2,194	4,941	3,080

(Source: U.S. Department of Agriculture.)

118,000 family and 85,000 hired workers were engaged in farming during 1961.

Events, 1962.—Retracting a March 31 announcement of intent to retire, Gov. Orval E. Faubus filed on May 2 for the Democratic nomination to a fifth term. Chief among his five opponents in the primary race were ex-Gov. Sidney S. McMath, who made Faubus a personal aide and then state highway director in the early 1950's, and U.S. Representative Dale Alford, who won office with Faubus' blessing in the wake of the 1957–58 Little Rock school integration crisis but lost his district in the 1961 reapportionment.

During the campaign, Faubus said so little against integration that archsegregationist former supporters openly denounced him. The governor countered his five opponents' main issue—that a fifth term would endanger the state's future—by pointing to recent industrial growth and increased state services. Faubus won in the first primary, July 31, with 51.6% of the vote (as contrasted to 68.9% in 1958 and 58.8% in 1960). In the same primary, U.S. Sen. J. William Fulbright was nominated for a fourth term over Winston Chandler, who attacked Fulbright as a liberal.

By August, the Republicans had launched possibly their biggest attempt of the century to make Arkansas into a two-party state. Although they entered some 150 candidates in the general election for city, county, and district offices, and provided opposition to both Governor Faubus and Senator Fulbright, the Republicans did not come close to winning any but a few city and county positions, and even lost the one seat which they had held in the 1961 General Assembly.

Also on November 6, voters adopted a constitutional amendment to permit the use of voting machines in Arkansas, but rejected all other proposals. These included amendments to increase the taxing power of cities, to permit salary increases for state and county officials, and to assure that no child who objects to attending integrated schools would be denied public education. Two initiated proposals backed by the Arkansas Education Association also met defeat—one to earmark at least half of the state's general revenues for public school use, and the other to assure the actuarial soundness of the Teacher Retirement System.

Despite chronic unemployment in many areas, nonfarm jobs in Arkansas hit a new high late in 1962. Eighty-one new plants and 102 plant expansions were announced in the year ended June 30. At Fort Smith, officially declared Arkansas' second largest city in August 1962, work began on a new Gerber baby foods processing plant, the third major industry to locate there in as many years. Near Ashdown, construction began on the $55 million Millwood Dam on the Little River, the newest of several major federal water projects now in progress in Arkansas. Overall 1962 farm production, still the state's main source of income, was good despite the driest May since 1918.

The public schools opened peacefully in September, with nearly 250 Negro children attending classes with white students in 12 school districts.

The Schola Cantorum of the University of Arkansas was awarded first prize in the Guido d'Arezzo international polyphonic competition held at Arezzo, Italy, in August. On its return from abroad, the chorus was invited by President Kennedy to sing at the White House.

"Events" by: Robert B. Walz,
Associate Professor of History,
Southern State College.

ARMED FORCES. See Air Force, U.S.; Army of the U.S.; Marine Corps, U.S.; National Guard; National Security; Navy, U.S.; and the Index entry, *Armed Forces.*

ARMY OF THE UNITED STATES

Large as were the increases in all United States armed services in 1962, following the impulse provided by the Berlin crisis of 1961, the changes within the Army were proportionately greatest. This was due in part to the considerable lag in modernization which had afflicted that service once the Korean truce lessened the national feeling of urgency. But the regeneration was due even more to the Kennedy administration's agreement with the Army chiefs that, quite beyond the unquestioned need for nuclear weapons, the nation required far more resources within the Army itself for coping with the many conceivable forms of limited warfare.

In mid-1961 the Regular Army had, nominally, 14 divisions (infantry, airborne, and armored), but of these only the 5 in Europe and 2 of the 6 in the United States could be regarded as truly combat-ready. The 2 on station in Korea, the 1 in Hawaii, and 4 of those in the United States were below strength. Worse yet, 3 of those in the

(*Left*) The surface-to-surface tactical missile Sergeant was test-fired in 1962. (*Center*) Meeting with President Kennedy, October 31, are (from left) Lt. Gens. Theodore W. Parker and Hamilton W. Howze and Gen. Earle Wheeler, Army chief of staff. (*Right*) A National Guard unit activated in 1961 during Berlin crisis is mustered out in Platteville, Wis., August 6.

U.S. ARMY, UPI, WIDE WORLD

United States were in reality wholly occupied with the training of recruits for transfer to the other divisions.

The Berlin crisis, plus a more acute concern with Communist-led insurgency against the government of South Vietnam, led to action in several fields. The three training divisions referred to were relieved of their training duties and rapidly transformed into combat status, and two additional divisions (the 1st Armored and the 5th Infantry) were recreated. To each of the below-strength divisions "filler" personnel was added, and the corps and field army establishments were built up by the usual addition of support units. This was achieved by increasing the draft, extending the terms of duty of volunteers, and bringing in divisions and lesser units from the National Guard and Army Reserve, as well as individual reservists, for periods averaging 10 months—long enough to permit the Regular Army to attain its newly scheduled strength in units composed of trained men.

The year 1962 also witnessed a steady increase in the number of Army Special Forces, an elite group of volunteers specially chosen for strength, courage, fortitude, resourcefulness, and the skills needed in counterguerrilla warfare such as unconventional fighting, radio, field medicine, local language and dialects, and leadership. A prime employment of such troops is that under way in South Vietnam, where Special Forces units are engaged in the training of indigenous forces in the highly specialized arts just mentioned. (See also VIETNAM.)

Accompanying the numerical enlargement of the Army and the new emphasis on unconventional warfare tactics has been a marked addition of modern weapons and equipment. This has long been urged by Army chiefs of staff as a requirement in modernization, most emphatically by Gen. Maxwell D. Taylor in 1960, with his contention that roughly $1.5 billion a year was needed for mere replacement due to depreciation, and a like amount annually for five years to replace obsolescent equipment. In each of the fiscal years 1962 and 1963, $2.6 billion was allotted for new weapons and equipment. The entire Army budget for the fiscal year 1963 is $11,574,067,000, against $11,996,496,000 in fiscal 1962.

Increasing emphasis was laid in 1962 also upon the Army's aviation arm (wholly distinct from the U.S. Air Force), which is more and more necessary to permit the aerial reconnaissance and battlefield mobility essential in modern land warfare. A measure of Army Aviation's growth is provided by the current total of 5,650 Army planes and helicopters (compared with the Air Force's total aircraft inventory of about 16,200). Projected for mid-1963 in Army Aviation are 3,078 helicopters and 2,883 light planes. (See also AERONAUTICS; MISSILES.)

Administration.—Cyrus R. Vance, former general counsel of the Defense Department, became secretary of the Army on July 5, 1962, following the resignation of Elvis J. Stahr, Jr. Gen. Earle G. Wheeler, former deputy commander in chief of the U.S. European Command, was advanced to chief of staff, U.S. Army, replacing Gen. George H. Decker, who retired. Gen. Paul L. Freeman, Jr., became commanding general, U.S. Army Forces, Europe, and Lt. Gen. Hugh P. Harris was named commanding general of the principal field force, the U.S. Seventh Army stationed in Germany. Gen. James F. Collins continued to head U.S. Army Forces, Pacific, and Gen. Guy S. Meloy, Jr., the Eighth Army in Korea.

Gen. Paul D. Harkins, Jr., heading the U.S. Military Advisory Groups to both South Vietnam and Thailand, became largely responsible for aid and advice in the counter-insurgency program for southeast Asia. In the United States, Gen. Paul D. Adams became head of the newly created U.S. Strike Command, composed of the Army's highly mobile Strategic Army Corps and the Tactical Air Command elements required for its movement and support.

The year witnessed a major administrative change within the Army organization, initiated by Defense Secretary Robert S. McNamara but designed by the Army itself. This constituted a complete reshuffling of traditional functions and services in pursuit of clearer fixing of responsibilities. The ancient Ordnance and Quartermaster establishments were completely fragmented, their functions being redistributed among several new commands. Four basic Army missions were recognized and allotted to strongly centralized commands, most easily summarized as follows: (1) determining how to fight and with what (to the Combat Development Command); (2) acquiring the wherewithal to fight (to the Army Matériel Command); (3) providing the men to fight (to the Office of Personnel Operations); and (4) training the men to readiness (to the Continental Army Command).

Strength.—The Army's total personnel at mid-1962 stood at the high temporary figure of 1,066,404, much of this due to the presence of reservists still on active duty and Regular Army personnel who, due for retirement some months earlier, had been kept on extended duty by reason of the Berlin crisis. With the return of these troops to civilian life in the late summer of 1962, the Army roster dropped sharply. Its targeted size for mid-1963 is 980,000, compared with the actual 858,622 of pre-crisis 1961. Of the 980,000, about 20,000 will be temporary, permitting advance training of recruits in order to let them replace, without loss of efficiency, the two-year men who enlisted in late 1961 in large numbers to cope with the Berlin crisis.

By late 1962 the Army's main combat elements comprised 16 divisions, 5 armored cavalry regiments, 3 separate brigades, 10 separate battle groups, 3 missile commands, 63 air defense (guided missile) battalions, and 33 surface-to-surface missile battalions. Additional support elements are purposely kept to the number regarded as essential for peacetime operation, plus a margin for emergency. Much larger support forces, not so near readiness, are set up both in the National Guard and Army Reserve. The Cuban crisis in late 1961 called for no notable changes in the existing structure of the Army.

Reserve Forces.—After a study of the virtues and defects visible in the 1961–62 experience, the Army, by direction of the Defense Department, undertook a grand-scale reorganization of its reserve components. It established the principle that the Regular Army should be relied on to maintain the overseas establishments, mobile forces at home for quick reinforcement or for sudden requirements in new areas, and defense against attack on the homeland, and to set up a mobilization base and direct troop training. Accordingly, the prime (but not the sole) national purpose of the reserve components would be to supplement the Regular Army establishment. The proposal to Congress by Defense Secretary McNamara inevitably called for radical changes, some of which were so hotly opposed by reservist leaders that Congress warned the Pentagon against moving too rapidly.

A measured review of what has been determined already and what is still required was scheduled for presentation to the House Armed Services Committee in February 1963. Anticipated were: (1) realignment of four National Guard and four Reserve divisions into brigades; (2) transformation of about 1,000 smaller units from their previous purposes to more urgently needed functions; and (3) elimination of several hundred other units as being no longer necessary. The planning of all these measures is complete. The expectation is that most of these radical changes will be accepted by Congress for gradual implementation.

Research and Development.—In the Army's budget for 1963, $1,319,000,000 was allotted to what is officially labeled "research-development-test-evaluation" activities. This record sum is indicative of the rapidly increasing attention given by all the military services to ascertaining new needs and meeting them with celerity. The year 1962 brought numerous items of equipment out of the laboratory into factory lines and thence to troops. The new matériel was marked variously by reduced weight and size (for field mobility and air transportability), and by increased range, firepower, reliability, or ruggedness. The new centralization of authority in the Army Matériel Command seeks to shorten the period of transition from weapons design to field use.

(See also NATIONAL GUARD; NATIONAL SECURITY.)

MARK S. WATSON,
Military Correspondent, "The Baltimore Sun."

ARSENIC. See MINERAL PRODUCTION.

ART. See PAINTING AND SCULPTURE and the Index entry, *Art.*

ARTHRITIS. See Index entry.

ARUBA. See NETHERLANDS ANTILLES.

ASBESTOS. See MINERAL PRODUCTION.

ASCENSION. See SAINT HELENA.

ASIA. See FAR EAST; MIDDLE EAST; articles on the countries of Asia; and the Index entry, *Asia.*

ASSOCIATIONS. See SOCIETIES AND ORGANIZATIONS.

ASTRONAUTICS. See SPACE FLIGHT.

ASTRONOMY

Steady progress was made in 1962, particularly in the relatively new applications of radio and electronics in astronomy. In America, general interest in astronomy is proved by the building of many new planetariums for popular instruction and the greater number of amateur scientific societies doing good work, while observatories are adding staff and equipment. The first Orbiting Solar Observatory (OSO) was launched into earth orbit on March 7, 1962 from Cape Canaveral, Fla. It telemetered data which filled 200 miles of magnetic tape on the sun's ultraviolet, X-ray, and gamma-ray radiation and on more than 75 solar flares before it ceased operating on May 22, 1962 after 1,138 orbits. It resumed intermittent operation later, transmitting data until November 1962.

Eclipses.—The path of totality of a total solar eclipse began in Borneo (Feb. 5, 1962) and swept by New Guinea and other islands over the International Date Line and across the Pacific (February 4), but ended before it reached North America. It was observed almost entirely from Indonesia, and many excellent photographs were obtained. Sunspot minimum was approaching, so the corona showed strong streamers in the solar equatorial regions.

The period from Jan. 1, 1964, to Dec. 31, 1965, during which the sun is expected to be at the low point of its 11-year cycle of activity, has been set aside as the International Year of the Quiet Sun (*IQSY*) by the International Committee for Geophysics, for intensive cooperative study of the sun, comparable to the previous International Geophysical Year (*IGY*).

Penumbral lunar eclipses, in which the moon enters only the penumbra of the earth's shadow cone, occurred on Feb. 19, July 17, and Aug. 15, 1962. The lunar surface is slightly darkened in penumbral eclipses, but they are of little scientific value. The path of an annular solar eclipse on July 31 began in South America, crossed the Atlantic, and passed over Africa, ending at the island of Madagascar.

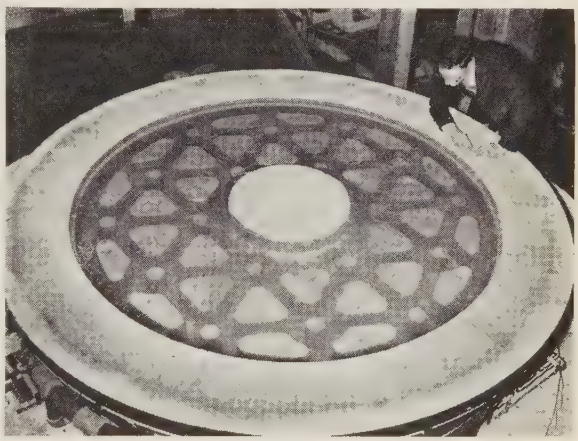
Planets.—The mean distance from the earth to the sun, called the astronomical unit (A.U.), is the fundamental unit of distance in astronomy. By means of echoes from radar signals to Venus, three new values for the A.U. are available, two definitive and one provisional, but all in good agreement. The first, determined at Massachusetts Institute of Technology, gave the distance as 149,597,850 ± 400 km. (92,955,616 ± 250 miles). The second, at California Institute of Technology, gave 149,598,845 ± 250 km.; while the third, at the Moorestown, N.J., station of the Radio Corporation of America, gave 149,596,000 km. A distance based on these values or on data derived from the radial velocities of space probes will probably supersede earlier estimates.

F. R. Zabriskie has made new studies of the atmosphere of Jupiter, based on spectra taken by Karl Keiss. Zabriskie concludes there are 5 km. of molecular hydrogen above Jupiter's cloud level, which is at a temperature of about 170° Kelvin. The period of rotation of the great Red Spot continues to diminish, and its physical nature remains conjectural.

Radar studies of the atmosphere, temperature, and surface of Venus continue. The United States space probe, Mariner II, was launched on Aug. 27, 1962, toward Venus. On September 4 its course was corrected so that it passed about 21,600 miles from Venus on December 14, taking data for 42 minutes on the conditions on that planet. Mariner II carried a 50-pound package of instruments to measure magnetic fields, charged particles, cosmic dust, and sun-emitted protons in interplanetary space; details of Venus' atmosphere and its surface temperature will be deduced from records from a microwave radiometer and its cloud structure analyzed by data from an infrared radiometer. (See also SPACE FLIGHT.)

Comets.—Photographs of Comet Humason (1961e) in July 1962 showed that its coma underwent most curious and unexpected changes when the comet was still 250 million miles from the sun. A plate taken by Elizabeth Roemer on July 10 with the U.S. Naval Observatory's 40-inch refractor at Flagstaff, Ariz., showed a remarkable asymmetrical development of the tail immediately following the coma. By the end of July, the comet's magnitude was 6.5. Spectra showed strong bands in the tail to within 4 minutes of the coma, and carbon dioxide and nitrogen molecules were far stronger than cyanogen. Observers believed the comet had collided with a cloud of strong solar radiation.

George Van Biesbroeck computed an orbit for Comet Bester (1948I), based on 243 days' observations. After perihelion the computed eccentricity



CORNING GLASS WORKS

This 84-inch glass disc will become the primary mirror in a new telescope at the University of La Plata, Argentina.

was slightly greater than 1, so the comet will leave our solar system. Similarly, two computers have found the orbital eccentricity of Comet Arend-Roland (1956h) to be slightly greater than 1. Since this is not due to planetary perturbations, this comet may have originated outside the solar system, or some unobserved factors may have affected it.

A study of Comet Oterma, discovered in April 1943, showed that its orbit has undergone exceptional changes. It was proved that before a near approach to Jupiter in 1936–38, its period was 18 years with a perihelion distance of 5.7 A.U., the largest such value for any known comet. Thanks to enormous perturbations by Jupiter, its period dropped to 8 years and its orbit became more circular, with an eccentricity of only 0.18, so that its perihelion and aphelion distances are only 3.4 and 4.5 A.U., respectively. In 1962 the comet again entered Jupiter's sphere of gravitational influence (within a radius of about 0.32 A.U.) and will remain within it for 18 months. It is computed that by 1964, Oterma's eccentricity will nearly double and that its period will increase to 22 years. By that time the comet will become so faint it can no longer be photographed.

A number of comets were discovered or rediscovered in 1962. Periodic comet Harrington-Abell (1962a) was relocated by Alan McClure of Hollywood, Calif., on January 26, in eastern Orion, at magnitude 17. Periodic comet Tuttle-Giacobini-Kresek (1962b) was rediscovered by Elizabeth Roemer, in Hydra on January 28 at magnitude 18. Comet Seki-Lines (1962c), found independently by Tsutomu Seki of Kochi, Japan, and R. D. Lines of Phoenix, Ariz., in Puppis, on February 4 at magnitude 9, has a very small perihelion distance with a high orbital inclination and direct motion. Comet Honda (1962d) was discovered on April 28 by the Japanese astronomer M. Honda, in Andromeda at magnitude 8. A diffuse comet with a central condensation or nucleus, it had passed perihelion on April 20 at 0.65 A.U. from the sun, and the inclination of its orbit is 73°.

Meteors.—The present knowledge of meteoric bodies, with emphasis on radar studies, was discussed in April 1962 at a symposium at Harvard University. Meteors ranging in size down to magnitude 15 are detectable by radar and show features (such as mass, velocity, and time distributions) similar to those predicted from studies of larger meteors. Their echo rate, however, measured at the same hours for several years, shows day-to-day fluctuations much greater than those of sporadic meteors, with almost no correlation with well-known showers. Meteors of magnitude 15 may come from short-lived showers, of which perhaps 10 occur on a given day, and not from general distribution. Some researchers conclude that almost all of the larger sporadic meteors move in direct orbits, the larger particles mostly near the plane of the ecliptic and those of smaller size almost perpendicular to this plane but still with direct motion. If sporadic meteors move in direct orbits, it is difficult to see how they can originate from comets, about half of which move in retrograde orbits.

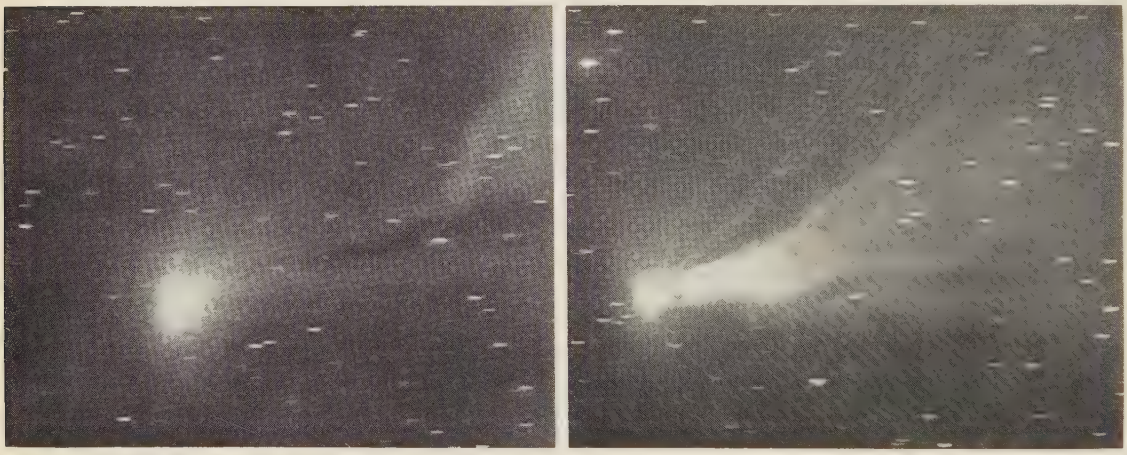
The linear width of meteor trails has been measured, based on photographs of the Geminid meteors in December 1957. The average train width was one meter, although exceptional trains ran to widths of 6 meters.

The earth gains a mass of 10,000 tons of interplanetary dust each day. Comparison with zodiacal light measures of the dust found at 1 A.U. from the sun indicates that the dust has a thousand times greater density near the earth, but the particles are not in geocentric orbits. The reason for this curious contradiction is not known. A micrometeorite collector rocket fired from White Sands, N.Mex., carried a specially prepared particle impactor open from the height of 88 km. to 168 km. and closed at 116 km. on the return, with a total exposure of 4 minutes. About 7 particles per square millimeter were collected, found falling with low velocity. Most were submicroscopic in size and were of three types: high density spheres, medium dense irregular particles, and fluffy particles. Chemical analysis by several methods reveals a variable composition.

Sidereal Universe.—Study of the Great Orion Nebula by T. K. Menon at the National Radio Observatory, Green Bank, W. Va., reveals that the distribution of stars and gas in the cluster tends to support the view that the nebula is relatively young and that its stars have been ionized. Estimates by others of the total mass involved vary from 770 to 3,100 times that of the sun. The time interval since the nebula became ionized is only about 10,000 years.

As now determined, the estimated masses of galaxies depend mostly on measures of their radial velocities. Because of their faintness, adequate spectra are very difficult to obtain, even with the most powerful telescopes. Recent studies of the Virgo Cluster lead to the disturbing conclusion that the mean velocity of recession for 8 of the spiral galaxies of type Sc which have emission lines is $+1{,}100 \pm 150$ km. per sec.; while for 10 others of the same type, but without emission lines, the velocity is $+1{,}800 \pm 250$ km. per sec. The velocities were expected to be the same, since all the objects studied are assumed to be members of the same cluster of galaxies at about equal distances from the earth.

James Lequeux, of the Paris Observatory at Meudon, France, has summarized present knowledge of radio galaxies, among the most interesting of celestial objects. When first studied it seemed that only galaxies with certain peculiarities were strong radio sources. But recent work has shown that an astonishing variety of objects turn out to be radio galaxies, and that they correspond to giant galaxies with great intrinsic luminosity—in fact, the average absolute magnitude of radio galaxies is −20.4. Also, it has been proved that the volume of space from which the radio waves come is far larger than the centrally associated visible galaxy.



ELIZABETH ROEMER, FROM U.S. NAVY

Unusual changes in the coma of Comet Humason are illustrated in these photographs, taken three days apart. (Left) July 7 exposure shows quiescent tail. (Right) Picture taken July 10 demonstrates great activity. Both plates were exposed one hour.

It has been found also that at least 50 percent (and perhaps 70 to 90 percent) of radio galaxies are double. Of the 10 most intense known, only Hydra A appears to be an exception. But it is a mystery why many optically double galaxies are simple radio sources and, inversely, many double radio sources correspond to single galaxies. With no sound current theory of radio galaxies, advances must come from more detailed knowledge of the structure of the larger and nearer ones.

The spectra of the spiral galaxy NGC 1365 show that an enormous variety of streaming motions may exist in it, in addition to circular motion. New work on the star cluster NGC 2158 shows that its distance is 4,900 parsecs and its age about 800 million years. Its structure is similar to that of a globular cluster, because of its radial symmetry and richness. In important aspects it seems to represent a transition between a globular and a galactic cluster.

Supernovae.—F. Zwicky has recently outlined the theories of the development of supernovae. Besides stars and nebulae, gas and dust clouds of varying density occur in various parts of galaxies, and perhaps the vast spaces between galaxies are not wholly empty. When a supernova explodes, vast clouds of dispersed matter are ejected with velocities of the order of 5,000 km. per sec. or more. This material puts the already existing gas clouds into motion on contact with them, and that region of space therefore contains less matter to exert gravitational force. Hence stars with initial high velocities may escape from the region entirely. Since some star clusters are rich in interstellar gas and dust, such an explosion within might sweep the cluster clear, destroy the internal equilibrium, and permit the stars to disperse. Perhaps even chain reactions occur, as in NGC 3184, where supernovae occurred in 1921 and 1947. When one supernova explodes, the immense energy released may be sufficient to act as a trigger on another star in just the right critical state.

Another theory is that supernovae may be the result of the collapse of immense gas clouds, where the total mass involved would amount to that of thousands of suns. Chains of supernovae might well result from the collision of galaxies, after which stars and gas clouds would be relatively more crowded than before, and the explosion of one supernova could well start the chain reaction. Also in such circumstances the nuclei of the galaxies might be dispersed, forming new, smaller galaxies or the curious bridges seen between or within certain types of galaxies.

The Crab Nebula in our galaxy, the remains of a supernova observed in China in 1054 A.D., is one of the strongest radio sources. Remarkable changes in brightness are now being observed in certain parts of the nebula, the radial velocities of some 200 points having recently been measured by Nicholas U. Mayall of Kitt Peak National Observatory. He concludes that a model of the nebula might be a distorted ellipsoidal shell, somewhat pear-shaped, with parts of some filaments inside. A definite decrease in radio flux has been found when the nebula is occulted by the solar corona.

WZ Sagittae is typical of another type of nova called recurrent, having flared up in 1913 and again in 1946. It turns out to be an eclipsing binary, with a very short period of 81.38 minutes. The light curve does not repeat itself, cycle by cycle, which means that there are intrinsic changes in brightness and flare activity.

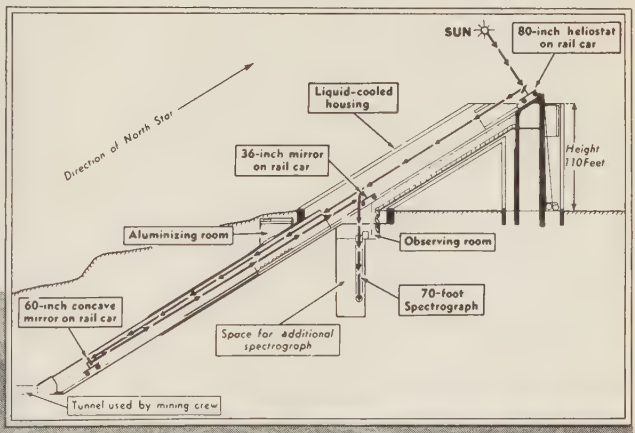
An extensive study has been made of the Class I supernova SN 64, found on June 28, 1959, by M. L. Humason of Mount Wilson and Palomar Observatories. Its magnitude was 14.0 on discovery, while the integrated magnitude of the barred spiral galaxy in which it appeared is only 15.4. The spiral's absolute magnitude is −17.0 and its distance is probably 29.9 parsecs, derived from the radial velocity of +2,990 km. per sec. shown by its spectrum. A plate taken on June 9, 1959, shows the supernova at less than magnitude 20.5, so its increase in 25 days or less was at least 6.5 magnitudes. At maximum, its absolute magnitude was −18.4 or roughly four times brighter than its parent galaxy. This supernova was 2 billion times brighter at its maximum than our sun, which has an absolute magnitude of only +4.85.

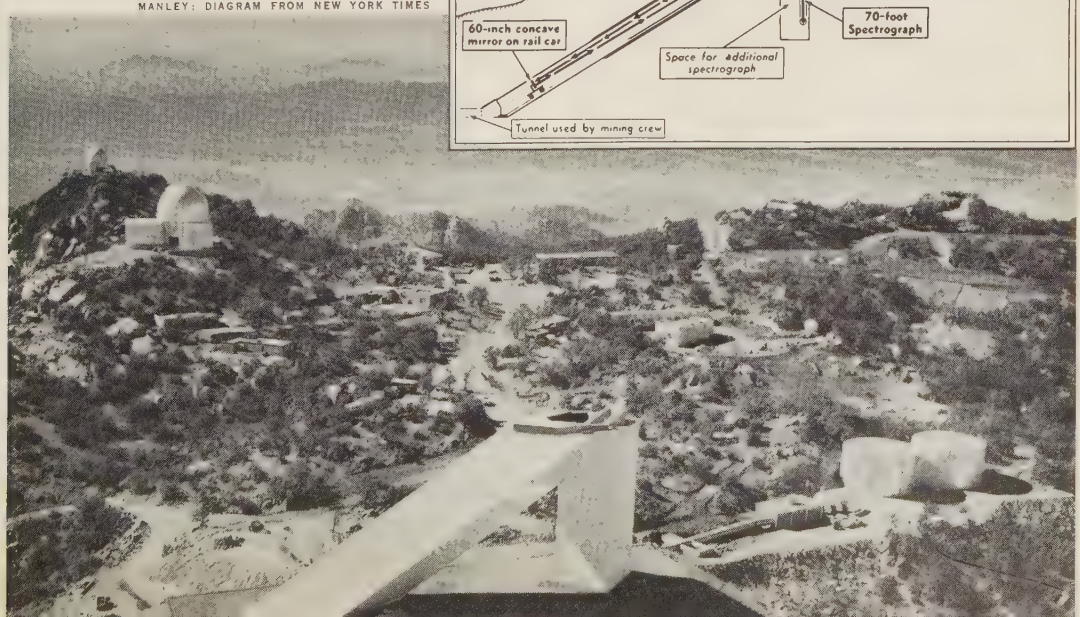
A supernova of magnitude 14 has been discovered in NGC 3938 by P. Wild. Another supernova, of magnitude 13, was discovered on June 28, 1962, by Enrique Chavira at the National Astrophysical Observatory, Tonantzintla, Mexico, in an unnamed spiral galaxy in the constellation Virgo near NGC 5134.

Observatories.—Rapid progress is being made at Kitt Peak National Observatory, 40 miles southwest of Tucson, Ariz. The McMath solar telescope, named for the late astronomer, Robert R. McMath, began operating in Decem-

World's largest solar telescope, under construction at Kitt Peak near Tucson, Ariz. (below), has 500-foot tunnel, partly underground, aimed toward North Star. Sunlight is directed into the shaft by movable mirror, and is then reflected into a 70-foot spectograph for study, as shown in diagram (right).

MANLEY: DIAGRAM FROM NEW YORK TIMES





ber 1962. This is the world's largest solar telescope. Partly tunneled beneath the summit of the 6,800-foot peak, it produces an image of the sun 33.5 inches in diameter, and its spectroscope yields a 70-foot spectrum. The mounting and mirror for an 80-inch stellar telescope are also being installed on Kitt Peak. It should be in operation with its interchangeable Cassegrainian and coudé optical systems early in 1963. Both instruments are federally financed and will be operated by a team of scientists from nine universities.

The radio telescope with the world's largest movable dish antenna was placed in operation in September at the National Radio Astronomy Observatory near Green Bank, W. Va. Covering wavelengths up to 40 cm., its paraboloidal antenna is 300 feet in diameter and 23 stories high when pointed at the zenith. The antenna swings north and south only, in the meridian, but has a resolution 10 times that of previous instruments. It is believed that the 140-foot, fully steerable radio telescope under construction at the same location will be completed in 1965. The similar 600-foot telescope project at Sugar Grove, W. Va., was canceled in 1962 because of engineering difficulties, increased cost estimates, and developments in satellite and electronic technologies which in part replaced it. The world's largest movable, high-powered dipole antenna system, covering 22 acres, is being operated by the National Bureau of Standards (q.v.) and the Instituto Geofísico del Peru near Lima, Peru. (See also ATMOSPHERE RESEARCH.)

At the Karl Schwarzschild Observatory in Tautenburg, East Germany, a reflecting telescope has been installed with a 200-cm. (78.7-inch) mirror and mounting designed and built by Carl Zeiss Jena. Its interchangeable Schmidt, Newtonian, Cassegrainian, and coudé optical systems permit a variety of astronomical and astrophysical functions. Two similar telescopes are being built for the Soviet Union and another for Czechoslovakia.

A 48-inch Canadian reflector, four years in the making, was completed early in 1962 at the Dominion Astrophysical Observatory near Victoria, British Columbia.

(See also ELECTRONICS.)

CHARLES P. OLIVIER,
Emeritus Professor of Astronomy and Former Director of Flower and Cook Observatories, University of Pennsylvania.

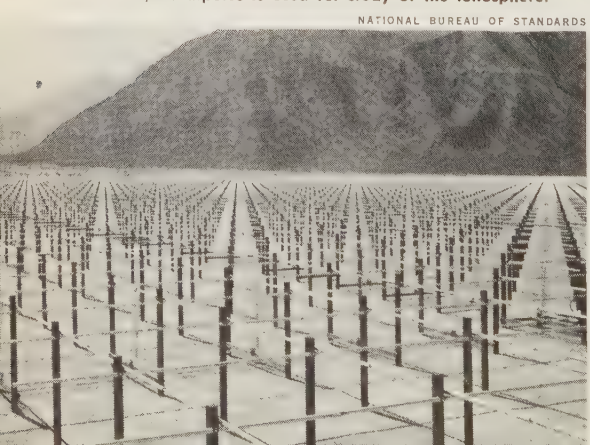
ATMOSPHERE RESEARCH

Progress in the atmospheric sciences was steady, and at times spectacular, during 1962.

Scatter Radar.—The world's largest movable, very-high-powered antenna system, operating at 50 megacycles per second, has been built at the magnetic equator near Lima, Peru. It is operated jointly by the National Bureau of Standards (q.v.) and the Instituto Geofísico del Peru. The antenna consists of an array of 18,000 dipoles covering 22 acres, half the array with east-west and half with north-south polarization. The antenna has a peak power of 6 million watts and by proper phasing can be shifted into the vertical by about 6 degrees. By pulsing energy into the antenna as a transmitter and then using the antenna system as a receiver, the energy backscattered from irregularities of electron density in the ionosphere can be recorded. The power returned to the antenna from any height is directly proportional to the electron density. By this means the electron-density distribution throughout the ionosphere and the exosphere have been measured from as low as 150 km. to as high as 3,000 km.

Covering 22 acres near Lima, Peru, radio telescope antenna with 18,000 dipoles is used for study of the ionosphere.

NATIONAL BUREAU OF STANDARDS



Artificial Radiation Belt.—Immediately following the high-altitude nuclear detonation above Johnston Island in the Pacific Ocean on July 9, 1962 (see ATOMIC ENERGY), very strong, highly polarized radio emissions were observed with the scatter radar antenna system located near Lima, Peru, and with riometers in Peru. Riometers are radio receivers which normally record the strength of cosmic noise at 30 megacycles per second from radio stars, and the absorption of this cosmic noise by the ionosphere. The radio emissions were synchrotron radiation emitted by relativistic electrons created by the bomb and then trapped in the earth's magnetic field. The trapped electrons spiral along the magnetic field lines and simultaneously drift toward the east. The first large peak in the noise records, 6 minutes after the detonation, corresponded to the first pass of the electrons overhead at Peru. A second peak in the radio noise recordings occurred about 25 minutes later after passage of the electrons completely around the world. Calculations showed that a total of 2×10^{24} electrons with energies of 1 Mev. or greater were trapped in the belt. The decay rate of the trapped electrons is very slow; after one month only about one third of the excess radio noise had disappeared. This would indicate that at the end of one year 10 to 20 percent of the synchrotron radiation noise will be present at the equator.

This artificially generated belt of radiation of high-energy electrons is situated within the inner Van Allen belt, at a height above the equator of 1,500 km., and has minimum mirror altitudes at about 1,000 to 1,200 km. The presence of this belt has caused the rapid deterioration of solar cells in orbiting satellites and the postponement of certain future satellite launchings. In order to study the new belt further, a specially instrumented Explorer satellite was launched into a highly eccentric orbit on Oct. 2, 1962.

Rainfall and Lunar Cycles.—An extremely detailed analysis of rainfall data from a 50-year period (1900–49), including 16,057 maximum precipitation records and 1,544 weather stations for the United States, has shown a very high correlation between periods of excessive precipitation and the period of the moon. There is a marked tendency for extreme precipitation in North America to occur near the middle of the first and third weeks of the lunar month, especially on the third to fifth days after the new and full moon. The second and fourth quarters of the lunar cycle are correspondingly deficient in heavy precipitation. A similar Australian analysis of rainfall data from 50 stations in New Zealand for the years 1900–25 showed the same correlation between rainfall maxima and lunar cycle. Not yet explained, the correlation will have considerable influence on atmosphere research as investigators seek an answer.

Equatorial Stratospheric Wind Oscillation.—An important revision in our understanding of the mean zonal circulation of the tropical stratosphere has been due to the discovery by R. J. Reed and D. G. Rogers, University of Washington, of a strong 26-month period of oscillation in the wind pattern. This feature consists of alternate easterly (from the east) and westerly bands of wind which encircle the globe, appearing first at the highest levels observed (about 30 km.) and progressing downward at a speed slightly greater than 1 km. per month. The amplitude is largest in the stratosphere above the equator, decreases slowly in the poleward direction, and disappears by about latitude 30°N. The long-term mean wind values still remain everywhere easterly in the equatorial stratosphere; they increase with height, and are strongest between latitudes 10°N. and 15°N. The amplitude of the annual cycle rises from near zero at the equator to a maximum of about 10 meters per second at approximately 25°N. The peak easterlies occur in late July or early August.

Magnetic Waves Heat Atmosphere.—The top of the earth's atmosphere may be heated partly by magnetic waves rolling in from space, rather than solely by ultraviolet solar radiation as previously thought. Evidence for this comes from observations of the drag on earth satellites due to the upper-air density, in turn controlled by temperature.

Particles (protons and electrons) are streaming outward from the sun as a continuous solar wind which at times increases sporadically by great eruptions from sunspots located in the so-called M regions on the sun, whose emissions produce magnetic disturbances on earth every time they swing in line with this planet. Most of these particles are deflected around the earth by its magnetic field. However, this bombardment and resulting deflection of the field produces hydromagnetic waves that flow into the upper atmosphere and generate heat. The heat then flows into the atmosphere both by wave propagation and by conduction. Only at considerably lower heights, below about 125 miles, does the ultraviolet heating take over in its role of warming the earth. A 27-day cycle and an 11-year cycle in the air density at great heights can be attributed to the solar cycle and resulting magnetic waves. Some investigators believe that the differences in upper-air densities between the daytime and the nighttime portions of the earth can also be explained in this way.

(See also METEOROLOGY AND CLIMATOLOGY; NATIONAL BUREAU OF STANDARDS; SPACE FLIGHT.)

DAVID M. GATES,
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ATOMIC ENERGY

Many significant international developments occurred in the field of atomic energy during 1962, including the design and completion of varied types of nuclear reactors, successful accelerator research into the heart of the atom, and large-scale testing of nuclear weapons and other devices.

U.S. Atomic Energy Commission.—In May, the five commissioners unanimously recommended that, in order to effect more efficient management of the United States program, the commission be reorganized with a single administrator. Although the proposal had the support of the president, the congressional Joint Committee on Atomic Energy (JCAE) suggested that it be shelved until next year to allow further study. Early in June, John S. Graham, whose term in office normally would have expired at the end of the month, resigned from the commission. Loren K. Olsen continued to fill out his term until the end of the month. These commissioners were replaced by James T. Raney, former staff director for the JCAE for over six years, and John G. Palfrey, dean of Columbia College. Other members are Glenn T. Seaborg (chairman), Leland J. Haworth, and Robert E. Wilson.

As a result of a request by the president, the AEC in 1962 started a study of the United States government's position with regard to nuclear power. This study is under the direction of Commissioners Wilson and Haworth. The president also directed the commissioners to study the effects of United States nuclear power policy on foreign relations.

The AEC asked congress for a record $2.7 billion for the fiscal year 1963. The greatest increases over the previous year were in those projects connected with the space applications of atomic energy. The 1963 budget included $75 million for nuclear rocket projects, as compared with $43 million in fiscal 1962. The moneys asked for research and development ($216 million) were at the same level as in the previous year, while the program for civilian reactor development was reduced. The House Appropriations Committee cut $10 million from the physical research program and authorized $60 million of the $95 million asked for the Stanford University linear electron accelerator. The only funds authorized for new reactor construction were $20 million for an organic-process heat reactor; however, a $50 million supplementary appropriation was approved for the Hanford New Plutonium Reactor (NPR), bringing the total money to date for this project to $195 million. After first being turned down in the House of Representatives, Congress finally authorized the sale of nuclear power from the NPR, with the provisions that: (1) any losses to the Bonneville Power Administration must be borne by customers and not by the government; (2) one half of the power generated be available to privately owned power companies.

Nuclear Power.—Three remote-type nuclear power reactors went into operation in 1962. The Air Force PM-1 reactor located on top of Mount Warren, Wyoming; the PM-3A at McMurdo Sound on the edge of the Ross Ice Shelf in Antarctica; and the SM-1A at Fort Greeley, Alaska. The PM-1 reactor is being used as the main power source for the Air Force base at Sundance, Wyo. The PM-3A is used to provide process steam for the desalinizing of sea water at the Antarctic base. By this means, 14,000 gallons of fresh water are produced each day.

Consolidated Edison's 163-Mw(e) (electrical megawatts) pressurized water reactor at Indian Point, Buchanan (near Peekskill), N.Y., went critical early in August 1962. The project initiated in 1954, with construction costs of $121 million, was expected to supply power to New York City sometime early in 1963. Also in 1962 the duPont Company completed a Heavy Water Components Test Reactor (HWCTR) at the AEC's Savannah River, S.C. plant. The $9.5 million test facility will be used to test fuel elements for new power-reactor designs.

Ten nuclear power plants, two of which were cooperative, were producing commercial power on a regular basis in the United States at the end of 1962, and two test plants were being run by the government. Nine other plants were planned or under construction by electric power companies, and five others by governmental or cooperative organizations; all of these are expected to produce commercial power. When in full operation, the 26 nuclear power plants will have a combined capacity of 3.5 million kw. The table on page 74 shows the principal plants in the United States nuclear power program presently operating and scheduled. (See also ELECTRICAL INDUSTRIES; PUBLIC UTILITIES.)

Great Britain's Advanced Gas-Cooled Reactor (AGR) prototype went critical at Windscale, Cumberland, England, in August. This reactor is one of two systems (the other being a heavy-water type) which the United Kingdom expects to use for the next generation of power reactors. It is expected that the 27-Mw(e) prototype will be operated for at least one year before a decision is reached on further development. The United Kingdom also approved the construction of an 800 Mw(e) nuclear station at Wylfa Head, Anglesey, Wales. This is Britain's ninth large nuclear power project and will bring the electrical output to 4,500 mw., to be on the British power grid by 1967.

The Canadian Nuclear Power Demonstration station (NPD) near Rolphton, Ontario, went critical in April and reached its full power output in June, using uranium dioxide fuel elements and a heavy-water moderator. Canada also approved the construction of an organic engineering test reactor (OTR), to be built at its new Whiteshell Labora-

NUCLEAR POWER PLANTS IN THE UNITED STATES AND PUERTO RICO
(In operation or under construction, design, or negotiation at the end of 1962)

System or sponsor	Operating basis[1]	Location	Normal rating of project (kilowatts)	Type of Reactor	Date in operation or scheduled for operation
IN OPERATION					
Argonne National Laboratory (AEC)	O	Lemont, Ill.	4,500[2]	Boiling water	1956
Commonwealth Edison Co.	EP, CP	Joliet, Ill.	180,000	Boiling water	1960
Consolidated Edison Co. of N.Y.	EP, CP	Buchanan, N.Y.	275,000[3]	Pressurized water	1962
Consumers Power Co.	EP, CP	Big Rock Point, Mich.	50,000	Boiling water	1962
Duquesne Light Co.	EP, CP	Shippingport, Pa.	60,000	Pressurized water	1957
National Reactor Testing Station (AEC)	O	Arco, Idaho	16,500	Fast breeder	1961
Pacific Gas & Electric Co.	EP, CP	Pleasanton, Calif.	5,000	Boiling water	1957
Piqua, Ohio (city)	O, CP	Piqua, Ohio	11,400	Organic-cooled and -moderated	1962
Rural Cooperative Power Assoc.	O, CP	Elk River, Minn.	22,000	Boiling water	1962
Saxton Nuclear Experimental Corp.	EP, CP	Saxton, Pa.	5,000	Water	1961
Southern California Edison Co.	EP, CP	Santa Susana, Calif.	7,500	Sodium graphite	1957
Yankee Atomic Electric Co.	EP, CP	Rowe, Mass.	136,000	Pressurized water	1960
UNDER CONSTRUCTION, DESIGN, OR CONTRACT NEGOTIATION					
Carolinas-Virginia Nuclear Power Associates	EP, CP	Parr, S.C.	17,000	Heavy-water-moderated and -cooled	1963
Consumers Public Power District	O, CP	Hallam, Nebr.	75,000	Sodium graphite	1963
Dairyland Power Cooperative	O, CP	Genoa, Wis.	50,000	Boiling water	1965
The Detroit Edison Co.	EP, CP	Monroe, Mich.	100,000	Fast breeder	1963
High Temperature Reactor Associates, Inc.	EP, CP	Peach Bottom, Pa.	40,000	High-temperature, helium-cooled, graphite-moderated	1964
Northern States Power Co.	EP, CP	Sioux Falls, S. Dak.	66,000	Boiling water	1963
Oak Ridge National Laboratory (AEC)	O, CP	Oak Ridge, Tenn.	22,300	Helium-cooled, graphite moderated	1963
Pacific Gas & Electric Co.	EP, CP	Eureka, Calif.	60,000	Boiling water	1963
Pacific Gas & Electric Co.	EP, CP	Bodega Bay, Calif.	325,000	Boiling water	1965
Puerto Rico Water Resources Authority	O, CP	Punta Higuera, Puerto Rico	16,300	Boiling water	1963
New England Electric System[4]	EP, CP	New England	350,000	(Not selected)	1967–68
Nutmeg Electric Companies Atomic Project[4]	EP, CP	Connecticut	450,000	Water-cooled and -moderated	1967
Southern California Edison Co. and San Diego Gas & Electric Co.[4]	EP, CP	Southern California	375,000	Pressurized water	1965
Washington Public Power Supply System[4]	O, CP	Hanford, Wash.	800,000	Plutonium production reactor supplying steam	1967

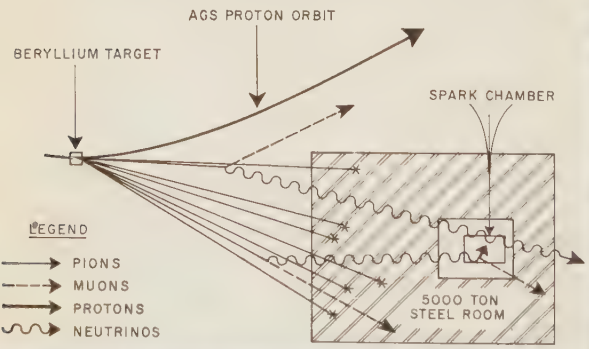
[1] Operating basis: EP—electric power companies participating in project; CP—commercial power produced, or to be produced, on a regular basis; O—other, such as AEC, public, or private group. [2] New core installed in 1960; original core rated at 5,000 kw. [3] Based 59% on reactor heating, 41% on supplementary superheating. [4] Project approved and still in planning stages. (Source: Edison Electric Institute.)

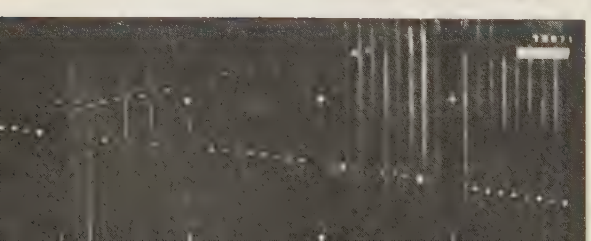
tory 60 miles northeast of Winnipeg. The Swiss began work at Lucens on their first power reactor, a 6-8-Mw(e) heavy-water, gas-cooled type; completion is scheduled for 1964.

The most notable advance in nuclear technology for 1962 was the acceptance by the Maritime Commission of the merchant ship N.S. *Savannah*, from the N.Y. Shipbuilding Corporation. The *Savannah* went to sea on March 23, 1962, and was taken to full power on April 4. By June 1 the ship had traveled some 5,000 miles under nuclear power without any unexpected shutdowns. Six hundred feet long with a full load displacement of 22,000 tons, the ship has a high degree of maneuverability because of the prompt response of the reactor to changes in load demand. Under normal operating conditions the reactor can supply full power in 30 seconds and cruise at 24 knots.

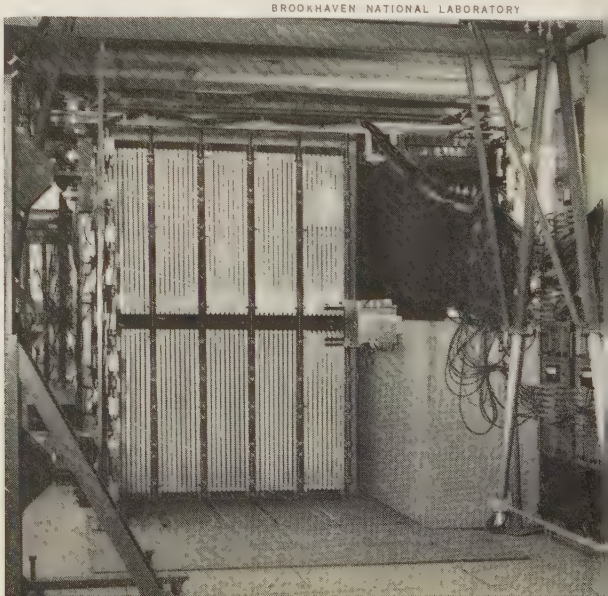
Accelerators.—Construction has started on the two-mile-long, $132 million linear electron accelerator at Stanford University. The tentative schedule called for its completion by 1966. The machine will begin operation with a power supply of 240

Columbia University's 10-ton spark chamber at Brookhaven National Laboratory (*right*) was used for study of neutrinos. Steel shield (diagram, *upper left*) eliminates particles other than neutrinos, one of which created the long straight spark track of a mu-meson (muon) in photograph (*lower left*). Shorter spark track above it may have been created by a gamma ray.





BROOKHAVEN NATIONAL LABORATORY



klystron tubes and produce from 10 to 20 Bev. (billion electron volts) with a beam current of 30 microamperes. Scheduled for early in 1967, experiments will use the electrons to probe the nature of nuclear forces. Measurements of the electron-proton interaction—for the investigation of which Robert Hofstadter of Stanford was awarded the Nobel Prize in 1961—will be extended to higher energies with this machine. Other electron experiments are planned to determine whether present electromagnetic theory is valid at very small distances. The electrons will also produce secondary nuclear particles in great quantities, and these will be available for beam experiments.

The 6-Bev. Cambridge Electron Accelerator (CEA) has begun routine operation for experimenters from Harvard University and Massachusetts Institute of Technology. The 12.5-Bev. zero-gradient proton synchrotron at the Argonne National Laboratory was nearly completed by the end of 1962.

High-Energy Physics.—A puzzle that has bothered physicists for the last five years was finally solved by one of the first experiments performed at the newly completed Brookhaven Alternating Gradient Synchrotron (AGS). It was known that if either an electron or a mu-meson (muon) is absorbed in a nucleus, a neutrino (particle of zero charge and zero mass) is emitted. The theoretical explanation of these processes was based on the assumption that the emitted neutrino is the same for both. A consequence of such a theory is the prediction that the mu-meson should spontaneously decay into an electron and a gamma ray, once in every 10,000 normal decays. However, the electron and gamma ray were not noted in experiments where 100 million mu-mesons were observed to decay. The experimental results, published in July 1962 by a group of Columbia University and Brookhaven Laboratory scientists, showed that the neutrino associated with mu-meson interactions is a different entity from the neutrino associated with electron interactions.

Pi-mesons (pions) were produced by the bombardment of beryllium nuclei by 15-Bev. protons accelerated by the huge AGS. About 10% of these pi-mesons disintegrate during their transit (at almost the velocity of light) from the machine toward the detector. The resulting mu-mesons and neutrinos continue roughly in the same direction, with the 90% of the pi-mesons that have not decayed. About 70 feet from the machine a 42-foot-thick shielding wall was constructed, consisting of about 5,000 tons of iron (old battleship deck plate). This wall is thick enough to stop all particles except neutrinos. On its other side in a well-shielded room is a 10-ton spark chamber which will show a trail of sparks along the path of a charged particle traveling within it. A neutrino interaction would be signified by either a mu-meson or an electron originating within the chamber.

© OAKLAND TRIBUNE FROM WIDE WORLD

Mushroom cloud was made by a United States nuclear test device exploded near Christmas Island in the summer of 1962.

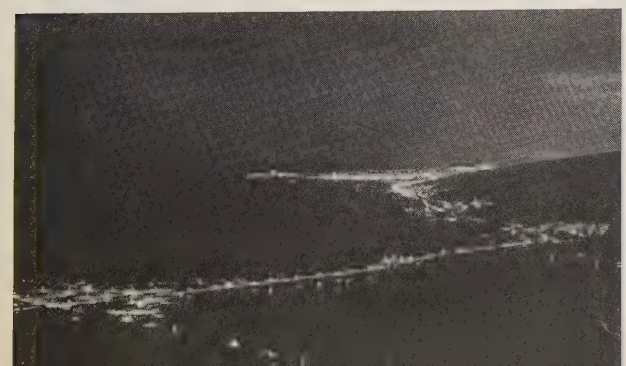
Of 100 trillion neutrinos allowed to pass through the chamber, 50 interacted in it, producing new particles. Of these, 29 show only a single energetic mu-meson being produced, while the remainder show mu-mesons being produced with other particles. In no case was a single energetic electron produced. This demonstrates that the neutrinos arising from the decay of the pi-meson are different from those involved in electron decay. It is thus no longer adequate to speak of a neutrino—it must be labeled as either a mu-meson-type neutrino or an electron-type neutrino.

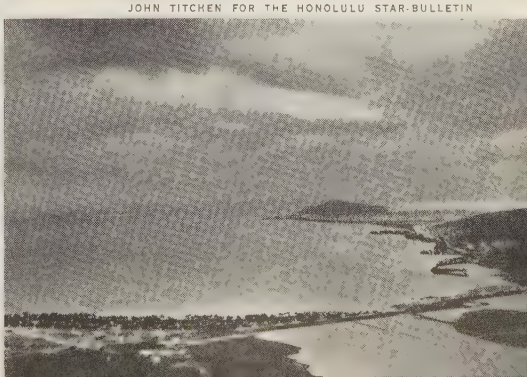
In March 1962, physicists working at Brookhaven and the European Organization for Nuclear Research (CERN) in Switzerland simultaneously discovered one more particle to add to the scientists' zoo of 29 already known "elementary" particles. The existence of the particle, known as the anti-Xi-minus, was predicted from the general principle on which quantum mechanics is based, that for every known elementary particle there must be an anti-particle.

Anti-protons with a momentum of 3.3 Bev. generated in the AGS at Brookhaven were sep-

Night sky over Honolulu, Hawaii (*left*) is brilliantly illuminated (*right*) by explosion of a United States nuclear device over Johnston Island, more than 700 miles away, on July 9. The device was detonated 250 miles above the surface of the earth.

JOHN TITCHEN FOR THE HONOLULU STAR-BULLETIN





arated by an arrangement of magnets and electrostatic separators, and sent through a 20-inch bubble chamber. The anti-Xi-minus particle was found after 34,000 bubble-chamber pictures had been scanned for strange particle production. Each picture contained an average of 14 antiparticle tracks.

The anti-Xi-minus is the heaviest of the predicted elementary particles to be observed. It has a positive charge and a lifetime of about one ten-billionth of a second. At it decays, it disintegrates into a positive pi-meson and a neutral anti-lambda-hyperon. This latter particle then decays into an anti-proton and positive pi-meson. This complex decay pattern is called a cascade. (See also PHYSICS.)

Reactors for Space.—The use of atomic energy for space projects falls into two distinct divisions: (1) the use of reactors as engines for providing the thrust for space vehicles; and (2) the use of reactors and radioisotopes to provide auxiliary power sources for space vehicles. The projects of the first division are being carried out by the Space Nuclear Propulsion Office, headed by Harold B. Finger, under the joint direction of the AEC and the National Aeronautics and Space Administration (NASA). One major program of this office is called Nuclear Engines for Rocket Vehicle Application (NERVA). As part of this program, various Kiwi reactor models were tested in the Nevada desert in 1962 by the Los Alamos Laboratory's Project Rover group. Into these nuclear reactors is injected liquid hydrogen, which is heated to temperatures of the order of 1000° C. and ejected at high velocities to provide the thrust for the nuclear space vehicle. The present plan calls for Project Rover engines to be ready for operational flight test in 1966–67. The Space Propulsion Office granted a contract in 1962 to the Lockheed Missile and Space Company for the design of a vehicle for the NERVA rocket engine. Another major program is called Reactor in Flight Test (RIFT). This project will produce a vehicle that will be used as the third stage of an advanced Saturn C-5 booster.

The second division projects are collectively known as Systems for Nuclear Auxiliary Power (SNAP). Some 20 different development projects were active in this division by 1962, and the AEC decided to put them all under a single director, Richard L. Kirk. Among the larger SNAP projects was SNAP 8, a program assigned to Aerojet General Corporation for developing a lightweight reactor and generating system (30 to 60 kw.) to provide power for large space vehicles. In 1962, NASA renegotiated an $8 million contract to assure that this power source will be operational in five years. Another project called SNAP 50 is a boiling-liquid-potassium fast reactor (300 to 1,000 kw.) using lithium as a coolant. The project is under development at Pratt & Whitney Aircraft with specifications for a weight of 10 lbs/kw. for the unshielded reactor, conversion unit, and radiation shield. (See also SPACE FLIGHT.)

Nuclear Tests.—Many tests of nuclear weapons and other nuclear devices were carried out during 1962. The intensive and large-scale nuclear testing of the USSR from Sept. 1 to Nov. 4, 1961, had broken the voluntary, uninspected test moratorium between the United States, Great Britain, and the Soviet Union in effect since Oct. 31, 1958. About 50 atmospheric explosions were estimated in this Soviet series, topped by the huge device exploded with a force of 58 megatons on October 30. On September 15 the United States began a series of low-yield, underground nuclear tests at its Nevada proving grounds. Eight of these tests, each of less than 20 kilotons, were made in 1961, and the series was continued into 1962, the ninth occurring on January 9. On February 2 the AEC reported that an unannounced (and apparently underground) Soviet nuclear device had been exploded on that day in the Semipalatinsk test area in central Asia.

The first British test of a nuclear device since 1958 was conducted underground at the Nevada proving grounds on March 1. By March 2, 18 tests had been reported in the underground series of the United States, when President Kennedy announced that because of probable Soviet technological advances the United States might have to conduct atmospheric tests. When attempts to reach agreement on an internationally supervised test ban failed, President Kennedy on April 24 authorized atmospheric tests in the Pacific.

The American atmospheric nuclear tests were carried on in the British Christmas Island test area about 1,150 miles south of Hawaii, and in an area near Johnston Island, about 860 miles southwest of Hawaii. The first air test, of intermediate yield, took place on April 25 near Christmas Island. On May 6 a long-range Polaris missile lofted by the nuclear submarine *Ethan Allen* was exploded on target in the Christmas Island area. France conducted its first underground nuclear test (its fifth nuclear device) on May 1 at a site in the Ahaggar Mountains of the central Sahara in southern Algeria.

In the so-called Plowshare series designed to develop the uses of nuclear explosions for peaceful purposes, the second test, an earth-moving experiment, was carried out on the Nevada test site on July 6. Fired in a 635-foot underground chamber, its 100 kilotons blew out a crater 320 feet deep and some 1,200 feet in diameter, 95% of the radioactivity produced being trapped in the earth or quickly returned in the debris.

After two failures at Johnston Island in mid-June, and despite worldwide scientific protests, on July 9 a 1.25-megaton thermonuclear device carried up from Johnston Island by a Thor rocket was exploded at a height of 250 miles above the earth's surface. The test was designed to check the effects of a high-altitude explosion on radio communications and military electronic systems. Auroral and rather short-lived radio effects were noted. On July 11, after the 26th test in the Pacific, the AEC announced that the Christmas Island atmospheric test series had been completed.

On September 1 the United States announced that its high-altitude space shot had intensified the natural Van Allen belt in its lower reaches and extended it inward toward the earth. Observations showed that the artificially created radiation was decaying rather rapidly and was sufficiently high not to affect manned-satellite projects, but it did cripple the British satellite Ariel and the American satellites Transit IV-B and TRAAC. In October, two specially instrumented Explorer satellites were launched into elongated orbits to investigate this artificial radiation and to check whether a high-altitude Soviet blast of October 22 had created more of it. The United States continued its high-altitude series from Johnston Island with successful tests on October 20 and 27, and November 4, reducing the intensity and height of the explosions.

After a set of unannounced, low-yield tests in the Siberian area, the USSR began another series at its test site at Novaya Zemlya in the Soviet Arctic, starting with a 30-megaton explosion on August 5, second only to its largest nuclear shot in 1961. Another large test device in this series was estimated at 17 megatons. The USSR had exploded 32 nuclear devices by November 17. Although Premier Khrushchev had indicated that the 1962 Soviet test series would end on November 20, at least 7 tests were reported up to December 25. In 1961 the Soviet Union had carried out about 50 tests.

On November 4, President Kennedy announced that the United States had completed its series of atmospheric tests in the Pacific and was prepared to negotiate a test-ban treaty. Since Sept. 15, 1961, the United States had carried out 56 low-yield tests at its Nevada test site, all but 3 of them underground; and since April 25, 1962, 36 tests (mostly atmospheric) in the Pacific testing areas of Christmas and Johnston islands. Underground tests were continued at the Nevada test site through the remainder of the year. (See also ATMOSPHERE RESEARCH; CIVIL DEFENSE; DISARMAMENT; SEISMOLOGY.)

Radiation and Fallout.—The fallout effects of the Soviet nuclear tests in the atmosphere during the fall of 1961 were predicted for the spring of 1962. The U.S. Public Health Service monitoring revealed that the strontium-90 fallout levels in the spring appeared to be comparable to those observed in 1959 from the 1958 test series in the USSR. During 1962 the cumulative levels of iodine-131 in milk in some areas of the United States approached the acceptable levels recommended by the Federal Radiation Council for environmental sources generated by peaceful applications and exceeded them slightly in only two areas, Palmer, Alaska, and Salt Lake City, Utah, the Public Health Service reported in November. According to the same report, the amount of radioactive strontium in fallout was well below the yearly dietary levels specified in the radiation guides.

In a report issued June 1, 1962, the council concluded that nuclear testing through 1961 had increased the normal risks of adverse health effects by small amounts, but observed that, compared with the adverse biological effects occurring from radiation sources wholly apart from testing, the additional cases that might be caused by testing are small in number. The National Advisory Committee on Radiation (U.S. Public Health Service) has recommended

the expansion of radiation surveillance activities and more research to develop countermeasures. Radiation research was carried on during 1962 for methods of radiation protection, countermeasures, and techniques for removing radioactive fallout materials from such foods as milk. (See also CHEMISTRY; PUBLIC HEALTH.)

International Atomic Energy Agency.—In 1962, Sigvard Eklund of Sweden assumed the leadership of the U.N. International Atomic Energy Agency (IAEA) as director general. The IAEA fellowship program supported more than 500 scientists and technicians in their studies abroad during 1962. The agency sponsored nine conferences on problems related to atomic energy in various parts of the world and expanded its publications to some 70 in number. During the year, the IAEA carried out an ambitious program of technical assistance to some 25 member countries. A modest new IAEA laboratory at Seibersdorf, Austria, adjacent to the Austrian Atomic Energy Laboratory, serves as a scientific center for the training of scientists from member nations and establishes international standards in the field of atomic energy. Early in 1962 it distributed calibrated samples of radionuclides for testing and calibration of radiation measuring instruments.

European Atomic Energy Community.—On Jan. 10, 1962, Etienne Hirsch, the energetic director of the European Atomic Energy Community (Euratom), was replaced by another Frenchman, Pierre Chatenet. The second five-year budget (1963–67) for Euratom, prepared under Hirsch's direction, amounted to $480 million, but late in June the Council of Ministers approved a budget of $425 million. (See also EUROPE.)

(For further references, see the Index entry, *Atomic Energy.*)

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AUDIO-VISUAL AIDS. See Index entry.

AUSTRALIA

Lying wholly in the Southern Hemisphere southeast of Asia, the Commonwealth of Australia is composed of the island continent of Australia and the adjacent island of Tasmania. It has an area (including Tasmania) of 2,974,581 square miles, and a population of 10,660,750 (March 31, 1962, est.). Designated a commonwealth on Jan. 1, 1901, when six former colonies were renamed states and united under a federal constitution, Australia is an autonomous member of the Commonwealth of Nations, and a charter member of the United Nations.

Chief among Australia's dependencies (with population as of June 30, 1961) are Christmas Island (area, 64 square miles; pop., 3,099) and the Cocos (Keeling) Islands (area, 5 square miles; pop., 548), both in the Indian Ocean; and Norfolk Island (area, 13.3 square miles; pop., 1,035), in the South Pacific.[1]

Exclusive of full-blood aborigines (estimated at 39,319 in June 1954), the population of the component states and internal territories was as follows in the 1961 census (revised figures):

COMMONWEALTH OF AUSTRALIA

State or Territory	Square miles	Population	Capital (and population)	
New South Wales...	309,433	3,916,907	Sydney	(2,181,211)
Victoria.....	87,884	2,930,244	Melbourne	(1,907,366)
Queensland.....	670,500	1,518,859	Brisbane	(620,121)
South Australia.....	380,070	969,258	Adelaide	(587,556)
Western Australia...	975,920	736,624	Perth	(419,755)
Tasmania.....	26,215	350,322	Hobart	(115,887)
Northern Territory...	523,620	27,139	Darwin[1]	(12,458)
Australian Capital Territory.....	939	58,828	Canberra[2]	(56,430)
	2,974,581	10,508,191		

[1] Municipality of Darwin, created June 28, 1957. [2] Federal capital.

[1] Also administered by the Commonwealth government are the Territory of Papua and the trusteeship Territory of New Guinea (see PAPUA AND NEW GUINEA), the trust territory of Nauru (q.v.), the Territory of Ashmore and Cartier Islands, the Antarctic islands of Heard and MacDonald, and the Australian Antarctic Territory (about 250,000 square miles), comprising the region south of latitude 60°S. and between longitude 160° and 45°E. (other than Adélie Coast).

AUSTRALIAN NEWS & INFORMATION BUREAU

Aerial view of Sydney, Australia, shows artist's concept of Sydney Opera House (foreground), due for 1964 completion.

In 1961 the number of immigrant arrivals was 127,586 (down 11,785 from 1960), of which 72,071 (up 5,258 from 1960) were British immigrants. Other principal groups were: Italian, 17,595; Greek, 8,041; Dutch, 5,610; German, 5,527; Yugoslav, 2,794; United States, 2,533; Polish, 1,481; Spanish, 1,423; Russian, 1,207; Austrian, 1,127; Chinese, 1,060; and stateless, 2,265. Permanent arrivals exceeded departures by 68,439 in 1961.

Government.—The crown is represented by a governor general, who is advised by an Executive Council composed of the ministers of state. Appointed governor general on April 10, 1961, Viscount De L'Isle formally opened the 24th federal Parliament in Canberra on Feb. 20, 1962.

The federal Parliament comprises a 60-member Senate (10 members elected from each state), and an elected 124-member House of Representatives, including 2 nonvoting members from the territories. Authority in limited fields is exercised by state legislatures (bicameral except in Queensland). The government headed by Robert G. Menzies (prime minister since Dec. 19, 1949) was returned for a fifth successive term at the Dec. 9, 1961, election, but with its House majority reduced to 2 (to 1 after the choice of a speaker). By winning 2 doubtful seats in Victoria and Queensland, the government coalition of Liberal and Country parties held 30 seats in the Senate which convened on July 1, 1962. An equal number of seats were held by the opposition, which comprises the Australian Labour Party (28 seats), Democratic Labour Party (1), and independent (1).

Education and Religion.—As of Dec. 12, 1961, state schools numbered 7,867 with 56,702 teachers and 1,612,281 pupils; nongovernment schools numbered 2,229 with 17,795 teachers and 511,293 pupils. Total enrollments at universities and colleges in 1960 numbered 53,780 (including 147 postgraduate students). University teaching staffs aggregated 4,986, and a total of 4,577 degrees were conferred in 1960. Government expenditure on higher education in 1960 totaled £A29,686,000. Principal religions (1954 census): Church of England, 3,408,850; Roman Catholic, 2,060,986; Methodist, 977,933; Presbyterian,

Prime Ministers Menzies of Australia (right) and Macmillan of Great Britain meet in London, May 30, to discuss effect on Australia of Britain's joining European Common Market.

WIDE WORLD

870,242; other Christian, 715,743; and non-Christian, 54,817.

Finance.—Government revenue, 1962–63, est.: £A1,973.4 million; expenditure, £A2,091.7 million; deficit, £A118.3 million (£A27 million in 1961–62). Consolidated fund expenditure, 1962–63 est.: £A1,725.8 million (up £A82.8 million from 1961–62), including departmental, £A148 million; defense, £A210 million (up £A6.9 million); national welfare fund, £A387.6 million (up £A22.4 million); payments to the states, £A422.6 million (up £A26 million); capital works, £A180.9 million (up £A6.3 million); war and repatriation fund, £A110.7 million; redemption of loans, £A106 million; grant to Papua and New Guinea, £A20 million; and oil exploration, £A6.7 million (up £A3 million). Consolidated fund receipts, 1962–63 est.: £A1,665.4 million (up £A23.8 million from 1961–62); and public loan raisings, £A215 million (down £A28 million).

Social Welfare.—Commonwealth expenditures on social and health services, 1960–61: £A330,604,000, including age (562,790 cases) and invalid (88,642) pensions, £A157,926,000; widows' pensions (55,436,000), £A13,469,000; child endowment (1,501,180 claims covering 3,313,225 children), £A74,303,000; maternity allowances (on 236,678 single, and 2,706 multiple births), £A3,898,000; unemployment (161,113), sickness (58,184), and special (14,001) benefits, £A7,140,000; hospital benefits, £A20,668,000; pharmaceutical benefits, £A20,543,000; war pensions (661,290), £A61,051,000; and service pensions (50,302), £A7,783,000. Assessed social services tax contribution from 4,037,862 taxpayers totaled £A378,219,000.

Defense.—The military forces consist of the regular army (20,443 officers and men as of June 30, 1961), the volunteer Citizens Military Forces (27,545), and the Australian Cadet Corps.

The serving strength of the Royal Australian Navy totaled 18,638 on June 30, 1961. Principal ships of the navy include 1 aircraft carrier (the 16,000-ton *Melbourne;* the former aircraft carrier *Sydney* was converted in 1961 to a fast military transport); 7 destroyers; 4 antisubmarine and 10 other frigates; 2 ocean minesweepers; and numerous auxiliaries. The Fleet Air Arm has 2 operational squadrons, with about 100 aircraft and 1,700 officers and men.

Personnel of the Royal Australian Air Force (RAAF) consists of the permanent air force (15,640 officers and men as of Aug. 1, 1961), the Citizen Air Force (671), and general reserve (14,857). The RAAF is organized into 12 squadrons (3 based in Malaya) and 1 jet fighter squadron. It received from Great Britain in 1962 a number of Bloodhound guided missiles—the first surface-to-air weapons adopted by Australia.

Transportation and Communications.—Federal- and state-owned railways (1960–61): total mileage, 26,243; passengers, 462,979,000 (New South Wales, 253,533,000); freight, 55,362,000 tons; net earnings, £A9,914,000; working profit, £A1,407,490. Domestic airlines: total mileage, 43,780,000; passengers, 2,639,080; freight, 64,020 short tons; mail, 6,150 short tons. Australian international air services: total mileage, 20,068,000; passengers, 291,258; freight, 6,575 short tons.

Highway network (1961): total mileage, 523,000 miles (194,507 hard-surfaced); motor vehicles registered (June 30, 1962), 3,139,264 (automobiles, 2,185,088, including 215,900 new registrations; commercial vehicles, 868,807). Six state and 10 commercial television stations are operated; viewers' licenses (June 1962), 1,424,435; licensed radio broadcast listeners (June 1962), 2,220,462; telephones in use (1960), 2,163,962.

Economic Indicators.—Consumer price index (average of six capital cities in 1961–62 on a base of 1952–53 = 100): food, 125.5; clothing, 112.8; housing, 150.7; household supplies, 112.7; all groups, 124.3. Export price index (1959–60 = 100): 96 for all groups in 1961–62. Savings bank deposits (1961–62): £A1,735 million (£A1,578 million in 1960–61); major trading bank deposits, £A1,807 million. Value of buildings commenced (1961–62): £A543.8 million. Total overseas reserves (Jan. 1, 1962): £A602 million (up £A226 million from Jan. 1, 1961). Total net value of production (1960–61): £A3,401,673,000. Retail sales (representing about 90% of consumer retail expenditure on goods in 1961–62): £A3,735.8 million (£A3,717.4 million in 1960–61).

Manufactures and Mining.—Estimated number of factory employees (1961–62): 1,154,000. Chief industrial products (1961–62): ingot steel, 4,062,000 tons (up 374,867 tons from 1960–61); pig iron, 3,378,000 tons; tin plate, 106,416 tons; superphosphate, 2,592,000 tons; cement, 2,781,000 tons; cotton cloth, 44,198,000 square yards; woolen cloth, 25,069,000 square yards; rayon fabrics, 20,472,000 square yards; boots and shoes, 24,999,000 pairs; clay bricks, 984 million; refined sugar, 552,000 tons; tobacco, cigars, and cigarettes, 55,412,000 pounds; beer, 247,488,000 gallons; soap, 1,176,000 cwt.; newsprint, 89,760 tons; refrigerators, 211,956; washing machines, 226,740; radios, 368,484; and television sets, 294,924. Automotive products: internal combustion engines, 196,632 units; motor vehicle bodies, 152,820; and pneumatic tires, 3,996,000.

Mining and quarrying output, 1961–62 (£A180,898,000 in 1960–61): black coal, 24,588,000 tons (up 1,740,000 tons); brown coal, 16,932,000 tons; lead, 230,580 tons; zinc, 153,744 tons; gold, 1,064,400 fine ounces; silver, 8,085,047 fine ounces (1960); and uranium.

Agriculture and Lumbering.—Wool is Australia's most important primary product. Wool production (1961–62): sheep and lambs shorn, 167,069,000 (163,741,000 in 1960–61); total clip, 1,699,500,000 pounds (1,632,000,000 pounds in 1960–61); average price per pound, 54.4 pence (2.25 pence over 1960–61); total receipts, £A338.59 million (up £A24.11 million, or 7.7%, from 1960–61).

Acreage (in thousands) and production (in thousand bushels) of major grains (1960–61): wheat, 13,895 and 273,716 (up 2,716 from 1959–60); oats, 3,637 and 76,107; barley, 2,830 and 67,970; maize (corn), 185 and 6,244. Acreage (in thousands) and production (in thousand tons) of other major crops (1960–61): hay, 2,973 and 5,079; potatoes, 92 and 451; and sugarcane, 341 and 9,166.

Dairy products (1961–62): butter, 199,975 tons; whole milk, 1,451 million gallons; and cheese, 55,417 tons. Production of fresh meat (1961–62): 1,492,939 tons, including beef, 792,000 tons; mutton, 373,930 tons; and lamb, 213,152 tons. Number of livestock (1962): beef cattle, 13,021,000; dairy cattle, 5,046,000; sheep, 157,714,000; and horses, 562,000. Net value of production (1960–61): agricultural, £A391,861,000; pastoral, £A458,169,000. Production of sawn timber (1961–62): 1,308 million superficial feet.

Electric Power.—Electricity generated for public supply and private use (1961–62): 26,450 million kw.-hr. (23,335 million kw.-hr. in 1959–60).

With the opening in May 1962 by Prime Minister Menzies of the giant Tumet 2 power station, the Snowy Mountains hydroelectric project in southern Australia was half completed. Begun in 1950, the construction of the project will finally cost an estimated £A321 million. The finished section includes the diversion of the Eucumbene River into the Murrumbidgee River, and the completion of three power plants with a combined capacity of 660,000 kw. Aided by a loan of $100 million by the World Bank (approved Jan. 24, 1962), the next phase of operation calls for the construction of three additional large dams, 31 miles of major tunnels, and twin steel pressure pipelines to carry water to the Murray 1 power plant, in which eight 95,000-kw. generating units will be installed. Scheduled for completion in 1975, the project will eventually have a total capacity of 2.5 million kw., and in addition will provide 2 million acre-feet of water a year for irrigation.

Foreign Trade.—Total exports (including re-exports totaling £A26.28 million), 1961–62: £A1,078,066,000 (up £A149.07 million from 1960–61); imports, £A884,793,000 (down £A200.64 million). Wool exports: 1,459,986,000 pounds, £A372,792,000 (up 77,009,000 pounds and £A38,350,000 from 1960–61). Other chief exports (values in millions): wheat, 5,452,867 tons,

£A142.44 (up 1,353,496 tons and £A40.31); wheaten flour, 1,215,170,000 pounds, £A18.16; barley, 701,681 tons, £A14.95; sugar, 827,853 tons, £A33.19; beef, 450,629,000 pounds, £A58.85; butter, 174,736,000 pounds, £A23.54; sheet metal and machinery, £A111.17; iron and steel, £A43.40; ores and concentrates, £A40.43; oils and fats, £A29.54; lead, £A23.51; gold, £A8.97; and pharmaceutical products, £A8.93. Chief imports (values in millions): metal manufactures and machinery, £A315.33; textiles and apparel, £A104.21; crude petroleum, £A75.89; foodstuffs, £A39.38; yarns and manufactured fibers, £A23.46; and tobacco, £A9.74.

Events, 1962.—Returned to power at the December 1961 election, though with the smallest possible parliamentary majority, the Menzies government formulated an economic policy for 1962 with the following objectives: to restrain inflation, continue encouraging immigration, develop internal resources to the full, and maintain a favorable balance of payments.

In 1961 the government had sought to stimulate consumer spending by making large increases in payments to the states and in expenditures on social welfare. Restraints on lending by trading banks were eased. Unemployment (116,000 in December 1961, or about 2.8% of the labor force) nevertheless continued to rise, and in January 1962 reached 131,496—the highest figure since World War II. Accordingly, the new administration announced on February 7 a rebate of 5% on personal income tax, a 30% reduction of sales tax on automobiles, grants equivalent to $225 million to the states for public works and housing, and increases in unemployment benefits. The economy immediately showed signs of recovery. A fall in unemployment to 112,000 was registered in February, and a further drop to 101,093 was recorded in March. There was a corresponding rise in factory production, in new automobile registrations, and in building construction. The lending market was buoyant; and at the end of April, Australia's total reserves stood at £A761 million. By mid-1962, government economists were predicting an approaching boom.

In the summer, Prime Minister Menzies visited the United States and conferred on three occasions (June 18–20) with President Kennedy in Washington. The main topic of their discussion was problems affecting the United States and Australia arising from Great Britain's proposed entry into the European Economic Community. Later the impending move by Britain was again discussed by Menzies at the conference of Commonwealth prime ministers in London in September.

Col. John H. Glenn, in all three of his orbits of the earth on February 20, passed over Western Australia. (See Space Flight.) On the first orbit, Colonel Glenn, who was in touch by radio with his fellow astronaut, Maj. Gordon Cooper, stationed at the Muchea tracking station, asked the latter to thank the people of Perth for "turning on the lights"—a unique salutation visible to Colonel Glenn 135 nautical miles above the city. Later, President Kennedy formally thanked the Australian government for its cooperation.

A syndicate of the Royal Sydney Yacht Squadron attempted unsuccessfully in September to win the most coveted yachting trophy, the America's Cup, from the United States. Although defeated 4 to 1 in a series of races off Newport, R.I., the Australian challenger, the 12-meter sloop *Gretel*, won wide acclaim by winning the second race on September 18—the first victory of a challenger in 14 cup series since 1934. The 1962 Empire and Commonwealth Games were held in Perth in November–December under the sponsorship of Prince Philip; athletes of 35 member nations participated. A total of nine world records and 39 Empire Games marks were set, and Australia supplanted England for the first time in the history of the games as the top sports nation of the Commonwealth by winning 38 gold medals to England's 29. It was resolved that the 1966 games would be held in Kingston, Jamaica. (See also Sports, Games, and Shows.)

The Commonwealth government gave permission to the United States on May 17 to establish a naval communications station at North West Cape, Western Australia. In August a team of five United States scientists began to inspect possible sites for a third American tracking station in Australia to support the man-in-space program.

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AUSTRIA

As established by the state treaty of July 27, 1955, Austria has the frontiers of Jan. 1, 1938 (1,648 miles), with an area of 32,375 square miles. By a parliamentary declaration of June 7, 1955, it is a neutralized state. According to the census of March 21, 1961, the population totals 7,073,807. Leading cities are Vienna, the capital, 1,627,566; Graz, 237,080; Linz, 195,978; Salzburg, 108,114; Innsbruck, 100,695; and Klagenfurt, 62,218.

Government.—Dr. Adolf Schärf (Socialist) was elected president for a 6-year term on May 5, 1957. In April 1961, Dr. Alfons Gorbach (People's Party) succeeded Julius Raab as chancellor, and his reorganized coalition cabinet consisted of five other representatives of the People's Party and six Socialists. This cabinet continued in office through the end of 1962, while negotiations continued for the formation of a new postelection government under the leadership of Dr. Gorbach.

An extraconstitutional Coalition Committee, which is composed of an equal number of representatives from both coalition parties, has developed much power in recent years. No important legislation is submitted to Parliament before this group approves it, and the committee exercises strong party discipline in the chambers.

The Upper Chamber, the Federal Council, is composed of 50 members (26 of the People's Party and 24 Socialists) chosen by the nine provincial legislatures, seats being distributed in accordance with the population of each province. Elections to the National Council (National Assembly), the 165-member lower chamber, were held on Nov. 18, 1962, with the People's Party securing (1959 figures in parentheses) 81(79) seats; the Socialists, 76(78); and the Freedom Party, 8(8).

In a rare tribute, former Chancellor Leopold Figl was unanimously elected governor of Lower Austria in February 1962, the Socialist Party deviating for the first time from its established practice of casting blank ballots for a candidate of the opposition party.

Education and Religion.—Education is compulsory for ages 6–14. For the first 4 years pupils attend the *Volksschule*, which in rural regions often continues for another 4 years. Elsewhere pupils attend the *Hauptschule*, which offers a 4-year terminal course and also prepares for trade schools and the *Mittelschule*. The latter, which is of various types, prepares for universities and higher technical schools. Physically and mentally handicapped children attend *Sonderschulen* or special classes attached to the regular schools. Number of schools (with enrollment), 1961–62: *Volksschulen*, 4,525 (544,579); *Hauptschulen*, 854 (197,553); *Sonderschulen*, 132 (22,136); and *Mittelschulen*, 203 (81,537). In the 1960–61 winter semester, 40,815 students (including 10,806 foreigners) attended the 14 Austrian institutions of higher education.

Religious affiliation, 1951 census: Roman Catholic, 6,170,084; Protestant, 429,493; Old Catholic, 32,919; Orthodox, 5,643; Jewish, 11,224; other, 17,450; none, 264,014; unknown, 3,078.

Finance.—The ordinary budget for 1962 (1961 figures in parentheses) provided for expenditures of 52,536.3 (45,098.1) million schillings (S 26 equal U.S. $1) and revenues of S 52,020.3 (44,787.1) million, producing a deficit of S 516 (311) million. To this should be added a deficit of S 1,360 (2,275) million in the extraordinary budget for investments, resulting in an overall deficit of S 1,876 (2,586) million. Savings deposits totaled S 35,929,000 in December 1961 (S 31,380,000 in December 1960). On Feb. 1, 1962, and again on August 1, the

Austrian National Bank raised minimum reserve requirements for credit institutions by 0.5%, to 10% for demand and time deposits and to 8% for savings deposits. Between July 31, 1961, and July 31, 1962, the bank's stock of gold and bullion increased by 43%, to S 10,796 million; the supply of foreign exchange and currencies by 33%, to S 14,890 million; and currency in circulation by 18%, to S 29,871 million.

Transportation and Communications.—Transport network mileage (1961): state-owned, railways, 3,740 (32% electrified); federal highways, 5,742; provincial and district roads, 13,652; superhighways (finished or under construction), 216. Danube freight traffic (1961): 5,493,414 metric tons (6,202,105 in 1960), including 4,159,386 (4,320,635) tons in international trade, 670,100 (692,094) tons in transit, and 663,928 (1,189,376) tons purely domestic. Landings at Austria's 6 airports (1961): 11,312 (9,818 in 1960). In 1962, Austrian Airlines made flights from Vienna to 23 cities in Europe and the Middle East. Motor vehicles of all descriptions (December 1961): 1,010,270 (932,472 in 1960). Television sets (December 1961): 290,899 (13% of all Austrian households).

Economic Indicators.—Gross national product: S 162.2 billion in 1961 (up 9.4% from 1960). Index of industrial production (1953 = 100): general but excluding gas, 186 in 1961 (177 in 1960); mining, including magnesite and petroleum, 116 (114); manufacturing, including stone, clay, and sand quarries but excluding sawmills, printing and publishing, and coal products, 194 (184); electricity, 201 (192). Monthly averages (1961): unemployed, 69,182 (87,959 in 1960); employed, 2,322,200 (2,281,900). Average monthly price index (1958 = 100) for a four-member worker family: 106.4 in 1961 (103.1 in 1960). Average weekly wage (1961): men, S 388 (362 in 1960); women, 317 (293).

Manufactures and Minerals.—Chief products in metric tons (1960 figures in parentheses): pig iron and ferroalloys, 2,268,000 (2,232,000); crude steel, 3,108,000 (3,168,000); copper, 11,880 (11,760); zinc, 12,120 (11,520); lead, 6,480 (8,400); aluminum, 67,680 (67,920); cement, 3,084,000 (2,832,000); paper, 507,204 (490,500); iron ore, 3,696,000 (3,540,000); coal, 106,800 (132,000); lignite, 5,664,000 (5,976,000); raw magnesite, 1,798,680 (1,625,400); raw graphite, 80,976 (88,032); crude oil, 2,355,864 (2,448,396); natural gas, 1,542,350,468 cubic meters (1,469,192,736); electric power production (excluding production for traction purposes for the railways and by industry for its own consumption): 13,738.8 million kw.-hr. in 1961 (13,117.2 million in 1960), including 10,296 (10,332.8) million hydroelectric; exports, 2,533 (2,428) million; imports, 101 (147) million.

Agriculture and Forestry.—Agriculture and forestry account for 11.4% of the gross national product, and Austrian farms produce about 90% of the nation's food requirements. Production in thousands of metric tons in 1961 (1960 in parentheses): wheat, 712 (702); rye, 472 (353); barley, 512 (589); oats, 340 (343); corn, 198 (213); potatoes, 3,395 (3,749); sugar beets, 1,225 (1,906). Wine production, above average both in quantity and in quality, amounted to 1,328,211 hectoliters in 1961 (897,487 in 1960). Wood cut: 10,070,394 cubic meters in 1961 (10,015,925 in 1960).

Foreign Trade.—Imports in 1961 (1960 in parentheses): S 38,604 million (36,812 million); by volume, 12,956,000 metric tons (13,502,000). Exports in 1961: S 31,262 million (29,119 million); by volume, 6,973,000 metric tons (7,238,000). Percentages of total imports from various groups in 1961 (1960 in parentheses): Organization for Economic Cooperation and Development (OECD), 74 (70); European Free Trade Association (EFTA), 12.7 (12.1); European Economic Community (EEC; Common Market), 59.5 (56.5); eastern Europe, 12 (13.1). Percentages of exports: OECD, 67 (65); EFTA, 14.4 (12.5); EEC, 49.5 (50.2); eastern Europe, 17.5 (16.1). Imports, first 6 months of 1962 (1961 in parentheses): S 19,408 million (19,109 million); exports, S 15,962 million (15,142 million). On Jan. 1, 1962, and again on September 1, Austria reduced tariffs and liberalized quota restrictions.

Events, 1962.—The tapering off of the economic boom that had begun in the second half of 1961 continued into the new year. Meanwhile, the shortage of workers was alleviated to some extent by the increased numbers of women who took employment. On June 15, the International Bank for Reconstruction and Development made a loan equivalent to $5 million to the Österreichische Investitionskredit, A. G. (Austrian Investment Credit Corporation). This loan, together with S 40 million in counterpart funds that the government agreed to make available, was to be lent in turn to private Austrian industrial enterprises. As of August 1, Austria accepted the obligations on convertibility of its currency set forth in Article 8 of the Articles of Agreement of the International Monetary Fund.

An unusual rise in prices in the first months of the year resulted in a wave of strikes. Metal, postal, and telegraph workers, physicians, and policemen all struck for higher wages. Among the more spectacular strikes was the 24-hour protest staged by physicians in Vienna on July 9, which was supported by their colleagues throughout Austria. The Health Insurance Institute, under which all workers and employees in the country are insured, refused to meet what were considered exorbitant demands. The strike was denounced by the trade unions, and the dispute was settled on July 26 by a moderate increase in physicians' fees. In the first days of August, police in Vienna and other cities turned their traffic lights to blinking yellow and left their posts for some hours at the height of rush periods. Customs officials staged a go-slow campaign, causing long lines of cars to form at border points. On August 8, Chancellor Gorbach agreed to enter into negotiations on these demands for wage increases.

The People's Party had opposed such increases, while the Socialists had supported them with the exception of the doctors' demands. The People's Party also attacked the handling by Foreign Minister Bruno Kreisky (Socialist) of the negotiations with Italy concerning the South Tirol and of Austria's request to be admitted to associate membership in the Common Market. These differences culminated in an agreement by the two parties to advance parliamentary elections from the spring of 1963 to Nov. 18, 1962. It was considered that it would be advantageous to have a new Parliament and a new government when serious negotiations with the EEC got under way in 1963. Accordingly, on July 25, Parliament was dissolved.

On January 19, Dr. Kreisky criticized certain Common Market officials as well as George W. Ball, United States under secretary of state, for their negative views on granting special concessions to such neutralized states as Austria, Switzerland, Sweden, and Finland as prospective associate members of the Common Market. On July 28, when Austria and Sweden presented their case for associate membership to the EEC Council of Ministers, they received a friendly hearing but no commitment. Great Britain has pledged that she will not join the Common Market until the neutral states, now joined with her in the EFTA, have made satisfactory arrangements with the EEC. Austria considers membership in the Common Market vital to her continued prosperity.

Paul Struye, chairman of the Council of Europe's special subcommittee on the South Tirol, visited Vienna and Rome and, on January 18, reported to the council that he felt that progress was being made toward solving the problems of this area. In a note of May 22, Austria urged Italy to agree to a meeting of their foreign ministers to consider the results of the Italian government's study commission on the South Tirol. The foreign ministers did meet with their advisers on July 31 at Venice, where it was evident that substantial progress had been made toward reaching an agreement. It was decided that each government would submit statements on the South Tirol to the UN General Assembly, and that the foreign ministers would continue their bilateral discussions in the fall.

On March 27–31, President Heinrich Lübke of the Federal Republic of Germany paid a state visit to Vienna. He was followed in May by Queen Juliana and Prince Bernhard of the Netherlands, and in June by King Frederik and Queen Ingrid of Denmark. Chancellor Gorbach, accompanied by Foreign Minister Kreisky, made a series of important state visits: to Great Britain, on March 21–

22; to the United States, on May 2–5; to France, on June 25–28; and to the USSR, on June 28–July 5. On all occasions the country's future relationship to the Common Market was explored, and Dr. Gorbach reiterated Austria's determination to maintain her neutral status.

During 1962 the United States curtailed its cultural program in Austria. Meanwhile, the Austrian government took a step in the opposite direction by establishing an Austrian Institute, which was to function as the cultural affairs section of the consulate general in New York. New chairs of American studies were founded at the universities of Vienna, Innsbruck, and Graz. In January, the Ford Foundation announced the grant of $1 million for the establishment of an Institute for Sociology, Current History, and Economics in Vienna. In May, the thoroughly renovated 162-year-old Theater an der Wien was reopened.

A rather desultory campaign preceded the National Council elections on November 18. The People's Party increased its representation at the expense of the Socialists, while the Communists, contrary to predictions, failed to win any seats.

,E. C. HELMREICH,
Thomas Brackett Reed Professor of History and Political Science, Bowdoin College.

AUTO RACING. See SPORTS, GAMES, AND SHOWS.
AUTOMATION. See Index entry.

AUTOMOBILES

More automobiles were produced in the United States during the 1962 model year than in any other year except 1955. The total passenger car production for the model year was 6,686,749, compared with 5,522,019 in 1961 and 7,920,186 million in 1955.

The high volume of 1962 production and sales was surprising because the relatively new compact cars were not the principal factor in the increase. Standard and medium-priced cars led in sales; the compact cars' share of the total United States market did not exceed one third.

The five automobile divisions of General Motors Corporation showed the largest increases in the 1962 model year. Compared with 1961 production, the 1962 increases in standard General Motors cars were as follows: Chevrolet, 235,000; Pontiac, 140,000; Oldsmobile, 110,000; Buick, 55,000; and Cadillac, 22,500. All of General Motors' four carryover compacts also increased substantially in sales and production. Chevrolet's Chevy II front-engine compact car, in its first full year of production, was third in sales among the compacts.

As reflected by the popularity of General Motor cars, which at times during 1962 sold 55% of the industry, customer tastes were decidedly in the direction of luxury, performance, and convenience. All manufacturers introduced bucket-seat sports cars in response to sales demand. Four-speed manual transmissions and seat-dividing consoles also contributed to the "personal car" trend. The proportion of convertibles increased, particularly among the compact cars. Stark economy models, such as those that increased the sales of compacts in 1960 and 1961, showed somewhat less appeal.

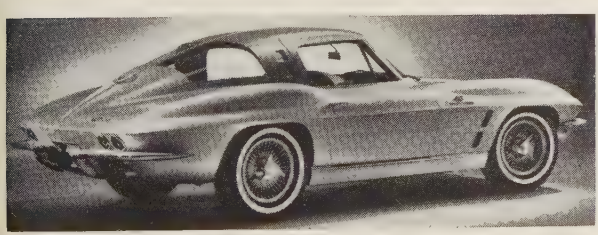
Underlying the strength of the market in 1962 and the fast beginning of the 1963 season was the growing rate of scrapping old cars. More than 5 million cars were sold for junk during the calendar year 1962, a rate unequalled since the days of the post-World War II demand for new cars.

Cars were offered in a great variety of models. Domestic manufacturers offered 320 models for 1963, 24 more than at the end of the 1962 season. Hardtops and convertibles, as well as sedans and station wagons, were available in all sizes of all makes. General Motors' success was attributed by competitors to the fact that its divisions were the first to make available "sportier" models of compacts and higher-priced cars.

Chrysler stopped production of the Lancer compact car, a Dodge product, and Ford postponed the introduction of its Cardinal, a Volkswagen-sized car.

Production.—Car production in 1962 was nearly 25% higher than in the recession year of 1961. Only 5.4 million cars were built in the 1961 model year, partly because of a large carryover of old models at the end of the 1960 model year. The sales of old models at the end of the 1961 season were far more effective, clearing the way for the record production which followed.

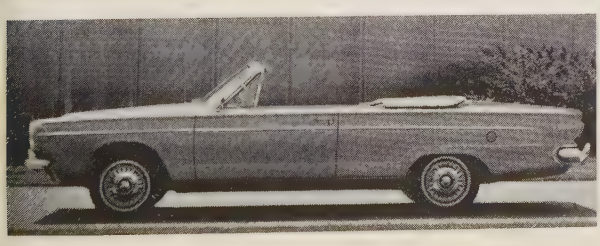
In the January–August 1962 period, General Motors' share of new car sales was 52.5%, compared with 45.8% in 1961; Ford dropped to 26.1% from 28.9%; and Chrysler Corporation, to 8.9% from 10.9%. American Motors and Studebaker remained at 6.3% and 1.2%, respectively.



(*Above*) Chevrolet Corvette Sting Ray sports coupe.

(*Above*) Ford Thunderbird.

(*Below*) Dodge Dart convertible.



(*Below*) Ford Falcon Futura convertible

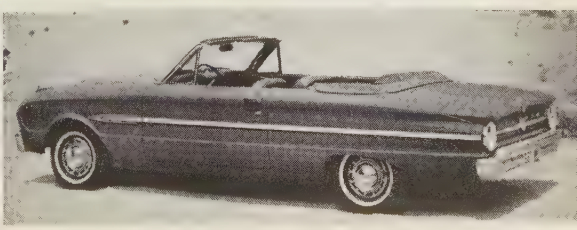


Table 1—U.S. PASSENGER CAR PRODUCTION, 1961–62

Company and make	1961 (Jan.–Sept.)	1962 (Jan.–Sept.)
American Motors Corporation		
Rambler	248,445	321,176
Chrysler Corporation		
Plymouth	210,179	209,323
Dodge	138,447	146,160
Chrysler	65,250	81,494
Imperial	5,668	7,587
Subtotal	419,544	444,564
Ford Motor Company		
Ford	966,566	1,117,180
Mercury	216,250	243,054
Lincoln	21,972	19,902
Subtotal	1,204,788	1,380,136
General Motors Corporation		
Chevrolet	1,060,400	1,566,588
Pontiac	230,145	390,088
Oldsmobile	200,214	325,831
Buick	176,627	282,357
Cadillac	100,170	109,674
Subtotal	1,767,556	2,674,538
Studebaker Corporation		
Studebaker	45,783	55,503
Checker Motors	4,287	6,260
Total U.S. production	3,690,403	4,882,177

(Source: Automobile Manufacturers Association.)

Table 2—WORLD MOTOR VEHICLE PRODUCTION, 1961

	Passenger cars	Trucks	Buses	Total
United States	5,522,019	1,130,919	...[1]	6,652,938
Canada	327,979	62,918	...[1]	390,897
Subtotal	5,849,998	1,193,837		7,043,835
Argentina	30,600	39,300	...[1]	69,900
Australia	182,464	49,187	...[1]	231,651
Austria	8,221	5,070	193	13,484
Belgium	...	800	...[1]	800
Brazil	97,557	47,036	1,108	145,701
Czechoslovakia	58,840	16,624	1,589	77,053
Finland	...	1,258	252	1,510
France	987,503	214,417	2,489	1,204,409
Germany, East	50,000	16,000	...	66,000
Germany, West	1,751,888	387,360[2]	8,548	2,147,796
Great Britain	1,003,967	443,117	17,050	1,464,134
Hungary	...	4,200	1,600	5,800
India	21,866	27,030	4,969	53,865
Italy	693,672	62,816	2,629	759,117
Japan	249,508	777,985[3]	10,981	1,038,474
Netherlands	13,448	4,598	546	18,592
Poland	14,400	19,300	2,290	35,990
Spain	52,000	20,000	...[1]	72,000
Sweden	109,853	19,666	2,236	131,755
Switzerland	...	900	300	1,200
USSR	149,000	406,000	...[1]	555,000
Yugoslavia	14,997	5,426	943	21,366
Subtotal	5,489,784	2,568,090	57,723	8,115,597
World total	11,339,782	3,761,927	57,723	15,159,432

[1] Included in truck figures. [2] Includes 152,087 microbuses. [3] Includes 224,595 three-wheeled vehicles. (Source: Automobile Manufacturers Association.)

At the beginning of 1962 there were 76 million cars, trucks, and buses in the United States (the total was expected to exceed 78 million by the end of the year), including about 6,750,000 new registrations in 1961. Total vehicle registrations in Canada rose to 5,387,000.

Foreign Cars.—Despite a general decrease in the sales of imported cars in 1962, Volkswagen sales increased by about 7%. Imported cars accounted for about 5% of the total United States market through the first eight months of 1962. Total import sales of 227,000 cars for the eight-month period indicated that this market was declining to a rate of about 325,000 a year, continuing a steady decline since the record import volume of 609,000 in 1959. Volkswagen sales volume for the January–August 1962 increased by 9,000 to 128,536. Other imported cars showing increased sales of 1962 models were Triumph and Volvo.

As of Jan. 1, 1962, a total of 2,186,000 imported cars were in operation in the United States. Of these, 673,000 were Volkswagens and 254,000 were Renaults.

The 1962 and 1963 Cars.—The most distinguishing features of 1963 models are the squarish roof line first popularized on the Ford Thunderbird and Galaxie. Amber parking lights, for better visibility, also are standard on all 1963 models, together with crankcase emission devices and seat-belt anchors. Disk brakes are a Studebaker option. General Motors has adopted self-adjusting brakes in an industry trend toward improved safety in stopping. Nine other makes have adopted the Chrysler-pioneered alternator. A tilting steering wheel has been introduced by General Motors.

For sports-car enthusiasts, three new models have entered the market: the Buick Riviera, the Studebaker Avanti, and the Chevrolet Corvette Sting Ray.

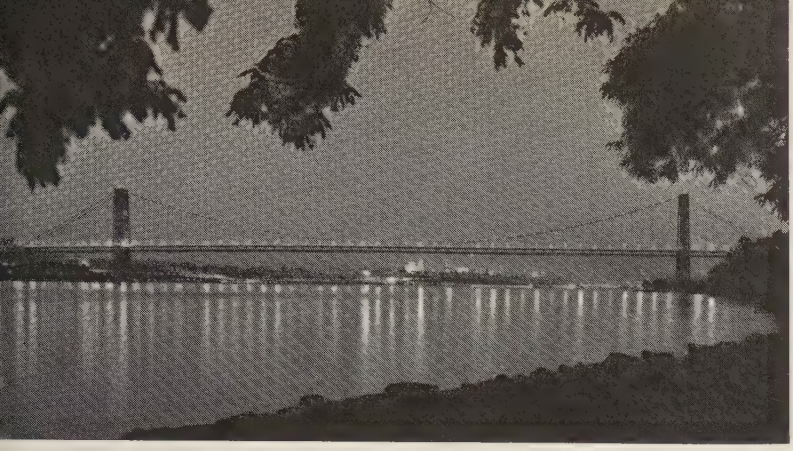
Prices remained largely unchanged on 1963 models. There were no major labor stoppages, and new-car warranties were doubled to 24 months or 24,000 miles by all manufacturers but Chrysler, which pioneered a five-year, 50,000-mile warranty on power-train components.

MAYNARD M. GORDON,
Editor, "Motor News Analysis."

AVIATION. See AERONAUTICS.

AWARDS. See NOBEL PRIZES; PRIZES AND AWARDS; and the Index entry, *Prizes and Awards*.

AZORES or **WESTERN ISLANDS.** See PORTUGAL.



BRIDGES—Lower level of the George Washington Bridge, between New York and New Jersey, was opened in 1962.

PORT OF N.Y. AUTHORITY

BACTERIOLOGY

Important applications, advances, and discoveries were made in microbiology in 1962.

Microbial Battery.—Microorganisms, like other living cells, obtain energy for their activities from the metabolism of various substrates (foods). During the metabolic process, electrons are transferred, catalyzed by enzymes formed by the cells. The energy changes taking place, when the enzymes of such anaerobic bacteria as the genus *Desulfovibrio* catalyze the utilization of carbohydrate and reduction of sulfate, have recently been exploited in a battery-type, electrochemical system, producing measurable amounts of electricity. Other microorganisms, protozoa, and algae have been used in such experiments, and tests have been made using inorganic materials alone to furnish electrons for the bacteria.

One of these so-called test-tube biological batteries or fuel cells reportedly has produced up to 900 millivolts (thousandths of a volt) of electricity. By connecting several such batteries in series, sufficient electricity has been generated to light a bulb, run a radio, or power a small model boat. Scientists working in this area have great hopes for microbiotechnology to produce a supplementary source of electricity. The plan is to utilize waste products from communities (garbage, sewage) and industry (paper mill wastes), or materials in ocean waters as substrates. Also spacecraft may be equipped with so-called bio-solar cells, which use the wastes of the personnel aboard. Predictions are that the electricity from such systems will be useful to light navigational buoys at sea or to power radio beacons in remote regions and equipment on spacecraft.

Measles Vaccine.—Measles, a universal disease of children, is a serious illness and may cause severe complications, such as brain-damaging encephalitis and fatal pneumonia. The measles virus has been cultivated in living tissue-culture cells since 1954, but it took over two years of careful work to attenuate the virus so it could be used safely in trial experiments on children. Further research was then necessary to develop an effective vaccine. Reports became available in 1962 on thousands of children carefully studied. Results made it clear that John F. Enders' measles vaccine is 95 percent effective in stimulating production of antibodies that should give permanent immunity. But because of mild reactions in some children and certain technical problems, it may be two years before a thoroughly effective and safe vaccine is generally available.

Infectious Hepatitis Virus.—Disease caused by the infectious hepatitis virus is on the increase, and over 70,000 cases were estimated to have occurred in 1962 in the United States. Microbiologists isolated several strains of the virus by the tissue-culture technique, and studied the neutralizing antibodies produced during the course of the disease. Attenuated strains of the virus were given as a vaccine to volunteers, but results showed protection to be so variable that a generally useful vaccine against this disease has not yet been produced.

Microbial Genetics.—Microorganisms are widely used in genetic studies, as well as in cytology, enzymology, physiology, and the study of infectious diseases. For example, enzymes are synthesized at structures in the cell called ribosomes by template ribonucleic acid (RNA). In turn, the activities of ribosomes are specified or controlled by the shapes of ribonucleic acids called messenger RNA. The latter is shaped by the genes, by information deoxyribonucleic acid (DNA), on sites of the chromosomes of the cell. The messenger role of RNA has gained support by recent studies which appear to prove that the genetic code is quite similar for widely divergent organisms, and probably is universal. Support for these statements comes from the observation that RNA from tobacco mosaic virus directs a cell-free system (particles) from the bacterium *Escherichia coli* to form a protein that closely resembles the protein normally formed by tobacco mosaic virus RNA as it attacks the tobacco leaf.

It now appears that virus (bacteriophage) infection at the cellular level consists of the introduction of a fragment of genetic material (nucleic acid) into the host cell (bacterium). The genetic material is delivered into the host cell by a specialized structure (virion or virus particle) which carries the information needed to produce new virus. This may mean that to cure virus diseases in animals, plants, and man we will first have to learn to affect selectively the intimate process of gene function and regulation. (See also BIOCHEMISTRY; GENETICS.)

Extraterrestrial Microorganisms (Exobiota).—Much thought was given in 1962 to the sterilization of spacecraft likely to land on the moon or planets, in order not to contaminate them from earth. Mechanical devices are being designed to pick up uncontaminated lunar dust and place it under a microscope to be examined for microorganisms by television. Concern has also been expressed regarding the possible hazard of back contamination of the earth by spacecraft returning from another planet. Such exobiota may grow better on earth than native microorganisms and thereby cause diseases.

J. R. PORTER,
Chairman, Department of Bacteriology, State University of Iowa.

BADMINTON. See SPORTS, GAMES, AND SHOWS.

BAHAMAS

Comprising 20 inhabited islands and 661 uninhabited coral reefs, the Bahama Islands extend

for 750 miles in the Atlantic Ocean, from 50 miles east of Florida to about 70 miles northwest of Haiti. The aggregate land area is 4,404 square miles, and the population totals 109,622 (1961 est.), of which 80% is Negro. Nassau (1961 est., 54,557), chief port of New Providence Island, is the capital of this British crown colony. Other principal islands and populations (1953 census): Andros, 7,136; Eleuthera, 6,070; Grand Bahama, 4,095; Long, 3,755; Great Abaco, 3,407; Cat, 3,201; Exuma, 2,919; and Acklins, 1,273. Joint naval and air bases and a research station are maintained by the United States and Great Britain.

Government.—The Bahamas are administered by an appointed governor (Sir Robert Stapledon), who is advised by a 9-member Executive Council. There is a Legislative Council of 11 nominated members and a House of Assembly of 33 elected members (see below, *Events, 1962*).

Education.—Primary education is free and compulsory. In 1961 there were 147 government schools (18,796 pupils) and 51 denominational and private schools (7,517 pupils). Government expenditure on education was £625,061 in 1961.

Finance.—Government revenue, 1961: £8,563,582 (£7,988,620 in 1960); expenditure, £8,574,914 (£8,337,188). British currency is legal tender, but United States and Canadian currencies are also circulated.

Transportation and Communications.—The Bahamas have no railroads. There are 218 miles of public roads (137 asphalted) on New Providence, and good roads are maintained on Eleuthera and Grand Bahama islands. Overseas air service is furnished to Nassau International Airport by Pan American World Airways (from Miami, Fla., and New York), Mackey Airlines (from four Florida cities), British Overseas Airways Corporation (from New York, London, Jamaica, and Bermuda), and Trans-Canada Air Lines (from Montreal and Toronto, Canada, and Kingston, Jamaica). Bahamas Airways provides scheduled service within the islands. Worldwide radiotelephone service is provided, and there were 12,668 telephones in use in 1961.

Economy.—Year-round tourism is basic to the economy. Income from tourism was estimated in 1961 at $33 million ($30.5 million in 1960); the number of tourists in 1961 was 314,126 (305,553 in 1960).

Foreign Trade.—Total exports, 1961: £2,959,719 (up 42% from 1960); imports, £30,431,511 (up 30%). Principal exports, 1961: salt, £256,630; pit props and lumber, £199,046; crayfish, £181,782; fresh tomatoes, £115,791. Imports include vehicles, apparel, fresh meats, machinery, cement, and nitrogenous fertilizers.

Events, 1962.—In elections to the House of Assembly on November 26, the ruling conservative United Bahamian Party won 19 seats (an increase of 2 seats); the Progressive Liberal Party won 8 seats (a decrease of 2); Labour received 1 seat; and 5 independents were elected. This was the first election in which women were granted the right to vote.

During the year the Bahamian government protested several times against what it termed a growing tendency on the part of fishermen from Florida to encroach on the territorial waters of the islands.

J. L. L.

BAHRAIN. See ARABIA.

BAKING INDUSTRY

Baking is the second largest food industry in the United States in value of products, with total annual sales in excess of $5.5 billion. This volume is produced by about 12,000 neighborhood retail bakers and 6,000 wholesale plants, grocery chain bakeries, home-service operators, and multiunit stores. About $1 billion of the total sales are credited to the retailers. Employees in the baking industry number about 331,500, of whom 260,700 are in the wholesale branch and 70,800 in the retail segment. Some 45 million loaves of bread are baked daily. The retail price of white bread averaged 21.2 cents per pound in 1962, as compared with 20.9 cents in 1961.

Trends established in 1961 continued in 1962: increased use of plastic films for packaging, greater consumption of frozen bakery foods, installation of more on-premise bakeries in supermarkets, more bulk handling of materials, and more of the larger bakeries changing over to the continuous process of mixing. The population growth resulted in increased volume of bakery foods, but the actual per capita consumption in 1962 remained about the same as in 1961.

U.S. BAKERY FOODS PRODUCTION, 1961[1]
(In thousands)

Category	Value
Bread and related products	$3,710,522
Bread and bread-type rolls	2,463,981
Sweet yeast goods	346,611
Soft cakes	431,037
Pies	207,059
Doughnuts, cake type	128,674
Biscuits and crackers	1,042,271

[1] Except by single retail shop bakeries.

CLIFFORD W. WEBSTER,
Editor, "Bakers Review."

BALANCE OF PAYMENTS, U.S. See INTERNATIONAL TRADE.

BALEARIC ISLANDS. See SPAIN.

BALKAN STATES. See BULGARIA; GREECE; RUMANIA; YUGOSLAVIA; and TURKEY.

BALLET. See DANCE.

BALTIC STATES. See ESTONIA; LATVIA; LITHUANIA.

BALTIMORE

The sixth most populous city in the United States, Baltimore is Maryland's dominant metropolis. It has a land area of 79 square miles, and in 1960 had a population of 939,024. Baltimore City is the center of a rapidly growing metropolitan area (1,807 square miles; 1960 pop., 1,727,023) which includes Baltimore, Carroll, Howard, and Anne Arundel counties.

The principal sources of Baltimore's economic strength come from the excellent port facilities and diversified manufactures. Leading industries (in terms of value added by manufacture) are primary metals, transportation and equipment, food and kindred products, and chemicals.

Data for Baltimore City, 1961: total civilian employment, 611,600. Department store sales index (1957–59 = 100), 102.0. Freight car loadings, 190,806. Vessel arrivals, 5,132; foreign trade handled, 19,610,000 short tons, valued at $1,085,000,000. Output of electricity, 5,948,510,000 kw.-hr., and sales of gas, 43,571,660,000 cubic feet. Value of investment in new manufacturing plants and plant expansion, $100,883,000. Cost of living index (1957–59 = 100), 104.4.

The government of Baltimore City combines city and county functions. The city is governed by a mayor (in 1962, J. Harold Grady, Democrat) and a 20-member City Council elected on a party basis for four-year terms. Additional elective officers include the comptroller and the City Council president. Practically all departments are subject to the direct authority of a single head appointed by the mayor and confirmed by the City Council.

The net funded debt (Jan. 1, 1962) was $333,718,950. The property tax rate in 1962 was $3.91 per $100 of assessed valuation. The 1962 budget was $302,522,672 for current and capital expenditures.

In 1962, Mayor Grady named a five-member commission to study the possibility of modernizing the Planning Commission provisions in the City Charter. The Board of Estimates approved a review of the municipal pension system and also a study to be made by a private consulting firm to consider putting such services as sewer and trash disposal systems under a metropolitan authority.

The Maryland Court of Appeals ruled that religious exercises in Baltimore City do not violate the U.S. Constitution. The case involved a school board regulation calling for a daily opening exercise of Bible reading and recitation of the Lord's Prayer.

The Baltimore Beltway, a 32.8-mile highway that encircles the city, was opened to traffic in June. Completion of the last leg of the Jones Falls expressway was approved; this will provide for a high-speed highway from the central city to the Beltway and connecting expressways. The Baltimore Transit Authority announced that it would replace streetcars with buses by Jan. 1, 1964.

The Supreme Bench of Baltimore City chose William J. O'Donnell as state's attorney to fill out the term of the late Saul J. Harris. The City Democratic Committee had selected Francis J. Valle for this post, but was enjoined from submitting the name to the Elections Board.

Governor Tawes in November appointed Mayor J. Harold Grady as an associate judge of the Supreme Bench. He was to be succeeded as mayor by City Council President Philip H. Goodman.

Baltimore's new $14 million civic center opened in October. This is the first building to be completed in an ambitious downtown renewal project.

MAURICE E. O'DONNELL,
Assistant Professor of Government and Politics, University of Maryland.

BANANAS. See FRUITS.

BANKING

The United States government, through the Federal Reserve System, maintained in 1962 a program of credit availability and interest rates favorable to domestic business expansion and to restraining short-term loanable funds from being shifted into foreign investments. Although business recovery began early in 1961, the continued expansion in 1962 fell short of full recovery, and induced no appreciable tightening of credit. In Canada, a similar domestic economic situation prevailed, but in mid-1962 credit was tightened primarily in response to a shift of loanable funds abroad and a generally adverse international payments position.

United States.—The Federal Reserve banks (12 regional banks controlled by the Board of Governors) encouraged an increase in the supply of available commercial bank credit, mainly by open-market purchases of medium- and long-term United States government securities. These operations and other conditions lowered net interest yields on such securities generally below the 1961 level. The open-market purchases also supplied reserves for commercial banks, enlarging their capacity for making loans and investments. This policy of credit ease was maintained during 1962, since inflationary price tendencies were almost nonexistent (see COST OF LIVING) and unemployment and unused plant capacity remained substantial.

Maintenance of credit ease for encouraging domestic business expansion, as in 1961, was complicated by the international short-term investment situation. Reserves of commercial banks were not supplied by open-market purchases so liberally as to encourage banks to seek more actively foreign investments for their funds. Such investments contributed to the persistent deficit in the United States international transactions, which resulted in recent years in substantial gold losses.

In particular, Federal Reserve action included open-market sales of short-term United States government securities—reinforced by increased United States Treasury offerings of three-month bills for financing the government's deficit—in order to prevent a rise in their prices from lowering net yields and short-term interest rates generally. This holding up of short-term rates to restrain shifts in short-term funds abroad also was facilitated by revision of the Federal Reserve's Regulation Q (effective Jan. 1, 1962) permitting higher interest rates (maximum of 4% instead of 3%) on time and saving deposits to be paid by member banks (that is, commercial banks owning the stock of Federal Reserve banks, controlled directly by the Reserve System, and accounting for more than 80% of commercial bank credit). During the year short-term interest rates fluctuated narrowly at levels slightly above those reached at the end of 1961; long-term rates tended to decline irregularly and appreciably.

The net position of the Reserve banks in their open-market operations changed appreciably during 1962. Their holdings of United States government securities increased about $800 million during the first half of the year. Holdings in the 1-to-5-year maturity range rose nearly $1.3 billion, while holdings of Treasury bills and other issues maturing within one year declined about $500 million. In the second half of 1962, total holdings increased about $1.2 billion, but the major part of the increase was in government issues maturing within one year. Partially as a result of these operations, member banks' reserves in the aggregate averaged about $500 million in excess of the required minimum, measured as a percentage of the member bank's deposit liabilities to customers. Borrowings of some member banks from the Reserve banks to meet temporary minimum reserve requirements were on the average in a very moderate range of $50 to $150 million, so that free reserves (that is, excess reserves minus "borrowings") were in a substantial range of $350 to $450 million—slightly below that of the free reserves of 1961.

A minor change was made in 1962 in the reserve requirements of the member banks in order to ease the credit situation. The reserve requirements for city and country banks remained at 16½ and 12%, respectively, of net demand deposits. However, the reserve requirement for time deposits of all member banks was reduced in October from 5 to 4% of such deposits.

Another important control over credit extension of the commercial banks, namely, the discount rate or interest rate charged by the Reserve banks on loans to member banks, remained at 3%. A minor control over the use of credit for certain transactions was relaxed following the sharp decline in stock prices in May–June 1962. The Board of Governors reduced from 70 to 50% (effective July 10) the required margin, or down

Architect's rendering of Charles Center, Baltimore's downtown renewal project, is superimposed on this photograph.

BALTIMORE ASSOCIATION OF COMMERCE

payment, to finance purchases of securities registered on a national securities exchange.

The combination of Federal Reserve actions and a moderate increase in demand for business loans, offset by an increased flow of savings, resulted in relative stability of interest rates in 1962—slightly higher short-term rates than in 1961 and some decline in long-term rates. The rates of leading commercial banks on prime loans (that is, short-term loans to the bank's biggest customers having the highest credit rating) remained at 4½%. The open-market yield on three-month Treasury bills averaged about 2.76%, compared with 2.36% in 1961.

Declines in Treasury and corporate bond yields from late February to mid-May 1962 offset earlier advances, and yields on state and local government bonds reached a four-year low of 3.21%. The latter decline was partly influenced by widespread advances in interest rates paid on commercial bank time and savings deposits. Many member banks early in January raised their rates above the previous maximum permissible rate of 3%, and a large proportion chose the new 4% ceiling rate on regular savings accounts.

Commercial bank credit (loans and investments of all commercial banks) increased substantially in 1962 under the credit-ease program of the Federal Reserve. The increase, on the basis of data seasonally adjusted and excluding interbank loans, was appreciable monthly, except for a July decline, and reached a level in September about $12.4 billion above the year-end total of 1961. Both loans and investments showed about an equal percentage increase. The July decline, however, was due entirely to a reduction in the commercial banks' investments in United States government securities.

Bank Loans.—Total loans of commercial banks increased moderately in 1962, after a slight decline in January, and in September were about $8.6 billion above the December 1961 total. Business loans, the largest component in commercial bank loans, declined slightly early in the year and then rose about $800 million above the December total. This slight increase reflected a moderate expansion in inventory investment and in plant and equipment outlays. Also, some growth in retained earnings and in depreciation allowances permitted substantial internal financing by corporations. Real estate loans, the next largest component, increased substantially and reached a level in September about $1.4 billion above the December 1961 total. In the same period, commercial bank loans to individuals, mostly for consumption purposes, increased approximately $1.1 billion. Loans for purchasing or carrying securities, especially to brokers and dealers, decreased appreciably in the first part of the year.

Bank Investments.—Total investments of commercial banks in 1962 showed appreciable monthly increases, except in July, and in September were about $3.8 billion above the December 1961 total. The July decline of about $1.7 billion resulted from a $2.5 billion decrease in investments in United States government securities and an $800 million increase in other securities. Practically all of the three-quarter increase in investments was accounted for by "other securities," consisting mainly of state and local government securities.

Deposits and Currency.—Demand deposits and currency outside banks (that is, held by businesses and individuals) decreased slightly, on a seasonally adjusted basis, in the first three quarters of 1962. Demand deposits comprising about 80% of this active money supply accounted for the entire decrease; currency increased slightly. However, turnover of demand deposits was appreciably higher than in 1961. With some idle demand deposit balances apparently transferred to time and savings deposits, and with the moderate expansion in business transactions, the existing supply of demand deposits was more intensively utilized.

ASSETS AND LIABILITIES OF ALL BANKS IN THE UNITED STATES[1]

(In millions of dollars)

Item	Sept. 13, 1961	Sept. 12, 1962
Assets		
Loans and investments:		
Loans	$148,190	$163,010
U.S. Government obligations	70,260	70,070
Other securities	28,820	34,070
Total loans and investments	$247,270	$267,150
Cash assets	47,910	50,520
Other assets	6,870	7,160
Total assets	$302,050	$324,830
Liabilities and Capital		
Deposits:		
Interbank	$ 15,220	$ 15,870
Demand:		
United States Government	3,480	5,430
Other	129,410	131,930
Time	118,460	133,700
Total deposits	$266,570	$286,930
Other liabilities	9,840	10,760
Total capital accounts	25,640	27,140
Total liabilities and capital	$302,050	$324,830

[1] Includes 13,430 commercial banks and 513 mutual savings banks as of Jan. 1, 1962. (Source: Board of Governors of the Federal Reserve System.)

Time and savings deposits showed a steady and very substantial increase in the first three quarters of approximately $13.8 billion. The bulk of the increase was accounted for by commercial banks—holders of approximately 70% of such deposits. Mutual savings banks' deposits increased moderately, about $2.1 billion in the first three quarters. The share of commercial banks in the holdings of these deposits was slightly greater than in 1961, largely because of the higher rates permitted by the Federal Reserve to be paid on time and savings deposits by member banks.

Insurance of Bank Deposits.—The Federal Deposit Insurance Corporation, which insures the deposits (up to a maximum of $10,000 for each depositor) of nearly all banks, was not called on in the first half of 1962 for financial aid to protect depositors in a bank failure and liquidation. At the end of June 1962, the corporation's assets totaled $2.6 billion; the liabilities, $0.181 million; and the insurance fund (excess of assets over liabilities), $2.4 billion—the last resulting largely from annual insurance premiums paid on total deposits by insured banks.

Canada.—The availability of credit was restrained and its cost substantially increased in Canada in mid-1962, largely because of an adverse international payments situation. Early in May the government established a fixed parity for the Canadian dollar at U.S.$0.925—an appreciable decline from the rate of U.S.$1.05 in 1960.

This currency depreciation came after a loss of $469 million in Canada's official exchange reserves during the first four months of 1962 to meet an outflow of capital, and payments for imports in excess of export receipts. The lower exchange rate was expected to encourage exports and to lessen imports.

Among other remedial government actions was the Bank of Canada's move on June 25 toward higher interest rates to attract an inflow of capital. This government-owned central bank reintroduced a fixed discount rate, at 6%, which was more than 2% above the variable rate prevailing in the first five months of the year. Since 1956 the discount rate had been automatically set at 0.25% above the weekly Treasury bill rate.

The yield on three-month Treasury bills offered weekly by the government increased from 3.07% in January 1962 to 5.51% in July, and then declined to 5.07% in September. The variable rate (bill rate plus 0.25%) was continued on the bank's loans to money market dealers. The fixed rate applied on the bank's temporary loans or advances to the commercial banks (that is, the seven chartered banks, with almost 4,000 branches). This rate was reduced from

6 to 5½% on September 7. Open-market sales of government securities, including new emphasis on long-term bonds, were made by the bank at crucial times in order to hold their prices low enough to maintain relatively high yields. The aim was to encourage purchases by foreign buyers.

Under this policy of credit restraint, commercial bank credit increased very little during the first three quarters of 1962. Total loans of the commercial banks increased about $1.2 billion, but their investments declined about $860 million—a net increase in credit of $340 million. Business loans, the largest component in total loans, increased about $700 million, reflecting continued mild expansion in the output of the economy. Personal loans, the next largest component, increased about $275 million.

In order to meet the increased demand for loans, and also maintain their cash and liquidity reserves, the banks began selling in June some of their investments—mainly Government of Canada securities. Holdings of Treasury bills were also reduced.

Commercial bank deposits (seasonally adjusted) held by the general public increased about $200 million in the first three quarters of 1962. Personal savings deposits increased about $300 million and other deposits, consisting mostly of demand deposits, decreased about $100 million. The money supply (that is, currency outside the commercial banks and total bank deposits) increased about $200 million.

The total Canadian dollar deposit liabilities of the commercial banks (including federal and provincial governments' deposits and foreign banks' deposits) increased about $300 million in the first three quarters of 1962. The commercial banks' ratio of cash reserves (deposits with the Bank of Canada, and Bank of Canada notes) to these total deposit liabilities was maintained with some difficulty fractionally above the required minimum of 8%. Also, their ratio of liquid assets (comprising cash reserves, day-to-day loans, and Treasury bills) to deposit liabilities declined from approximately 18% in the first quarter to 15.5% in the third quarter of the year. Since the agreed minimum liquidity ratio was 15%, a tight credit situation prevailed.

(For additional information, see the Index entry, *Banking*.)

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BAPTIST CHURCHES

Baptist churches in 1961 had a membership of 21,396,250, with 91,840 individual churches making up the 28 autonomous Baptist congregations, as reported in the 1963 edition of the *Year Book of American Churches*. Baptists thus remain the largest single communion in the United States, representing about one third of all Protestants.

The Southern Baptist Convention (see below) is the largest of the Baptist bodies. Next is the National Baptist Convention, U.S.A., Inc., a Negro group, which reported an estimated 5 million members in 1958. Third, and also a Negro denomination, is the National Baptist Convention of America, whose membership in 1956 was 2,668,799; and fourth is the American Baptist Convention (see below). For membership figures of other large Baptist bodies, see the article CHURCH MEMBERSHIP, U.S.

AMERICAN BAPTIST CONVENTION

In 1962 the American Baptist Convention (known until 1950 as the Northern Baptist Convention) represented the cooperative interest of 6,283 churches in 42 states, and had a total membership of 1,544,505.

The church's missionary and benevolent work program is carried on in the United States, Africa, Asia, Europe, and several Latin American countries by 7 national societies and boards, 36 state conventions, and 14 city societies. It is supported by contributions from churches to a unified budget, representing the interests of all agencies. The approved budget for 1963 is $11.4 million. This amount, plus about $4.2 million from other income, provides over $15 million for the support of the missionary enterprises of the American Baptist Convention. An additional $8.2 million, to be paid over a 3-year period, beginning in 1960, has been pledged by American Baptists for strengthening the convention's work in Christian higher education, with funds to be allocated for colleges, universities, theological institutions, and scholarship programs. A new national office building and graphic arts plant, erected at Valley Forge, Pa., at a cost of $8.5 million, were occupied by the convention in late 1961.

In 1962, at Philadelphia, Dr. Benjamin P. Browne of Chicago was elected president of the convention for 1962–63. The convention is affiliated with the Baptist World Alliance, the National Council of the Churches of Christ in the U.S.A., and the World Council of Churches.

EDWIN H. TULLER,
General Secretary, American Baptist Convention.

SOUTHERN BAPTIST CONVENTION

The Southern Baptist Convention, largest of the Baptist bodies, reported 32,598 churches in 1961 with a membership of 9,978,488 in 28 states.

The 71 Southern Baptist educational institutions reported 77,143 students in 1961–62, with 5,502 in the six seminaries located at Louisville, Ky., New Orleans, La., Fort Worth, Texas, Mill Valley, Calif., Wake Forest, N.C., and Kansas City, Mo. There were 79 students in the American Baptist Theological Seminary for Negroes located in Nashville, Tenn. The educational institutions reported endowments of $90,638,263 and property valued at $268,157,552. The 44 Baptist hospitals reported property valued at $178,388,481. The 27 children's homes reported 6,340 children, and property valued at $32,642,239 in 1961. The denomination supports 1,548 foreign missionaries and 1,975 home missionaries. The Annuity Board reported 24,605 active members, with assets totaling more than $93 million.

The publishing division of the convention is the Baptist Sunday School Board, located in Nashville, Tenn. In 1961 it distributed 110,395,424 individual literature items and published 5,984,237 books.

Dr. Herschel H. Hobbs of Oklahoma City was elected president of the 1962 convention, held in San Francisco. The office of the Southern Baptist Convention Executive Committee is located at 127 Ninth Avenue, N., Nashville 3, Tenn.

PORTER W. ROUTH,
Executive Secretary, Executive Committee,
Southern Baptist Convention.

BARBADOS. See WEST INDIES FEDERATION.
BARITE. See MINERAL PRODUCTION.
BARLEY. See GRAINS.
BASEBALL. See SPORTS, GAMES, AND SHOWS.
BASES, U.S. See Index entry.
BASKETBALL. See SPORTS, GAMES, AND SHOWS.
BASUTOLAND. See BRITISH SOUTH AFRICAN TERRITORIES.
BAUXITE. See MINERAL PRODUCTION.
BEANS. See VEGETABLES.
BECHUANALAND PROTECTORATE. See BRITISH SOUTH AFRICAN TERRITORIES.

BEEBE, (Charles) William

U.S. naturalist, author, and explorer: b. Brooklyn, N.Y., July 29, 1877; d. near Arima, Trinidad, June 4, 1962.

The leader of scientific expeditions that took him from the Himalayas to the depths of the Atlantic, Beebe was equally acclaimed for his research on birds, fishes, and mammals, and for

the literary talents he displayed in two dozen books recounting his experiences as a naturalist. In 1934 his record underwater descent off Bermuda made him a celebrity; the depth of 3,028 feet which he reached that year in a glass-windowed iron cylinder called the bathysphere was not exceeded until 1949, when Otis Barton, designer of the vessel, descended 4,500 feet. The present record of 35,800 feet was established in 1960 by Jacques Piccard and Lt. Don Walsh in the U.S. Navy's bathyscaphe *Trieste,* designed by Piccard's father, Auguste Piccard (q.v.).

After graduating from Columbia University (B.S., 1898), Beebe joined the New York Zoological Society in 1899 as curator of ornithology and director of scientific research. He organized the society's renowned collection of birds at the Bronx Zoo and founded (1916) its Department of Tropical Research. Although he retired as an executive of the society in 1952, he continued to direct its Trinidad research station, Simla, where he died.

Beebe's first book was *Two Bird Lovers in Mexico* (1905); his research in ornithology was climaxed by the exhaustive four-volume *Monographs of the Pheasants* (1918), for which he spent two years in the jungles of Asia and Malaysia gathering data. In the 1920's, after service as a combat aviator during World War I, he made two notable scientific expeditions: to the Galápagos Islands, off Ecuador, where he studied the sea iguanas (*Galápagos: World's End,* 1924); and to the North Atlantic in a wooden ship, *Arcturus,* to explore the marine life and floating seaweed formations of the Sargasso Sea (*The Arcturus Adventure,* 1926). In *Half Mile Down* (1934) he described his bathysphere descents, made on a New York Zoological Society oceanographic expedition. One of Beebe's most interesting books, *Unseen Life of New York* (1953), investigated the amazing variety of wildlife to be found in that city. Excerpts from his 50 years of writing on natural history were published in *Adventuring with Beebe* (1955).

BEEF. See MEAT INDUSTRY.
BEER. See BREWING INDUSTRY.
BEETS. See VEGETABLES.
BELGIAN CONGO. See CONGO, REPUBLIC OF THE.

BELGIUM

This constitutional monarchy on the northwest coast of Europe has an area of 11,775 square miles and a population of 9,373,370 (est. March 31, 1962). The population is divided into two distinct ethnic groups—the Flemish (Dutch)-speaking Flemings and the French-speaking Walloons. French and Flemish are the official languages. Principal cities and populations (est. Dec. 31, 1961, with suburbs): Brussels, the capital, 1,398,326; Antwerp, 849,432; Liège, 607,117; Charleroi, 469,259; Ghent, 455,022.

Government.—King Baudouin (b. 1930; acceded 1951) is the hereditary constitutional monarch. The bicameral Parliament, elected every four years or after dissolution by the sovereign, consists of a Senate with 175 members and a Chamber of Representatives with 212 members. Of the senators, 106 are elected directly, 46 by provincial councilors, and 23 by their fellow senators. The representatives, one for every 40,000 inhabitants, are elected by proportional representation. Suffrage has been universal since 1950. Following the elections of March 26, 1961, party strength in the Chamber of Representatives was as follows: Christian Socialists (Catholic), 96; Socialists, 84; Liberals, 20; Communists, 5; Flemish Unionists, 5. Premier Theo Lefevre heads a Christian-Social-Socialist coalition cabinet, sworn in on April 25, 1961.

Belgium, which is joined with Luxembourg in an economic union, is a member of the Benelux Economic Union, the European Economic Community, and the European Atomic Energy Community.

Education and Religion.—Number of schools (with enrollments), 1959–60: 4,475 infant (392,345); 9,048 primary (960,282); 1,229 secondary (21,959); and four major universities (26,497 students in 1960–61). Outside of Brussels, Roman Catholic Flemings represent 50% of the population, and Protestant Walloons, 33.61%.

Finance.—Government revenue, 1962 est.: 132.4 billion francs (120.8 billion in 1961); expenditure, 147.2 billion (129.1 billion). The Belgian franc equals U.S.$0.02. National debt: 444 billion francs as of May 31, 1962 (up 126.9 billion from Jan. 1, 1960). Gold and foreign exchange holdings of the National Bank: $1,625 million as of Aug. 31, 1962 (down $32 million from Dec. 31, 1961).

Transportation and Communications.—Transport networks (miles, 1961): state-owned railways, 2,895 miles (20% electrified); main roads, 6,330; navigable waterways, 990. Merchant marine tonnage (Jan. 1, 1961): 676,791 gross registered tons. National airline: Sabena (serves 30 countries; 1,264,094,000 passenger-kilometers in 1960). Other data for 1960: registered motor vehicles, 1,004,800; telephone subscribers, 1,085,594; radio receivers, 2,612,850 (1961); television sets, 820,709 (1961); 47 daily newspapers (1959).

Economic Indicators.—Gross national product: 608 billion francs in 1960 (up 6% from 1959). Index of industrial production (1953 = 100): 139.0 (provisional) in 1961 (131.6 in 1960). Cost-of-living index (1958 = 100): 104 in August 1962 (103 in September 1961). Index of employment (1958 = 100): 101 for final quarter of 1961 (99 for final quarter of 1960).

Manufactures and Minerals.—Chief industrial products (metric tons, 1961): coal, 21.5 million (down 4.4%); steel, 6.9 million (down 4%); cement, 4,752,000 (up 8.2%); glass, 308,000 (down 15.5%); electric power, 16.02 billion kw.-hr. (up 5.0%). Construction permits in 1961 increased by 11% over 1960. Textiles production rose by 3% in the first 10 months of 1961.

Agriculture.—Agriculture engages 10% of the labor force. Chief crops (metric tons, 1961): wheat, 722,200 (down 6.6%); oats, 444,400 (down 1.2%); barley, 408,700 (up 6.9%); rye, 119,400 (down 36.3%); sugar beets, 2,328,112 (down 24%); potatoes, 1,593,242 (down 15.9%). The number of hogs and cattle increased slightly in 1961. The exceedingly wet summer in 1960 reduced the quantity of winter grains produced.

Foreign Trade.—Total exports, 1961: 195.3 billion francs (up 3.44% from 1960); imports, 209.2 billion (up 5.7%). Principal exports (in billion francs, for first 10 months of 1961): base metals, 54.4; textiles, 25.2; machinery and equipment, 15; chemicals, 12; precious stones, 8. Principal imports (in billion francs, for first 10 months of 1961): mineral products, 28.2; textile products, 21.4; machinery and industrial equipment, 21.6; base metals, 21.3; transport equipment, 16.7. Chief customers (with percentage of total Belgian-Luxembourg exports received in 1961): Netherlands (23.4%); West Germany (15.4%); France (11.2%). Principal suppliers (with percentage of total imports provided in 1961): West Germany (17.8%); Netherlands (15.3%); France (14.7%).

Events, 1962.—The year 1962 was another year of increased economic growth. Industrial activity was continued at high levels, and in the first half of 1962 registered a gain of 17% over the comparable period of 1961. There was again a marked increase in total wages earned due to the increase in the number of employed persons. Foreign investment was continued at a high rate, and prices were relatively stable. As in the previous year, expenditures for necessities declined, while expenditures for travel, luxury goods, and entertainment increased. As highly industrialized Belgium exports about half of its production and imports nearly all raw materials and one third of its food, its competitive economic position improved because of a relatively lower increase in production costs in 1961–62.

The position of the coal industry was improved. The closing of uneconomic coal mines proceeded; pithead stocks were reduced by 33% in 1961; the number of workers declined from 102,000 to 88,000; and worker productivity increased substantially. Since 1960 the European Coal and Steel Community has protected the market for Belgian coal, and this aid was continued through 1962. Early in the year the High Authority of the Community raised objections to Belgian plans for increased assistance to the coal industry, alleging that such aid would be in violation of the Community's original treaty. Belgium then abandoned plans to increase subsidies by means of taxes on steel and on imports of coal, but continued to dis-

cuss other proposals with the High Authority. In the spring of 1962 the High Authority authorized construction at Selzaete of a new steel works capable of producing 1.5 million tons annually.

The construction, petroleum, and metal manufacturing sectors of the economy have increased in economic importance and have offset the decline of the coal industry. Foreign investors have been attracted by the various incentives offered by the government. As a result, new foreign investments have increased in number and value.

It was feared that independence for the Congo (Léopoldville) and the chaos that followed in 1960–61 would seriously affect the economic life of Belgium. There was a sizable decline in trade with the Congo, but these losses were offset by new markets. Diplomatic relations with the Congo were resumed in December 1961, and indications pointed to an increase in trade for 1962. The Congolese sought Belgian technical assistance, often preferring it to United Nations technical assistance. Belgians began to return to the Congo; some 15,000 were reported to be in Léopoldville in June 1962.

Ruanda-Urundi, the United Nations trust territory administered by Belgium, became independent on July 1, 1962, as the separate states of Burundi and Rwanda (qq.v.).

Existing tensions between the Flemings and Walloons again broke into open clashes in 1962. The 1932 law requiring exclusive use of the predominant language in each community has given rise to much agitation in Flemish Louvain, where the university student body is divided rather evenly between Flemings and Walloons. Walloons staged demonstrations to protest against making the university exclusively Flemish.

In July a clash between Flemings and Walloons occurred in Antwerp. In October the Senate approved a bill fixing a boundary between the two cultural areas. On the succeeding Sunday, October 14, thousands of Flemings marched into Brussels to protest against domination by the Walloons. The Walloons staged counterdemonstrations, and 19 persons were injured in the disorders. Extremists of both groups agitated for a federal Belgium made up of Flanders, Wallonia, and a bilingual state of Brussels.

AMRY VANDENBOSCH,
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BEMELMANS, Ludwig

Austrian–U.S. painter and writer: b. Meran, Austria (now Merano, Italy), April 27, 1898; d. New York, N.Y., Oct. 1, 1962.

In children's rhymes or in satirical novels, in magazine illustrations or in barroom murals, Bemelmans always was immediately and absolutely identifiable as Bemelmans. Neither his painting nor his writing found a place in the mainstream of the art of his day, but their quality was generally acclaimed by critics, and their freshness and tang were a delight to millions.

The son of a Belgian painter, Bemelmans was raised in the Austrian Tirol by his maternal grandfather, an affluent brewer, and was educated at high schools in Bavaria. To quash his early inclinations toward painting, he was sent to work for an uncle who owned hotels in Switzerland. An ungovernable boy, he was removed from one hotel to another until 1914, when he shot a tyrannical headwaiter and, in retribution, was given a choice of going to reform school or to the United States.

In New York City, he worked as a busboy and waiter at several fashionable hotels until 1918, when he became a citizen and joined the U.S. Army. His experiences as a soldier provided the basis for his first adult book, *My War With the United States* (1937). After World War I, he returned to his job as a waiter at the Ritz Hotel, the prototype of the Hotel Splendide in his writings. He created an unsuccessful comic strip, "Count Bric-a-Brac," for the New York *World*, designed theatrical scenery, and in 1933 became manager of a new restaurant, Hapsburg House, which he decorated with his own sketches.

In 1934, with *Hansi*, Bemelmans became an author-illustrator of children's books. The little Parisian schoolgirl, Madeline (named after his wife), who first appeared in 1939 in a book with that title, was his most popular creation. He liked to think of himself primarily as a painter, but his ebullient good humor was more widely appreciated in his 30-odd books, which include *Now I Lay Me Down to Sleep* (1943), his first novel, adapted for Broadway in 1950; *Dirty Eddie* (1947), a best-selling satire on Hollywood; and *On Board Noah's Ark* (1962), a travel book. His short stories, informal essays, and illustrations also appeared in magazines. At the time of his death, he was working on the sixth book of the Madeline series and on a musical adaptation of his novel *The Street Where the Heart Lies* (published posthumously).

BEN BELLA, Ahmed (formerly **Mohammed**)

Premier of the Republic of Algeria: b. Marnia, Algeria, 1919.

One of the heroes of the Algerian struggle against the French, Ben Bella in 1962 made the transition from a French prison to the premiership of the new nation—after a fierce power struggle which almost erupted in civil war.

UPI

Ahmed Ben Bella, shown addressing the United Nations on October 9, emerged as premier of the newly independent Republic of Algeria in September 1962 after a bitter power struggle.

Ben Bella attended high school in Marnia, and became a soccer player of renown. He served in a Moroccan regiment of the French Army in World War II and was four times decorated for bravery. Returning to Marnia after the war, he soon became one of the early leaders of the clandestine Algerian war for independence. Imprisoned by the French in 1949, he escaped in 1952 and helped organize the group which later became the National Liberation Front (FLN). He fought against the French after the beginning of the open revolt in 1954. Arrested again in 1956, he was released after the cease-fire agreement at Évian-les-Bains in March 1962. His stature had grown during imprisonment, and he returned to Algeria a national hero.

Joining (as vice premier) the Provisional Government headed by Benyoussef Ben Khedda, Ben Bella on July 22, 1962, announced the formation of a seven-member Political Bureau to lead the government; on August 7 the bureau assumed political power. Following the September 20 elections, in which the candidates were picked by the

bureau, the new National Assembly elected Ben Bella premier on September 26.

Ben Bella visited the United States October 6–15, addressing the United Nations on October 8, the day of Algeria's admission to the world organization. He was officially received by President Kennedy on October 15, and on the following day he flew to Cuba for a one-day state visit, after which he issued a statement supporting Cuba's demands that the United States evacuate its naval base at Guantanamo Bay. On November 20 he stressed his desire for "healthy cooperation" with France (whose subsidy of Algeria was originally due to end on Jan. 1, 1963), and on December 4 he made an appeal for economic help from abroad to help Algeria overcome its "unbelievable problems."

(See also ALGERIA.)

BENELUX ECONOMIC UNION. See Index entry.

BERLIN. See GERMANY and the Index entry, *Berlin.*

BERMUDA

A British crown colony in the Atlantic Ocean about 760 miles southeast of New York City, this group of 300 islands (20 of which are inhabited) has a land area of 20.59 square miles and a population (1960 census) of 42,640, about 63% of which is colored. The capital is Hamilton (1960 est. pop., 2,800), on Main Island; other important islands are St. George's, St. David's, Somerset, and Ireland.

Government.—The governor (Maj. Gen. Sir Julian Alvery Gascoigne) is assisted by an Executive Council of 8 members and a Legislative Council of 11 members, all appointed by the crown. The 36-member House of Assembly, elected by universal suffrage subject to certain property qualifications, is the oldest British colonial legislature.

Education.—Primary education is free and compulsory. Number of schools (with enrollment), 1961: 71 (11,000), including 47 primary schools (8,724). Vocational and technical students numbered 333.

Finance.—Government revenue, 1961: £5,148,022; expenditure: £5,115,759 (trade development, £646,430; education, £604,186; public works, £493,121).

Transportation and Communications.—Four airlines supply service directly to and from New York: British Overseas Airways Corporation, Cunard Eagle Airways, Eastern Airlines, and Pan American World Airways. Other routes connect the colony with Canada, the West Indies, South America, and Europe. A large airfield forms part of an airbase leased with a naval base to the United States for 99 years in 1940. Twelve shipping lines serve Bermuda from North America and Europe. No passports are required of United States citizens. Radio receivers numbered 18,000 in 1959; television sets, 8,500 in 1960.

Economy.—Tourism is vital to the economy. The number of visitors, most of them from the United States, increased from 148,156 in 1960 to 169,957 in 1961 (by air, 113,280; by ship, 56,677, including 46,306 cruise passengers). The cultivated area (579 acres) produces bananas, citrus fruits, lilies and other plants, and vegetables.

Foreign Trade.—Exports, 1961: £9,534,387 (drugs and essences, £3,408,743; re-exports of bunkers and ship stores, £2,482,986). Imports: £21,955,457 (£10,471,460 from the United States), including gasoline (£1,704,658), electrical supplies (£1,274,468), cotton clothing (£830,502), and hardware (£496,671).

Events, 1962.—The newly completed United States government satellite-tracking station on Cooper's Island played an important part in the successful launching of America's first manned orbital flights in February and May.

In January a new transoceanic coaxial cable from Flatts, Bermuda, to Manahawkin, N.J., went into operation, starting on a manual basis. Local operators, by means of key sets, now place calls through the cable into the United States and Canadian automatic networks with no intervening operator.

BERYL. See MINERAL PRODUCTION.

BEST SELLERS. See BOOK PUBLISHING AND SALES.

BETTING. See Index entry, *Gambling.*

BHUTAN

Located high in the Himalayas between China and India, Bhutan is an autonomous state with an estimated area of 19,305 square miles, and a population (1961 est.) of 680,000. Bhutan is closely allied to Tibet by language (Tibetan), race (Bhotia), and religion (Buddhism). Thimbu, the designated capital, was under construction in 1962. The chief seat of government, which moves with the ruler, is usually Tashi Chho Dzong in Thimbu district in the summer and Punakha in the winter; Paro also serves as a temporary capital.

Bhutan is ruled by an absolute monarch (Maharaja Jigme Dorji Wangchuk (b. 1929; installed, Oct. 27, 1952), who is advised by a 130-member National Assembly (Tsongdu). The maharaja is assisted by feudal governors (penlops) of the state's eight provinces.

Subsistence agriculture is the main occupation; chief crops are rice, wheat, and buckwheat. Stock raising is important in the highlands. The northern forests provide valuable hardwoods for export. Some iron, dolomite, and coal are mined. Practically all of Bhutan's trade is with India.

India provides an annual subsidy of 500,000 rupees (about $105,000) to Bhutan under the treaty of Aug. 8, 1949. India conducts Bhutan's foreign relations, and has extended a guarantee of military defense of the state in case of aggression. On July 27, 1961, India announced a five-year plan aimed at increasing Bhutan's internal revenues and creating a self-sufficient economy. In May 1962 a 110-mile road from Paro to a border town in West Bengal was opened.

Bhutan's dispute with Communist China over the latter's claim to 300 miles of territory in northeastern Bhutan remained unresolved during 1962, but Bhutan was not invaded during the large-scale fighting late in the year between China and India.

As a step forward in its modernization program, Bhutan announced in March 1962 that it was establishing its own postal service and would apply for membership in the Universal Postal Union.

BICYCLING. See SPORTS, GAMES, AND SHOWS—*Cycling.*

BILLIARDS. See SPORTS, GAMES, AND SHOWS.

BIOCHEMISTRY

Perhaps the most dramatic and significant biochemical developments of 1962 concerned the coding principle by which the genetic information contained in the cell nucleus is transferred to the protein-synthesizing system in the ribosome; and the cell-free growth in the laboratory of biologically active nucleic acid of the tobacco mosaic virus.

Messenger Ribonucleic Acid.—Enzymes in the cell nucleus are capable of causing synthesis of ribonucleic acid (RNA) from the nucleoside 5′-triphosphates as precursors; the formation of this type of RNA requires deoxyribonucleic acid (DNA) as a primer or template. Since the newly synthesized RNA has a purine and pyrimidine base composition apparently identical with that of the primer DNA, it is considered to be a replica or copy of the DNA.

Sol Spiegelman and others have been able to isolate a DNA-RNA complex, presumably a double-stranded helical structure, which is probably an intermediate stage in this copying process. This type of RNA is apparently identical with the so-called messenger RNA postulated by Jacques Monod and François Jacob. This is sent to the ribosome with the genetic message to be used as a template in enzymatic formation of protein. It has

long been the expectation that the sequence of the four different bases of nucleic acids determines or codes the sequence of the 20 different amino acids in the protein undergoing synthesis.

Triplet Nucleotide Sequence.—Despite much past speculation on the nature of this code, there has been little understanding of its details until this past year. Several years ago, Seymour Benzer had shown that probably only a very few nucleotide units in the DNA chain are required to code a single specific amino acid. However, in 1961 a group led by F. H. C. Crick at Cambridge University produced genetic evidence that a sequence of three nucleotide units, a triplet, codes a single amino acid in a "comma-less" code.

This idea has been given direct biochemical support by simultaneous work by Marshall W. Nirenberg and his colleagues at the National Institutes of Health and by Severo Ochoa and his co-workers at New York University. Nirenberg found that incorporation of certain radioactive amino acids into ribosomes of *Escherichia coli* may be greatly stimulated by either naturally occurring RNA or by synthetic polynucleotides having only one type of mononucleotide unit, such as polyuridylic acid. Presumably such ribosomes are deficient in template RNA; the RNA or polynucleotides added in such experiments apparently act as messengers and form a template on the ribosome. Nirenberg and his colleagues found that when added to *E. coli* ribosomes, the synthetic polyuridylic acid (containing only the base uracil) caused stimulation of incorporation of only one specific amino acid, phenylalanine, into peptide linkage in the ribosome. They concluded that uridylic acid (abbreviated U) codes only for the amino acid phenylalanine (abbreviated Phe).

Amino Acid Code.—This finding immediately suggested that if a large variety of synthetic polynucleotides of known base composition and sequence could be tested as messengers or determinants for the incorporation of one specific amino acid or another, then the basis of the genetic code for amino acids could be worked out. By this approach the groups led by Ochoa and Nirenberg were able to show in a few months' time that each of the 20 specific amino acids was apparently coded by a triplet of specific nucleotide units in the messenger polynucleotide, each of which has a known characteristic content and sequence of bases. The accompanying table shows the coding triplets which have been assigned.

NUCLEOTIDE TRIPLETS OF MESSENGER RNA WHICH CODE THE AMINO ACIDS

Amino acid	Symbol	Bases in triplet
Alanine	Ala	U C G
Arginine	Arg	U C G
Asparagine	AspN	U A C; U A A
Aspartate	Asp	U A G
Cysteine	Cys	U U G
Glutamate	Glu	U A G
Glutamine	GluN	U C G
Glycine	Gly	U G G
Histidine	His	U A C
Isoleucine	Ileu	U U A
Leucine	Leu	U U C; U U A; U U G
Lysine	Lys	U A A
Methionine	Met	U A G
Phenylalanine	Phe	U U U
Proline	Pro	U C C
Serine	Ser	U U C
Threonine	Thr	U A C; U C C
Tryptophan	Try	U G G
Tyrosine	Tyr	U U A
Valine	Val	U U G

Each amino acid can be coded by a trinucleotide containing three specific bases as shown in the table. Presumably these must be in specific sequences, not yet determined experimentally, explaining why some appear for more than one amino acid. Starting from the four known bases—adenine (A), uracil (U), cytosine (C), and guanine (G)—there are 64 possible triplets of specific sequence, whereas only 20 would be needed to code the 20 amino acids.

This fact suggests that the genetic code may be degenerate—that is, that more than one triplet codes a specific amino acid. Actually this has been found to be the case in a few instances, as shown in the table. It is also very curious that uracil is present in all the triplets, whereas this base does not occur in natural RNA specimens in the proportions required by these findings. It is probable that the experimental methods used by Ochoa and Nirenberg have tended to select the U-containing triplets from a degenerate coding system. On the other hand, Roberts has suggested that the code may actually involve doublets rather than triplets of nucleotides, if the common character uracil is eliminated.

These discoveries, which require much further analysis, have dramatically opened the whole problem of the genetic coding system to rather simple and direct experimental analysis, with implications as important to biology and medicine as atomic fission and fusion have had in the realm of the physical sciences. (See also BACTERIOLOGY; GENETICS.)

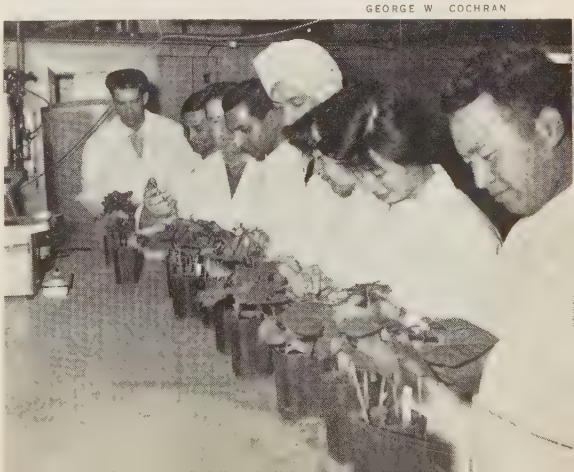
Cell-Free Growth of Virus.—Scientists at the University of California, Los Angeles, and at Utah State University have independently reported on a technique for growing infectious tobacco mosaic virus outside of the living cell. Normally, viruses grow only within living cells. The nucleic-acid cores of the virus enter the host cells and there monopolize the normal enzymatic mechanisms for making nucleic acids, with the result that new virus nucleic acid is turned out. Such infectious viruses as those of polio and hepatitis are grown in tissue cultures in this way.

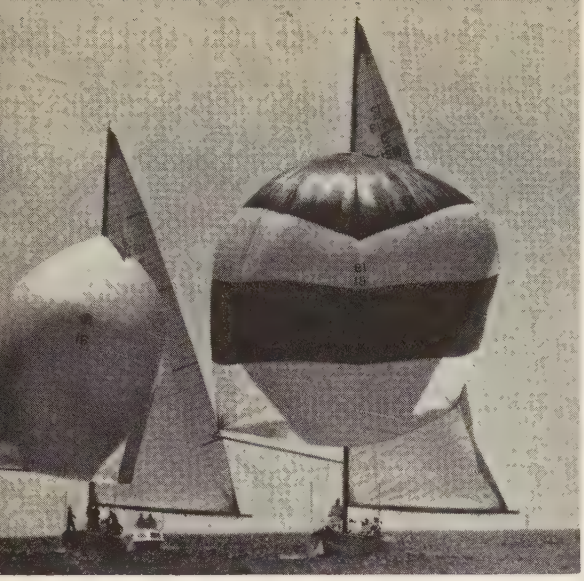
The announced new technique consists of obtaining a filtered sap from leaves infected by the tobacco mosaic virus, containing large, virus-synthesizing enzyme molecules and possibly cell nuclei. The addition of four chemicals—the triphosphates of adenosine, guanosine, cytidine, and uridine—to the cell-free sap then produces the rapid formation of the virus nucleic acid, constituting the heart of the tobacco virus. Radioactive adenosine triphosphate (ATP) was used to check the technique and to produce, from tagged nucleic acid, further batches of the virus nucleic acid in the sap. If further research confirms these experiments, it will be the first time a biologically active nucleic acid has been formed independently of the intact cell. This discovery could lead to simple methods for growing and studying virus nucleic acid or even viruses in a cell-free medium.

ALBERT L. LEHNINGER,
Professor and Director, Department of Physiological Chemistry, School of Medicine, Johns Hopkins University.

An international team of scientists at the University of Utah, led by Dr. George W. Cochran of the United States (third from left), in 1962 reported on a method of growing infectious tobacco mosaic virus outside the living cell.

GEORGE W. COCHRAN





UPI

Yacht *Nefertiti* (right) defeats *Columbia* in first race of America's Cup defense elimination, Newport, R.I., July 2.

BIOGRAPHY. See Index entry, *Literature;* also biographical articles in their alphabetical order, and NECROLOGY listing at the back of the volume.
BIOLOGY. See BOTANY; GENETICS; MARINE BIOLOGY; ZOOLOGY.
BIRDS. See Index entry.
BIRTH STATISTICS. See Index entry.
BISMUTH. See MINERAL PRODUCTION.
BLINDNESS. See OPHTHALMOLOGY and the Index entry, *Blind, Aid to the.*
BLOOD DISEASES. See Index entry, *Blood.*

BOATING

The eyes of the nonboating as well as boating worlds focused in September 1962 on Newport, R.I., where the America's Cup, sailing's oldest international trophy, was in contention for the 18th time. "The Old Mug," as it is also called, was successfully defended by the United States 12-meter yacht *Weatherly*, which won four of the five races against the challenging Australian 12-meter yacht *Gretel.* Although she failed to make off with the famous trophy (an American possession since 1851), the Australian yacht distinguished herself by becoming the third challenger to win a race in an America's Cup series.

Less than a month after the deciding race of 1962, the New York Yacht Club accepted a challenge from the Royal Thames Yacht Club of London, England, and scheduled the next cup match for September 1964.

The sailing segment of the pleasure boat fleet continued to exhibit impressive growth in 1962, the bulk of the newcomers again being one-design craft (class boats) of from 13½ to 20 feet in length. Confirming the soaring popularity of sailing craft in general, the nation's largest and one of its oldest builders of stock powerboats, the Chris-Craft Corporation, introduced its first sailboat—a 35-foot auxiliary sloop with cruising accommodations for six persons.

The array of production houseboat models doubled (there were more than 100 models from which to choose in 1962), and the number of firms engaged in their manufacture passed the two-dozen mark. Public interest in houseboats was high, and the houseboat fleet appeared likely to expand greatly.

Deep-V powerboat hulls with longitudinally stepped bottoms showed up in an increasing number of small boat lines, revealing the trend-setting impact of the "Moppie" hull form introduced in 1960. Its reputation for speed and rough water stability assured its application in larger pleasure craft in 1963.

Evident in popular-sized cabin cruisers that rolled off production lines in 1962 were the distinct emphasis placed on quality and optimum utilization of space, as well as comfort and styling. With few exceptions, builders offered a better product for the price, and obviously had gone to great lengths in planning interior accommodations and other built-in conveniences.

Inboard-outboard power packages combining the operating economy of inboard engines with the compactness, ease of installation, and easier steering of outboard motors claimed a permanent place in the marine propulsion market. Several major engine manufacturers, including the two largest outboard motor producers, featured outdrives in their 1962 lines. Builders of stock boats adopted them on a large scale.

The number of boats registered under the Federal Boating Act of 1958 showed an increase over the total recorded in 1961, and the boating industry reported sales gains that, although slight, indicated that the slump experienced in recent years had run its course.

(For the results of boat competitions, see the *Motorboating* and *Yachting* sections of the article SPORTS, GAMES, AND SHOWS.)

ROBERT W. CARRICK,
Editor, "Popular Boating."

BOBSLEDDING. See SPORTS, GAMES, AND SHOWS.

BOHR, Niels Henrik David

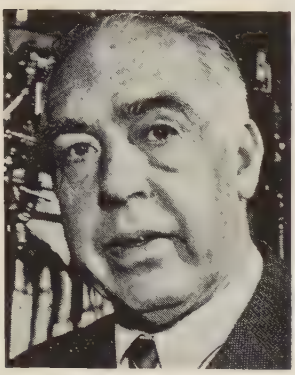
Danish physicist: b. Copenhagen, Denmark, Oct. 7, 1885; d. Copenhagen, Nov. 18, 1962.

A creative nuclear physicist, whose thinking helped to clarify the structure and behavior of the atom and to release atomic energy for human use, Niels Bohr won both the Nobel Prize in physics and the Atoms for Peace Award. He made Copenhagen a world center for the development of the next generation of physicists, and in his later years devoted his energies to stimulating the peaceful applications of atomic fission.

The son of a professor of physiology, Bohr was educated at the University of Copenhagen, where he distinguished himself both as a physics student and as a soccer player known throughout Scandinavia. After receiving his doctorate in physics from the university in 1911, Bohr went to England and worked at the Cavendish Laboratory of Cambridge University and subsequently at the University of Manchester, where he was associated with the nuclear physicist Ernest Rutherford. In 1916, Bohr became professor of theoretical physics at the University of Copenhagen, and in 1920, director of the university's newly created Institute for Theoretical Physics.

Working from the Rutherford construct of the atom, Max Planck's theory of heat radiation, and Albert Einstein's study of the photoelectric emission of electrons, Bohr by 1913 had developed the model of the atom in which the negatively charged electrons move around the positively charged nucleus in restricted orbits. His explanation that the atom emits definite quanta or bits of energy as electrons shift inward from outer orbits (or shells), and absorbs quanta as electrons move outward, formed the basis for the quantum theory and provided the theoretical foundation for spectroscopy by explaining spectral emission. For these achievements Bohr was awarded the Nobel Prize in physics in 1922.

While at the Institute for Advanced Study at Princeton, N.J., in 1939, Bohr went beyond the work of the German chemists Otto Hahn and Fritz Strassmann on the splitting of the uranium nucleus by neutrons. In collaboration with Dr. John A. Wheeler, Bohr formulated the theory of nuclear fission which led him directly to the identification of the lighter and scarcer isotope of uranium, U-235, as the prime source for atomic energy and stimulated the development of advanced atomic research.



Niels Bohr
(1885–1962)

WIDE WORLD

Bohr returned to Denmark in 1940, then fled from the Nazis to Sweden with his family in 1943. Shortly afterward he went to England, and then to the United States again, where until 1945 he served as an adviser on atomic fission, mostly at the Los Alamos, N. Mex., atomic laboratory. He then resumed the directorship of the Institute for Theoretical Physics in Copenhagen, became chairman of the Danish Atomic Energy Commission, and worked tirelessly for international control of atomic energy. He was primarily responsible for arranging the first Atoms for Peace Conference in Geneva in 1955, and helped create the European Center for Nuclear Research (CERN). In 1957 he became the first recipient of the Ford Foundation's Atoms for Peace Award.

BOLIVIA

This landlocked South American republic has an area of 424,163 square miles. About one third of Bolivia is mountainous, with heights reaching over 21,000 feet; the remainder comprises tropical and subtropical lowlands. Bolivia's population (est. 1962) is 3,556,000. Sucre is the constitutional capital (1962 est. pop., 57,500), but La Paz (450,000) is the actual seat of government. Other major cities are Cochabamba (114,000), Oruro (88,000), Potosi (64,000), Santa Cruz (80,000), Tarija (23,500), and Trinidad (14,700). About 63% of Bolivians follow an Indian way of life. Spanish is the official language; Quechua, Aymará, and Guaraní are spoken widely.

Government.—Bolivia is a republic with a centralized government. The 13th Constitution went into effect in 1961. Executive power is vested in a president elected by popular vote to a 4-year term; President Victor Paz Estenssoro took office on Aug. 6, 1960. Congress consists of two houses, with 27 senators and 76 deputies elected for 6 and 4 years, respectively. The Bolivian Supreme Court of 10 justices is appointed for 6-year terms, and resides in Sucre. The country is divided into 9 departments governed by prefects appointed by the president. They are Chuquisaca (1961 est. pop., 307,600), La Paz (1,157,400), Cochabamba (550,300), Oruro (265,400), Potosí (619,600), Tarija (142,600), Santa Cruz (326,900), Beni (161,800), Pando (24,400). The departments are divided into 95 provinces, which are subdivided into cantons and independent municipalities.

Education and Religion.—Education is free and compulsory for all children aged 7 to 14 years. In 1961 some 64% of all persons aged 15 and over were illiterate (69% in 1951), and only 38% of the school-age population attended school (32% in 1951). Schools are administered by 3 different units: Ministry of Education, Ministry of Rural Affairs, and Department of Literacy. In 1962 the first unit handled 336,000 students; Rural Affairs had 205,550 students; and there were 40,386 students taking literacy courses, mostly at night. The 7 universities enroll over 15,000 students (many part-time), and administer literacy and night courses. Roman Catholicism is the state religion, but freedom of worship is a constitutional right which is strictly honored.

Finance.—The 1962 budget was estimated at 464 billion bolivianos (Bs.), compared with Bs.430 billion in 1961 (Bs.11,880 equal U.S.$1). Government revenues, 1962 est.: Bs.200.6 billion from custom duties, Bs.161.8 billion from taxes, Bs.80.0 billion from United States budgetary support, and Bs.21.6 billion from other sources. Main expenditures: Bs.66.0 billion for education, Bs.32.1 billion for rural affairs and rural education, Bs.60.0 billion for defense, Bs.17.3 billion for welfare, and Bs.12.0 billion for public works. There is controversy and contradictory claims about Bolivia's debt; claims for external debt range from $148.8 million to $239.6 million. Internal debt is estimated at Bs.680 billion. In 1961 interest and amortization of the public debt was Bs.25.3 billion. A new monetary unit, the Bolivian peso (equivalent to 1,000 bolivianos), is scheduled to be introduced in 1963 and to replace the boliviano by 1965.

Transportation and Communications.—Transport networks (miles, 1962): railways, 2,031; all-weather roads and trails, 11,594; passable roads and trails in dry season, 6,906; year-round navigable waterways, 8,894. Five foreign airlines serve Bolivia. The national airline, Lloyd Aéreo Boliviano, in 1961 carried 226,284 passengers and 56,365 tons of freight. Bolivia has 11,600 passenger cars, 24,000 commercial vehicles, 19,900 telephones, 200,000 radio receivers, and 40 radio stations.

Economic Development.—Fixed capital: $1,014.1 million in 1961 ($946.9 million in 1959). Cost-of-living index (1957 = 100): 132.4 in January 1962 (122 in January 1961). There were no wage increases in 1961 or 1962, although there were many strikes. United States aid continued to be of crucial importance: in 1962, United States technical assistance totaled $1.4 million; economic assistance, $28.1 million; and development loans under the Alliance for Progress program, $9.6 million. Additional foreign assistance from the United Nations and West Germany and other countries was estimated at $6.0 million over a two-year period. Alliance for Progress funds have been earmarked for 14 projects covering education, industry, irrigation, mining, transportation, agriculture, health, geological research, and manual arts.

Agriculture.—About 2.6 million Bolivians are engaged in agriculture, but Bolivia still imports 36.6% of its food. Under the agrarian reform law, 92,617 families received land from 1955 to April 1, 1962. The major agricultural products (in thousands of metric tons) are as follows:

Product	1959	1960	1961
Rice	22.6	22.9	23.0
Sugarcane	885.5	1,032.0	...
Refined sugar	17.5	24.4	41.2
Potatoes	775.5	575.0	620.0
Corn	293.0	298.0	305.0
Wheat	74.0	64.0	77.5
Meat	97.5	106.2	112.0

Mining and Manufacturing.—About 75% of Bolivia's total income is provided by the mining and manufacturing industries. Production for export of major minerals was as follows:

Mineral	1960 (in metric tons)	1961 (in metric tons)	1960 (in million dollars)	1961 (in million dollars)
Tin	19,718	20,735	$42.8	$50.3
Lead	21,419	20,301	4.8	4.1
Antimony	5,326	6,739	1.4	2.2
Copper	2,271	2,081	1.5	1.3
Tungsten	1,290	1,684	1.5	2.3
Silver	152	121	4.5	3.5
Sulfur	1,194	4,975	0.05	0.2

Petroleum production in 1961 (in cubic meters): raw oil, 430,257 (down 13.1% from 1960); refined gasoline, 146,269 (up 1.4%); other refined products, 200,103 (up 0.5%).

Manufacturing in 1960 supplied the following percentage of total needs: processed food, 35%; textiles, 70%; pharmaceuticals, 19%; leather, 80%; furniture, 80%; cement and glass, 87%; rubber, 10%; metal products, 3%; paper, 40%; construction materials, 78%.

Foreign Trade.—Total exports, 1961: $73.4 million; imports, $77.5 million. Principal exports (in million dollars): tin, 50.3; other minerals, 18.2; petroleum, 2.1; brazil nuts, 1.5. Principal imports (in million dollars): machinery, 7.5; motor vehicles, 4.5; raw materials, 5.9; pipe and tubing, 2.5; drugs, 2.7; food and beverages, 13.9. Exports in order of importance were to Great Britain, the United States, Argentina, Brazil, Japan, and West Germany; imports came mainly from the United States, West Germany, and Argentina.

Events, 1962.—The year was relatively quiet compared with past years during which Bolivia

was governed by the Movement of the National Revolution (MNR), which celebrated its tenth anniversary in power on April 9. There was active political campaigning for the congressional elections of June 3. The chief opposition was the rightist Bolivian Falange (FSB) and the Party of the Authentic Revolution (PRA), led by Walter Guevara Arze, who a few years ago had seceded from the MNR and formed the Authentic MNR (now called PRA). Guevara Arze returned from exile in 1962 but found his new party already split.

A total of 1,066,480 votes were cast for half of the 76 seats in the Chamber of Deputies and for one third of the 27 seats in the Senate, compared with 987,730 ballots cast in the 1960 presidential election. The MNR received 886,572 votes; the FSB, 74,178; the PRA, 44,296; and the Communist Party, 20,352.

There was much violence connected with personal rivalries of local officials in Santa Cruz. The Communists and pro-Castro elements showed strength in various labor unions and provoked many incidents. The ex-MNR vice president and recent cabinet member, Ñuflo Chávez Ortiz, emerged as the most articulate anti-United States spokesman and the leader of the pro-Castro elements. The main labor unions of Bolivia, through the powerful Third National Workers' Congress of May, condemned the Alliance for Progress as another tool of American imperialism.

Bolivia elaborated a ten-year development program which was submitted to Washington as a part of the Alliance for Progress. It was also submitted to the Organization of American States and the UN Economic Commission for Latin America. The ten-year project aims to raise drastically the standard of living of Bolivians and to change the shaky Bolivian economy to one of the most robust in the continent. One of its most determined goals is to raise the average caloric intake of Bolivians from a low 1,800 calories per day to 2,400. The plan required the investment of $1,300 million for the next decade, and was favorably received by all interested agencies.

At the same time, responsible Bolivians criticized the slowness of the Alliance for Progress program and said that Bolivia ranked tenth in the 19 countries receiving such aid, although Bolivia was truly the only country which had fulfilled the requirements of the program. In 1962, two United States Peace Corps contingents arrived in Bolivia.

Bolivia engaged in a bitter dispute with Chile which led first to diplomatic rupture on April 16 and then to the temporary walkout of Bolivia from the Organization of American States on September 3. The dispute was caused by Chile's construction and operation of a hydroelectric dam that diverted for irrigation purposes the waters of the Lauca River, which has its source in Chile but flows through Bolivia. Bolivia charged that this was contrary to all the principles of international water rights. Efforts were made to settle the dispute, but anti-Chilean demonstrations occurred in Bolivia.

Riots between pro-Communist and anti-Castro demonstrators occurred in some Bolivian cities during the Cuban crisis in late October. Bolivian Foreign Minister José Fellman Velarde, who is generally considered to favor Castro, recalled Bolivian Ambassador Victor Andrade from Washington after the latter had supported the United States quarantine of Cuba.

CHARLES W. ARNADE,
Professor of History,
University of South Florida.

BONAIRE. See NETHERLANDS ANTILLES.

BONDS. See STOCKS AND BONDS.

BOOK PUBLISHING AND SALES

Consolidation rather than notable growth characterized the book industry in 1962. Year-end figures reflected a new spurt in sales, however, negating midyear deficits caused by the stock market decline and national economic uncertainty. Publishers and booksellers approached 1963 with more than usual confidence.

Highlighting industry adjustments in 1962 was overproduction of paperback titles, especially in "quality" lines designed for the general trade and educational market. Paperback titles in print totaled 20,000, a 100% increase over the past four years. The bookseller became more selective, and publishers sought new outlets in school libraries, book fairs, and school-operated student bookstores.

The year's many excellent novels restored a high degree of intellectual respectability to fiction. Katherine Anne Porter's *Ship of Fools* and William Faulkner's *The Reivers* made notable contributions to the revival. The list of art books continued to reflect the affluence of the times by offering many high-priced items of special appeal. One four-volume set, *Great Master Drawings of All Times,* was priced at $160. Another, also in four volumes, *The Magnificence of Rome,* sold for $200.

The American Booksellers Association made its quadrennial White House presentation of some 200 specially selected books to the president. The Century 21 Exposition (Seattle World's Fair) contained an exhibit entitled "Library 21," designed to demonstrate future library research and bibliographical techniques.

American book exports in 1962 exceeded $100 million for the first time. Secretary of State Dean Rusk, at the suggestion of Attorney General Robert Kennedy, established an official Government Book Industry Advisory Committee to consolidate the activities of government agencies (the United States Information Agency, the Cultural Division of the State Department, and the Agency for International Development) with international programs of the American Textbook Publishers Institute, the American Book Publishers Council, and the American Booksellers Association.

Censorship continued to be a problem in 1962. Over 400 legal actions remained unsettled at the end of December. The newly organized Citizens for Decent Literature, a general-membership national organization, sent spokesmen to appear before local groups to advocate police and court action. One of the books widely involved was Henry Miller's *Tropic of Capricorn,* and another was the paperback edition of Harold Robbins' *The Carpetbaggers.* There was also evidence that private right-wing groups were bringing increased pressure on school administrators to exert ideological censorship on textbooks and school library reading material.

In fiction, J. D. Salinger's *Franny and Zooey* led in sales early in the year, and *Ship of Fools* was at the top of the best-seller list at midyear. *Fail-Safe* by Eugene Burdick and Harvey Wheeler took first place in response to the publicity impetus indirectly generated by the Cuban crisis. Fletcher Knebel and Charles W. Bailey, II's *Seven Days in May,* Allen Drury's *A Shade of Difference,* James Jones' *The Thin Red Line,* and Anne Morrow Lindbergh's *Dearly Beloved* were near the top of all lists as the year came to a close.

In nonfiction, Louis Nizer's *My Life in Court* stayed within the first three places of sales lists throughout the year. Other best sellers were Frederic Morton's *The Rothschilds,* Rachel Carson's *Silent Spring,* and John Steinbeck's *Travels With Charley in Search of America.* Also published during the year were such disparate best sellers as Her-

man Taller's *Calories Don't Count*, Robert Frost's *In the Clearing*, *The New English Bible*, *The J.F.K. Coloring Book*, H. G. Brown's *Sex and the Single Girl*, and Barbara Tuchman's *The Guns of August*.

A total of 21,904 titles were issued in 1962, as compared with 18,060 in 1961. The 1962 figures by category, with 1961 totals in parentheses, are as follows: fiction, 2,942 (2,630 in 1961); philosophy and ethics, 653 (565); religion, 1,455 (1,290); technical, 931 (781); juvenile, 2,584 (1,626); general literature and criticism, 1,097 (888).

(See also AMERICAN LITERATURE; CHILDREN'S LITERATURE.)

JOSEPH A. DUFFY,
Executive Director,
American Booksellers Association.

BORNEO

The world's third largest island (286,969 square miles), Borneo is located in the Malay Archipelago north of Java and southwest of the Philippines. Kalimantan, a division of Indonesia (q.v.), occupies most of the island; British Borneo, on the north coast, consists of the colonies of Sarawak and North Borneo and the protected sultanate of Brunei.

	Sq. Mi.	Population	Capital	
North Borneo[1]	29,388	454,421[2]	Jesselton	(21,714)[2]
Sarawak	48,250	744,529[2]	Kuching	(149,456)[3]
Brunei[4]	2,226	83,877[2]	Brunei	(37,511)[2]
Total	79,864	1,282,827		

[1] Includes island of Labuan (35 sq. mi.). [2] Census of Aug. 10, 1960. [3] Census of June 15, 1960. [4] Divided by Sarawak into two coastal enclaves.

A revolt against British rule broke out in Brunei on December 8, but the uprising was crushed within five days by British troops and forces loyal to the sultan of Brunei. Since Jan. 1, 1962, Sarawak and North Borneo have comprised a free-trade area for domestic goods, with a common tariff on some external products. An agreement to establish the Federation of Malaysia, a union of Malaya, Singapore, and British Borneo, was concluded on July 31, 1962, after British rejection of the Philippines' claim to North Borneo; the union is scheduled to take effect in August 1963 (see MALAYA; PHILIPPINES).

The Malayan dollar (M$) equals 32.67 U.S. cents.

NORTH BORNEO

The governor (Sir William A. C. Goode, since April 20, 1960) is assisted by a 12-member Executive Council and a 25-member Legislative Council. Government ordinary revenue, 1961: M$68,105,459; expenditure: M$62,670,339; special (economic development) budget revenue: M$24,475,726; special expenditure: M$19,496,122, financed from Colonial Development and Welfare funds, loans, and local revenue.

Education.—Primary education is provided mainly in Malay, Chinese, and English (110 government and 305 grant-aided schools); secondary education is principally in English (6 government and 22 grant-aided schools, and one trade school and a teacher-training college, both maintained by the government). There is also a training center for rural teachers, as well as adult evening classes in commercial subjects, science, and languages. Primary school enrollment, 1962: 58,523 (70% of that age group); secondary, 5,773. Educational expenditure, 1961: M$12,902,244.

Production and Trade.—Exploitation of forests (80% of the total land area) is the basis of the economy. Chief exports, 1961: logs and sawn timber, 63.1 million cubic feet (M$102.7 million); rubber (produced for export), 23,600 tons (M$41.2 million); copra (including re-exports), 67,900 tons (M$27.1 million); manila hemp, 4,115 tons (M$4.8 million); tobacco, 326,591 pounds (M$3.6 million); dried and salted fish, 1,029 tons (M$1.6 million); and cutch (or catechu, a tanning extract), 2,961 tons (M$1.1 million). Total exports (including re-exports): M$220.3 million; imports: M$215 million, leaving a favorable trade balance of M$5.3 million.

Transportation and Communications.—A 116-mile railroad connects Jesselton with Melalap, in the interior; a 20-mile branch line runs to Weston, on Brunei Bay. In 1961 there were 928 miles of road (350 miles hard-surfaced). Work is in progress on a road network that will connect the main centers of population. Malayan Airways Ltd. provides scheduled flights from Sandakan (1960 census pop., 28,805) and Jesselton to Brunei, Sarawak, and Singapore. Borneo Airways Ltd. operates internal services and regular flights to Sarawak and Brunei.

SARAWAK

The colony is administered by a governor (Sir Alexander Waddell, since 1960), assisted by a 10-member Supreme Council and the legislative Council Negri (45 members, including 24 elected). Estimated 1962 revenue: M$77,135,600; current expenditure: M$68,616,336; capital expenditure: M$54,246,750.

Education.—Number of schools (with enrollments), 1961: 887 government and grant-aided primary (97,577); 25 unaided primary (1,432); 48 secondary (11,244); 2 teacher-training (318); and 1 vocational (68).

Production and Trade.—Oil refining and rubber production are the major industries. Chief exports, 1961: petroleum (mostly produced in Brunei and shipped from Sarawak), 3,670,000 tons (valued at M$221.9 million); rubber, 46,900 tons (M$83.3 million); logs and sawn timber, 21.2 million cubic feet (M$41.6 million); and pepper (M$28.6 million). Total exports: M$397.2 million; imports: M$411.7 million, including crude oil worth M$189.9 million.

Transportation and Communications.—In 1961 there were no railways and only 748 miles of road (415 miles hard-surfaced), but the main towns are situated on the coast or on navigable rivers. Scheduled domestic and international air services use Kuching, Sibu, and four other airports.

BRUNEI

The supreme governmental authority is the sultan, Sir Omar Ali Saifuddin (acceded June 6, 1950), who under the constitution of Sept. 29, 1959, appoints a chief minister or *mentri besar* invested with executive authority. A resident British high commissioner, Sir Denis C. White, is responsible for defense and external affairs. The sultan is advised by a Privy Council of at least 8 members, and he presides over an Executive Council of 15 members. The Legislative Council has 33 members, of whom 16 are chosen by elected district councils. Government revenues, 1961: M$111,417,390; expenditures: M$65,926,345, about half of which was expended on economic development.

Education.—About 55% of the school-age population attended school in 1959. In 1960 the 53 government Malay schools enrolled 8,601 pupils; 8 Chinese vernacular schools, 4,461 pupils; 7 private and 3 government English schools, 4,018 pupils. There is also a trade school.

Economy.—The petroleum industry provides employment for 75% of the wage-earning population, makes possible liberal social benefits (including pensions to all citizens at the age of 60), and finances the government's development program. After Canada and Trinidad, Brunei is the largest oil producer of the Commonwealth. Petroleum production, 1961: 4,049,000 tons (down 10% from 1960). Oil extracted from the Seria fields by the Brunei Shell Petroleum Company accounts for 90% of total export value; rubber ranks second in export value. Total exports, 1961: M$238.5 million; imports, M$58.3 million.

Transportation and Communications.—In 1960 there were about 300 miles of paved road. Borneo Airways Ltd. and Malayan Airways Ltd. make regular flights from Brunei to North Borneo, Sarawak, Singapore, and Malaya.

R. N. M.

BOSTON

The leading city of New England and the most populous state capital in the United States, Boston, Mass., ranks 13th in population among the nation's cities. In 1960 there were 697,197 inhabitants in the city (47 square miles) and 2,589,301 in the metropolitan area (987 square miles).

Under the city charter, the mayor (in 1962, John F. Collins) is elected for four years; the 9-member City Council and the 5-member School Committee are elected for two years. Elections are at-large and are without party designation.

The city budget for 1962 provided for the expenditure of $110,818,436. The tax rate dropped 80 cents, to $99.80. Assessed valuation as of Jan. 1, 1961: $1,467,906,900. Gross debt (Oct. 1, 1961): $144,546,500; net debt: $94,009,102.

Value of products manufactured in 1960: in the city, $1,467,757,409; in the Greater Boston industrial area (18 communities), $3,173,689,770. Employed production workers (August 1962) in the metropolitan Boston area: 293,500; average weekly earnings: $96. Consumer price index in August 1962: 107.1 (1957–59 = 100). Shipments through the Port of Boston in 1961: exports, 1,018,725 tons; imports, 6,451,129 tons.

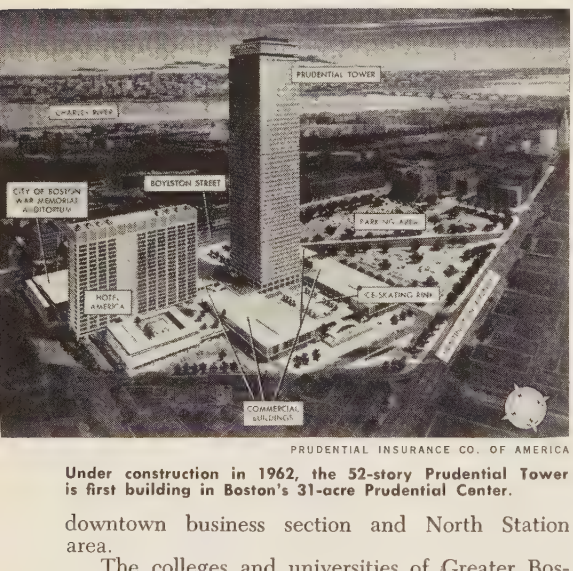
In 1962, Boston and its environs witnessed a construction boom. In the metropolitan area, the key industries of electronics and defense research continued to expand, although slowing down somewhat from their 1958–61 pace.

Although controversies over the displacement of families and businesses took place, Boston's $90 million redevelopment program made progress. In 1962 a new organization, Action for Better Community Development, was founded to ease redevelopment and relocation problems.

Construction of the 52-story Prudential Building, largest structure in the city, resumed early in the year, and plans were completed for other parts of the Prudential Center, including the first hotel to be built in Boston since 1929. Several projects stimulated by the Prudential Center in the surrounding Back Bay area were announced.

Demolition began in the area from Highway 128 into the center of the city to make way for the extension of the Massachusetts Turnpike, and in the Scollay Square area to allow the construction of the Government Center. The latter is to include a new City Hall.

The Greater Boston Chamber of Commerce sponsored a new plan for the waterfront area, and new designs were formulated for parts of the downtown business section and North Station area.



PRUDENTIAL INSURANCE CO. OF AMERICA

Under construction in 1962, the 52-story Prudential Tower is first building in Boston's 31-acre Prudential Center.

The colleges and universities of Greater Boston contributed to the building surge. Among the many projects in various stages, Massachusetts Institute of Technology and Harvard University completed the Cambridge Electron Accelerator; Boston University began construction of a building to house its schools of law and education; and Boston College planned several new buildings on its Newton campus.

After a disastrous fire in October 1961, WGBH, the educational television and radio station sponsored by the Lowell Institute, carried on a successful fund-raising drive and was given a site for a new building by Harvard University. The Museum of Fine Arts became probably the greatest repository of 18th and 19th century American art as a result of new additions to the "M. and M. Karolik Collection."

During the year several scandals were investigated by the Boston Finance Commission or by state authorities. In March, Gov. John A. Volpe ordered the dismissal of Police Commissioner Leo J. Sullivan, who resigned a week later during an investigation into alleged police collusion with bookmakers. The state legislature in April transferred the power of appointment of the police commissioner, as well as fiscal control over the police department, from the governor to the mayor.

George D. Blackwood,
Associate Professor of Political Economy,
Boston University.

BOTANY

Lichens are among the most resistant types of life on earth. They can survive and grow, although slowly, under conditions of extreme drought and exceedingly low temperatures. It has been known for almost 100 years that a lichen consists of two entirely different plants, a fungus and an alga, growing in close association. The relationship between these plants has not been well understood, and it has been variously interpreted, from that of a fungus parasitic on an alga, to that of a mutually beneficial living together. The problem has been obscured by the difficulty of bringing the fungus and alga into association with any degree of certainty to make a lichen.

Vernon Ahmadjian succeeded recently in combining the fungus and the alga, resulting in the formation of a lichen thallus.[1] If a lichen is grown under favorable conditions of nutriment and water supply, the alga and the fungus will dissociate. Under unfavorable conditions, however, such as growing the two components on purified agar without nutrients, a lichen thallus will be produced. The alga benefits by obtaining mineral salts from the fungus, and by being protected from high light intensity. The fungus, in turn, under such conditions, obtains from this association carbon and nitrogen compounds, vitamins, and various salts. The lichens thus studied were *Acarospora fuscata* and *Acarospora smaragdula.* Since it is necessary that the algal cells be contained by the fungus—under unfavorable conditions—to achieve the lichen thallus, the slow growth of lichens in nature becomes understandable.

Morphogenesis.—Morphogenesis (form development), as applied to both physical and chemical considerations, is obviously correlated with similar analyses in plants, animals, and human beings. A notable contribution to this topic was made by A. E. De Maggio and Ralph H. Wetmore[2] through the study of the early stages of development of *Todea barbara,* a fern native of South Africa, Australia, and New Zealand, related to the cinnamon, interrupted, and royal ferns. They succeeded in growing young embryos, of various ages, removed from the prothallial tissue in which they were developing.

If the embryos were removed 20 days after fertilization had occurred, and they had begun to differentiate, they could be cultured to maturity in a medium which contained mineral salts and sugar. If the embryos were taken three days earlier it was necessary to add whole coconut milk or a mixture of inositol and sorbitol to achieve development. On the other hand, if the embryos were removed 4 or 5 days after fertilization, prior to the first division of the zygote, they gave rise to structures suggestive of the haploid or gametophytic, prothallial plant, rather than of the sporophytic plant, regardless of nutritional supplements. These experiments indicate that in the very early stages of embryo development, physical (restraining) factors are important in achieving normal

[1] Ahmadjian, V., *American Journal of Botany,* 49:277–283, 1962.

[2] De Maggio, A. E., and Wetmore, R. H., *American Journal of Botany,* 48:551–565, 1961.

growth, and that subsequently the chemical requirements of an embryo change in very definite ways.

Taxonomy.—In 1958 a new and unusual liverwort, *Takakia lepidozioides,* was described. It had been collected a few years before in several locations high in the Japanese Alps, and was subsequently found in the Queen Charlotte Islands of British Columbia. It is a small plant with a delicate stem and minute, threadlike leaves, 1 to 1½ millimeters long, usually borne in pairs. There are no rhizoids, and the plant is associated with a fungus. Regeneration occurs from detached leaves. On the tips of the shoots, among closely packed leaves—and sometimes also farther down on the stem—one to three archegonia are developed. The archegonia are similar to those of other liverworts. No antheridia or sporophytes have as yet been discovered. *Takakia* has been placed in a new order, Takakiales, and family, Takakiaceae.[3, 4, 5, 6]

By study of the growing tips it was shown that the haploid chromosome number is 4. This establishes 4 as a probable basic chromosome number in bryophytes. Since most liverworts have 8, 9, or 10 chromosomes, and the Anthocerotaceae have 5, the higher numbers have probably been derived from a 4-chromosome type. Certain of the green algae also have 4, and this lends credence to the concept that the liverworts (and mosses) were derived from green algae, as has often been supposed.

Phyllotaxis.—A fresh and new interpretation of the spiral arrangements of leaves on stems has been offered by G. van Iterson,[7] who has demonstrated similarities in leaf arrangements to pulsation patterns in liquids. He has suggested further that pulsations may be caused at the growing point by shocklike growth of cell walls, resulting from the breakdown of macromolecules, or from secondary linkages between such molecules.

(See also HORTICULTURE AND GARDENING.)

EDWIN B. MATZKE,
Professor of Botany, Columbia University.

BOWLING. See SPORTS, GAMES, AND SHOWS.

BOXING. See SPORTS, GAMES, AND SHOWS.

BRANDT, Willy

German political leader: b. Lübeck, Schleswig-Holstein, Germany, Dec. 18, 1913.

Faced with incessant crises as governing lord mayor of West Berlin since 1957, Willy Brandt has given the Berlin citizens a vigilant and spirited leadership which has won the support of Western statesmen and kept West Berlin morale and production high, despite such direct Soviet challenges as the wall which cut the city in half in 1961.

Educated in the Lübeck schools and at the University of Oslo, Norway, Brandt fled from the Nazis to Norway in 1933 and worked as a journalist and writer in Norway and Sweden during World War II. In 1945–47 he served as a representative for Scandinavian news bureaus in Berlin, and was chief editor of the newspaper *Berliner Stadtblatt* in 1950–51. He entered politics in 1948 and moved rapidly up in the Berlin branch of the West German Social Democratic Party (SPD). From 1949 to 1957 he was a member of the Federal Diet (Bundestag), and from 1957 to 1958 he was president of the Federal Council (Bundesrat). After gaining pre-eminence in the Berlin House of Representatives (Abgeordnetenhaus), Brandt was elected governing lord mayor of the city by the House in 1957, and was re-elected to a four-year term in 1959 on the basis of a coalition of the SPD and the Christian Democratic Union (CDU).

Brandt's independent leadership when the Communists built the Berlin wall in August 1961 increased his popularity and made him one of the stronger minority party politicians of West Germany. He was honored with the 1961 Freedom Award by the American Freedom House. Running against Chancellor Konrad Adenauer in the national elections in 1961, Brandt was defeated in a campaign which became bitterly personal, although he was re-elected to the Federal Diet and the SPD made major gains.

During 1962, Brandt maintained a firm West Berlin stand in the midst of continual Communist harassment along the wall and on all access routes to the city. After expressing impatience that the city's difficulties were moving no closer to solution, he visited the United States in the fall, conferring with Secretary of State Rusk (September 29) and with President Kennedy (October 5). On returning to Berlin, Brandt reported that he was confident of the backing of the United States and of continued Allied military support in the city, though he warned West Germans that "uneasy decisions" might be required in any approach to a Berlin settlement.

(See also GERMANY.)

BRAZIL

Portuguese-speaking Brazil is the largest (3,287,195 square miles) and most populous (1960 census, 70,799,352; mid-1962 est., 75,271,000) nation in Latin America. Most Brazilians live in the eastern and southern sections of the country. The leading cities (1960 populations) are São Paulo (3,776,581), Rio de Janeiro (3,307,163), Recife (788,580), Salvador (655,735), and Pôrto Alegre (641,173). The new inland capital, Brasília, has a population (est. 1962) of 185,000. Although more than half of the people still live in a rural or village environment, the growth of the cities is quite rapid.

Government.—Jânio da Silva Quadros, installed for a 6-year term as president in January 1961, resigned on August 25 of that year. On September 7, Vice President João Belchior Marques Goulart was inaugurated to fill out the term to Jan. 31, 1966, but only after the National Congress had approved (September 2) a constitutional amendment establishing a parliamentary system. Thereafter the president of the Council of Ministers (cabinet), popularly known as the premier, shared executive power with the president and was responsible with the cabinet to the National Congress. The amendment also provided for a plebiscite on the new system before the end of the present presidential term.

Legislative power is vested in Congress, which consists of a Chamber of Deputies of 409 members and a Senate of 66. The federal judiciary is headed by an 11-member Supreme Court. Brazil is a federal republic, and each of the 22 states (Acre became a state in 1962) has an elective governor.

Education and Religion.—Probably more than half of the people are illiterate, and the rapid increase in the population makes it difficult to reduce the percentage, given current financial conditions. Traditionally, higher education has been favored over other types, but an education law of December 1961 was designed to correct this imbalance. In 1961 some student groups agitated against the traditional overemphasis on legal education in the higher institutions of learning. In that year, 4,000 lawyers, but only 1,500 physicians and engineers, 1,200 dentists, and 600 agronomists, architects, and veterinarians, were graduated.

In 1960 there were 100,000 primary schools, with 220,000 teachers and an enrollment of 7.7 million; 3,698 secondary schools, with 58,296 teachers and an enrollment of 868,178; 1,234 training schools for secondary teachers, with 13,289 instructors, and an enrollment of 90,727; 1,835 technical schools, with 22,551 teachers and an enrollment of 218,522; and 1,115 institutions of higher learning or for higher teacher training, with 21,064 instructors, and 93,202 students.

Most Brazilians are Roman Catholic, but freedom of worship is allowed to all.

[3] Tatuno, S., *Journal of the Hattori Botanical Laboratory,* 20:119–123, 1958.

[4] Hattori, S., and Mizutani, M., *Journal of the Hattori Botanical Laboratory,* 20:295–303, 1958.

[5] Hattori, S., Mizutani, M., and Inoue, H., *Journal of Japanese Botany,* 33:321–322, 1958.

[6] Tatuno, S., *Cytologia,* 24:138–147, 1959.

[7] Iterson, G. van, Jr., Koninklijke Nederlandse Akademie van Wetenschappen, *Proceedings,* Series C, 63:137–150, 1960.

WIDE WORLD

Brazil's President Goulart (left) is greeted with a traditional ticker-tape parade in New York City on April 5 as he begins a five-day official visit to the United States.

Finance.—Most aspects of the financial picture remained dark in 1961. Some relief accrued from the decline in the trade deficit, this being one of the reasons that gold and foreign exchange holdings rose from $415 million on Jan. 31, 1961, to $512 million on Jan. 31, 1962. On the other hand, the inflationary process continued, in part because of government budgetary deficits and the continued emission of paper currency.

In December 1961, Congress approved a 1962 budget providing for expenditures of 574 billion cruzeiros and revenues of 439 billion, with a deficit of 135 billion. By March 1962, the government estimated the deficit at 320 billion cruzeiros, and later estimates were still higher. An example of the policies that contributed to this process was the passage on May 25 of a 40% pay raise for civil servants and the military without provision for increased revenues.

The number of cruzeiros in circulation increased by 108 billion in 1961 and by 65 billion in the first 8 months of 1962. One result of this and other policies was a decline in the free exchange value of the cruzeiro. Although the government revised controlled exchange rates, the difference between these and the free market rate widened. The latter reached a low of 740 cruzeiros to the dollar on Dec. 5, 1962. Inflation continued the long-time rise in the cost of living, variously calculated for 1961 at 38% to 43%. In the first 8 months of 1962 there was a rise of an additional 28.6%.

Transportation and Communications.—Road and rail networks cover only a small part of Brazil. There are 23,823 miles of railroad, about 8,680 miles of paved roads and possibly another 35,000 miles of improved but unpaved roads, and 16 domestic airlines. Communications facilities include 1,022,793 telephones (1961) and 44 television and 920 radio stations (1960).

In December 1961, a National Transportation Council was created to make transportation policy and coordinate federal investment. Controversy over the operations of foreign-owned telephone companies continued in 1961 and 1962. The most publicized incident was the expropriation on Feb. 16, 1962, by the state of Rio Grande do Sul of a subsidiary of the International Telephone and Telegraph Company. In August, a new law established a National Telecommunications Code and Council. During the year prominent Brazilians made it clear that all telecommunications (and possibly all public utilities) would eventually be state owned.

Economic Conditions.—The Brazilian government faces gigantic economic problems, involving a large and rapidly growing population, anxious to improve its living conditions, a huge national territory that poses costly transportation problems, dangerous dependence on coffee exports, and insufficient capital to develop all aspects of the economy simultaneously. The use of deficit financing and of currency inflation has aided certain types of development. It has tended also to encourage speculative activity, has pressed hard on the poorer elements, and has somewhat impeded access to international financial institutions. Nationalistic pressures on statesmen have inhibited the activity of private foreign capital, although the great promise of Brazilian resources and the Brazilian market had drawn $3.5 billion of such investment by mid-1962. The rate of private foreign investment, however, declined by 90% during the year.

The national policies have brought considerable growth, and the government claims that the gross national product increased by 6.3% in 1960 and by 7.1% in 1961. This growth has occurred largely in the industrial and commercial spheres, however, and agriculture has not kept pace. This results in continued low incomes and purchasing power in the rural areas. Furthermore, specialization in export crops and low productivity in the cultivation of common food crops necessitate expensive food imports, using foreign exchange needed for industrialization.

Agriculture.—Continued shortages of beans, rice, and sugar in Brazilian cities in 1961 and 1962 were due largely to distribution difficulties and to the retention of stocks because of unsatisfactory prices. Wheat production, on the other hand, was much lower than requirements. The 1961–62 crop totaled 776,000 metric tons, whereas national consumption requirements were set by the government in August 1962 at more than 3,000,000 tons. The result was substantial wheat imports, especially from Argentina and the USSR, and surplus wheat and corn shipments valued at $58.6 million from the United States. Exportable coffee production for the 1961–62 crop year was estimated at 29 million bags (132.76 pounds each), as compared with 22 million bags in 1960–61. In August 1962, the United Nations Coffee Conference set the Brazilian export quota at 18 million bags (40% of the world total). To try to deal with overproduction, a program was begun in June in São Paulo to cut down 2 million coffee trees, replacing them with fewer trees of higher quality. Production of other important crops in 1961–62 was as follows, in thousands of metric tons: cacao beans, 168; corn, 8,999 (1960–61); cotton, 613 (1961); cottonseed, 1,166; peanuts, 390; potatoes, 1,081; rice, 4,763; sugar, 3,722; sweet potatoes, 1,345; and tobacco, 176 (1961).

Industry.—In 1961 industrial production rose by 9%, the same high percentage of increase realized in 1960. In the first 6 months of 1962, however, the rate of growth declined to 4%, as compared with 8% in the corresponding period of 1961. While this was due mainly to reduced expansion in nonmanufacturing industry (civilian construction, electric power, and minerals), the rate of increase in manufacturing alone also declined, to 6%, as compared with 8% in the first half of 1961.

Steel ingot production totaled 2,400,000 metric tons in 1961 (up 9% over 1960) and was expected to reach 2,600,000 tons in 1962. Output of rolled iron and steel products in 1961 amounted to 1,880,000 tons (1,640,000 tons in 1960), while 291,034 metric tons had to be imported (compared with 413,861 tons of such imports in 1960).

In 1961 the automobile industry turned out 145,632 units (134,371 in 1960), and in the first 6 months of 1962 production increased by 17.1%, to an annual rate of 168,000 units. The third company in Brazil making tractors went into operation in January, under the same sort of government incentive program that had resulted in the rapid creation of the motor vehicle industry.

Mining.—In 1961, Petrobrás, the government oil monopoly, produced 34,807,000 barrels of crude petroleum, compared with 29,612,000 barrels in 1960. Natural gas production totaled 527 million cubic meters, compared with 535 million in 1960. Petrobrás drilled 248 wells in 1961, and its refining activity reached 260,000 barrels a day, a level just below domestic consumption. Total iron ore output for 1961 was expected to approxi-

mate the 9,340,000 metric tons produced in 1960. Cement production totaled 4,680,000 metric tons, and the output of manganese apparently nearly equaled the 1,000,000 tons produced in 1960.

Foreign Trade.—In 1961, Brazil reduced her foreign trade deficit to $57 million, as compared with $193 million in 1960. Imports declined from $1,462 million to $1,460 million, while exports increased from $1,269 million to $1,403 million. More than half of the value of exports in 1961 was represented by coffee. Among other exports were 6,230,000 metric tons of iron ore and 868,501 tons of manganese. The United States took the largest share (40.1%) of Brazil's exports, followed by West Germany (8.1%). The leading imports by value were machinery, fuel and lubricants, pharmaceutical products, wheat, and vehicles. The United States was the chief supplier (35.3%), again followed by West Germany (9.6%). Although Brazilian trade with Communist countries rose (and the government tried strenuously to increase the rate of such growth), exports to these nations accounted for only 6.2% of the total. In 1962, Brazil's foreign trade situation worsened, and in the first 9 months of the year she registered a $160 million deficit.

Events, 1962.—The fundamental public issue in Brazil in 1962 remained whether and how to enact drastic economic and social reforms. President Goulart, leader of the Brazilian Labor Party (PTB), made many pleas for such reforms, and in his message to Congress on March 15 said that the greatest single need was for agrarian reform. Congress, dominated by rightist and centrist parties, took little action on Goulart's suggestions, and he asserted that this demonstrated the ineffectiveness of the parliamentary system of government which the military had imposed as a condition of his succession to the presidency in 1961. Conservatives argued that the new system, under which the premier and cabinet were responsible to Congress, was necessary to guard against leftism and dictatorship by Goulart.

The left-right debate continued during 1962 to the accompaniment of economic and social distress. Government finances worsened, and private capital was frightened away by expropriations and nationalistic legislation. The Alliance for Progress (under which a $276 million agreement for aid to the northeast was signed on April 13) was stalled because of United States dissatisfaction with Brazilian policies. Inflation led to almost constant strikes, demonstrations, food riots, leftist protests, and police and military actions to preserve order.

These conditions sharpened the debate over communism and leftism in general. Such critics of Goulart as Carlos Lacerda, governor of Guanabara, found this the most important of all issues. During much of the year, Goulart's government continued a policy of resisting United States pressures for strong action against Fidel Castro's Cuba. This seemed to have the support even of moderates, partly as an expression of Brazilian independence. On October 23, however, Brazil joined with the other members of the Organization of American States in supporting United States quarantine measures in the Cuban crisis. The government continued its efforts to build trade with the Communist world, and here again conservative elements considered that ideology should be subordinated to economics. The Communist Party, though outlawed, continued to operate quite vigorously, and candidates for office often accepted its support.

The contest between Congress and president, which was at least loosely a right-left struggle, was intensified by the resignation on June 26 of Premier Tancredo Neves and his cabinet. Two candidates for the premiership became victims of the political struggle before Goulart secured congressional approval on July 10 of Francisco Brochado da Rocha. On August 10, the new premier requested Congress to delegate sweeping political and economic powers to his cabinet. Amid the ensuing debate, on August 15 the government devalued the official exchange rate of the cruzeiro for the fourth time since March 1961, an action that emphasized the inability of the government to act decisively in the face of grave economic dangers. Meanwhile, the debate over the parliamentary system came to a focus on a demand by Goulart that a plebiscite on the matter be held soon, preferably at the time of the congressional elections of October 7.

Congress and the nation at large debated this issue in a spirit of mounting tension, which culminated on September 14–15 in a leftist general strike (only partially effective), the resignation of Brochado da Rocha's government, and congressional agreement to a constitutional plebiscite for Jan. 6, 1963. By this time, Goulart had accumulated considerable backing (even among conservatives and the military) for a return to the presidential system as a necessity for effective action in the economic and social spheres. He notably received support in this regard from former President Juscelino Kubitschek of the Social Democratic Party. Hermes Lima of the PTB succeeded Brochado as premier on Sept. 17, 1962.

As the campaigning for the elections of October 7 warmed, the anti-Goulart parties tended to make the internal threat from communism the leading issue. Nearly complete returns after the election showed that the moderates and conservatives generally had maintained their dominant position. In Rio Grande do Sul the Socialist-Labor ticket, backed by outgoing Gov. Leonel Brizola, Goulart's brother-in-law, did poorly. In the important gubernatorial race in São Paulo, moderate Adhemar de Barros won over the conservative candidate and over ex-President Quadros. On the other hand, the race for the governorship of Pernambuco, which aroused great interest, was won by a leftist, running with Communist support.

After eight unsuccessful attempts, Premier Lima was confirmed in office by the Chamber of Deputies on November 30. He retained all mem-

Idled by general strike on July 5, mob in Duque de Caxias, Brazil, rioted over a shortage of food. Defying bayonet-armed soldiers, men reach for food thrown from buildings.

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bers of his cabinet except the leftist minister of labor, who was discharged on December 4 despite union opposition.

(See also INTER-AMERICAN AFFAIRS.)

ROBERT JONES SHAFER,
Professor of History, Syracuse University.

BREWING INDUSTRY

A new beer sales record, 90,693,253 barrels of 31 gallons each, was established in the United States during the fiscal year 1962. This figure was 1,764,370 barrels higher than the previous high, established in the fiscal year 1960.

The brewing industry also set all-time high sales records in May 1962 and in the first six months of the calendar year 1962. The sales in May, 9,056,075 barrels, were 9.2% higher than the previous record for the month, established in 1960. Brewers' sales from January through June 1962 amounted to 44,912,893 barrels, 3.8% above the former record, set in 1961.

At the end of the calendar year 1961, the proportion of the United States population living in areas where the sale of beer and ale is prohibited dropped to 8%, the lowest since 1937. The 398 local option elections in 1961 resulted in an increase of 99,381 persons living in wet areas.

During the calendar year 1961, as in each of the previous six years, brewers paid more than $1 billion in state and federal taxes. Brewers also contributed over $5 billion to the nation's economy in 1961, including more than $230 million for agricultural products; $435 million for kegs, bottles, cans, and related materials and containers; and $462 million in direct salaries.

EDWARD V. LAHEY,
Chairman,
United States Brewers Association.

BRIDGE, Contract. See SPORTS, GAMES, AND SHOWS.

BRIDGES

Many large bridges were under construction and a number were completed during 1962, a year which also saw several significant innovations in bridge design and construction processes.

Verrazano-Narrows Bridge.—The two deceptively slender steel towers for this record-breaking suspension span over New York Bay were completed at the end of 1962, and the cable spinners were preparing to start work. The twin towers rise 690 feet above the choppy waters of the bay and will support the longest suspended span ever built—4,260 feet. (The main span of San Francisco's Golden Gate Bridge is 4,200 feet). About 142,500 miles of steel wire weighing 38,600 tons will form the main cables, which in turn will support over 160,000 tons of structural steel and more than 500,000 cubic yards of concrete which will comprise the 12-lane, double-deck highway span.

The Narrows Bridge will link Staten Island (New York City's Borough of Richmond) with the Borough of Brooklyn by spanning the Narrows, the main shipping channel connecting Upper and Lower New York bays. The deepest foundation for the towers is 170 feet below mean high water. The deck will clear mean high water by 228 feet. The overall length of the bridge, including its approaches, is 13,700 feet.

George Washington Bridge.—The new six-lane lower level of this span linking New Jersey and New York City was opened to traffic in August 1962. Completion of the lower deck climaxes four years of construction costing $145 million, and makes the 31-year-old structure the world's only 14-lane vehicular bridge. Until the Narrows Bridge is completed, the Hudson River span remains the third longest suspension bridge in the world. When all the complex approaches at each end of the bridge are completed, the improvement will increase traffic capacity by 75%.

Chesapeake Bay Bridge-Tunnel.—Completed sections of this $144 million, 17.5-mile crossing of Chesapeake Bay stood the test of nature with flying colors when a storm in March 1962 heavily damaged the east coast of the United States. The contractors building the trestles, tunnels, and high-level bridges that comprise the crossing did not fare so well. A $1.5 million floating pile-driving rig, patterned after the oil-drilling devices called Texas towers, was capsized, and one of the prefabricated tunnel sections being sunk into place was dislodged. Work progressed well, however, during 1962, and more than half of the 268-foot-long tunnel sections were put in place. The 325-foot-long main span of the longest of two high-level bridges included in the crossing was finished in 1962. Overall completion is due in 1964.

Lewiston-Queenston Bridge.—Traffic moved over the Niagara Gorge on the world's longest fixed steel-arch bridge late in 1962. The 1,000-foot arch is nearly a twin of the well-known Rainbow bridge, just downstream from the scenic falls and familiar to many tourists. The new four-lane bridge connects the New York State Thruway with Canada's Queen Elizabeth Way, providing a continuous superhighway between New York City and Toronto.

Soo International Bridge.—United States and Canadian construction crews in 1962 completed this bridge between Sault Sainte Marie, Michigan, and its sister city of the same name on the Canadian side of the St. Marys River. Spanning some 5,500 feet over the United States and Canadian ship canals, the structure combines continuous truss spans and continuous plate girder spans.

Columbia River Bridge.—Work started in 1962 on a 4.2-mile-long bridge across the mouth of the Columbia River where it forms the Oregon-Washington border. The $24 million toll bridge will combine steel truss spans over the navigation channels with prestressed concrete trestle similar to the Chesapeake Bay Bridge-Tunnel's low-level sections.

Sunshine Bridge.—Construction began in 1962 on substructures for this $30 million highway crossing of the Mississippi River at Donaldsonville, La. The 8,277-foot-long steel cantilever structure will be the only bridge over the Mississippi between Baton Rouge and New Orleans. Construction will take about two and one-half years.

Sherman Minton Bridge.—One of the prize winners in the American Institute of Steel Construction's 1962 "Most Beautiful Bridge" competition, this 800-foot, steel tied-arch bridge over the Ohio River was completed in 1962. The double-decked highway span links New Albany, Ind., with Louisville, Ky.

Twin Delaware Memorial Bridge.—In 1962, Congress approved creation of a Delaware River and Bay Authority, thus clearing the way for the twinning of the Delaware Memorial Bridge, familiar to many east coast motorists traveling the New Jersey Turnpike. The existing 11-year-old suspension bridge was designed to carry 16 million vehicles a year and is already handling 12 million. Tolls are paying off the cost of construction years ahead of schedule, but original agreements did not allow for diverting the toll revenues for any other purpose. The newly-created bi-state authority will build a twin next to the existing span to handle traffic crossing the Delaware River between New Jersey and Delaware.

Australia.—Impressive progress was made in 1962 on the world's longest concrete arch bridge over the Parramatta River at Sydney, Australia. The spectacular arch spans 1,000 feet and is made up of 256 hollow, precast-concrete boxes assembled to form four parallel ribs each 20 feet wide. The huge box sections weigh up to 50 tons each and measure 20 by 23 feet at the bases of the arch. The daring design includes prestressed-concrete vertical columns rising from the arch to support the roadway. The 1,900-foot-long bridge is only a mile upstream from Sydney's famous steel arch bridge, the second longest in the world. The new arch will clear the water at its midpoint by 150 feet.

Panama Canal Zone.—The first high-level bridge over the Panama Canal, the Thatcher Ferry Bridge, was opened to traffic in the fall of 1962. This important link in the Inter-American Highway is a fixed steel structure with a 1,128-foot-long, arch-truss main span. Steel erection went on as high as 384 feet above the water without disrupting traffic in the busy waterway. The roadway section of the $20 million bridge clears mean high water by 201 feet and runs 6,200 feet to reunite the Republic of Panama bisected by the canal. As a symbol of Panamanian—United States unity, the flags of both nations fly from the new span.

Egypt.—A West German construction company is building the world's longest swing bridge over the Suez Canal at El Firdan. The steel structure is a double-swing railroad bridge with a central span that will measure 525 feet in the closed position, and a total bridge length of 1,050 feet. The $5 million bridge is part of the canal's improvement program, which includes increasing its navigable width. The new bridge replaces a smaller swing bridge that was rammed by a ship and damaged severely in 1955.

Portugal.—Construction was started in 1962 on a suspension bridge over Lisbon's Tagus River that will displace Scotland's Forth Bridge as the longest in Europe. The Tagus Bridge, with its 3,323-foot-long main span, will resemble the San Francisco-Oakland Bay Bridge in design. One of its 626-foot-high towers will be supported on a pier extending a record 260 feet below the water surface. The Export-Import Bank of Washington loaned Portugal $55 million as partial financing for the bridge.

Scotland.—Cable spinners fought Scotland's unruly weather during 1962 to assemble the main suspension cables for Europe's longest suspension bridge, over the Firth of Forth. Wind gusts at times blew the catwalks used by the construction crews 30 feet out of alignment, but by year's end the 30,000 miles of wire that forms the 22-inch-diameter cables was in place and steel erection had started. The center span of the $44 million highway bridge is 3,300 feet long, for a short time the longest in Europe and fifth longest in the world.

Venezuela.—Maracaibo Bridge, one of the most spectacular prestressed-concrete bridges ever built, was opened to traffic in 1962. The 5½-mile-long highway bridge vaults the northern end of Lake Maracaibo to provide the first direct link between the city of Maracaibo, one of the world's great oil centers, and the north shore cities of Venezuela. The $80 million structure consists of 135 spans, each 56 feet wide, totaling 27,300 feet, plus 1,335 feet of causeway at one end. Five 771-foot-long main spans clear the lake's shipping channels by 148 feet. Graceful supporting structures for these sections tower 300 feet above the water.

(See also the Index entry, *Bridges.*)

William W. Jacobus, Jr.,
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BRITISH ANTARCTIC TERRITORY

Formerly part of the Falkland Island Dependencies, this British colony was formed on March 3, 1962. It consists of the South Orkney Islands (area, 240 square miles), the South Shetland Islands (1,800 square miles), Graham Land, and that sector of Antarctica lying between 20° and 80° west longitude. The colony is administered by a high commissioner (Sir Edwin Arrowsmith). There is no permanent population in British Antarctic Territory. Whaling and fishing are conducted in its waters. Parts of the colony are claimed by Argentina and Chile.

BRITISH BORNEO. See Borneo.

BRITISH CAMEROONS. See Index entry.

BRITISH COLUMBIA

British Columbia, with an area of 366,255 square miles, is the third largest and most westerly of the Canadian provinces. Forming part of the province are the Queen Charlotte Islands (3,866 square miles) and Vancouver Island (12,408 square miles). The population was estimated at 1,659,000 on June 1, 1962 (1,629,082 at the census of June 1961). A large part of the population is concentrated in and around the southern coastal areas of metropolitan Vancouver (1961 census, 790,165) and metropolitan Victoria, the capital (154,152). Other chief urban centers and their populations (1961 census) are: Nanaimo, 14,135; Prince George, 13,877; Penticton, 13,859; Kelowna, 13,188; Prince Rupert, 11,987; Trail, 11,580; and Dawson Creek, 10,940.

WIDE WORLD

Agile crew works on one of the principal cables for the suspension bridge across the Firth of Forth in Scotland.

Government.—British Columbia is represented in the Canadian Parliament by 6 senators (appointed for life) and 22 members of the House of Commons. The provincial government is administered by a lieutenant-governor (Maj. Gen. George R. Pearkes in 1962) and a Legislative Assembly of 52 members. The Social Credit government, headed by Premier W. A. C. Bennett, was re-elected in the general election held on Sept. 12, 1960. The party standings in the Legislative Assembly are: Social Credit, 31; New Democratic Party-CCF, 16; Liberal, 4; and vacant, 1.

Education.—Education is compulsory between the ages of 7 and 15. During the school year 1960–61 there were 321,760 pupils enrolled in 1,240 public schools and instructed by 12,137 teachers. In addition there are a number of private institutions modeled on the English public school system. Higher education is offered by the University of British Columbia at Vancouver, which in 1961–62 had an enrollment of 12,950 full-time undergraduates, and by its affiliated college at Victoria, with an enrollment of 1,741. A College of Education on the university campus at Vancouver and Victoria provides additional teacher training.

Finance.—Estimated expenditures for the year ending March 31, 1963, totaled $284,804,223, compared with $266,645,374 for the year ending March 31, 1962; revenue was estimated at $336,000,000 ($326,076,151). The 1962–63 budgeted surplus (available for capital purposes) was $51,195,777 ($59,430,777 in 1961–62).

Transportation and Communications.—The province is crossed from east to west by the Canadian Pacific and the Canadian National transcontinental railways. The Pacific Great Eastern, a provincially owned railway, operates a line running north and south from Vancouver to Fort St. John and Dawson Creek. Railway mileage as of Dec. 31, 1960, was 4,676 miles of main track and over 1,000 miles of siding. As of March 31, 1961, there were, exclusive of

urban streets, 23,681 miles of highway in the province. Trans-Canada Air Lines and Canadian Pacific Airlines operate international air routes.

Industry.—British Columbia's four major industries yielded the following returns in 1961: forestry, $685,000,000; mining, $181,079,785; agriculture, $134,250,000; and fisheries, $77,886,000. The estimated gross value of manufacturing was $1,934,590,000. The forest industry yielded 5.35 billion board feet of sawn lumber in 1961. The fishing catch, consisting chiefly of salmon, halibut, and herring, totaled 630,954,000 pounds in 1961.

As of July 31, 1962, housing units under construction numbered 5,110; building permits issued in 1961 were valued at $207,558,000. Crude petroleum production increased in 1961 to 1,018,091 barrels. Electric power generated in 1961 was 13,086,326,000 kw.-hr. The net generated capability of hydroelectric and thermoelectric generating plants in 1962 was 3,369,000 kw.

Trade.—Retail sales in British Columbia were valued at $1,664 million in 1961. Exports through provincial customs ports in 1961 totalled $1,080,784,458, and imports, $421,822,601.

Events, 1962.—Victoria, the capital, celebrated the 100th anniversary of its incorporation in June. Princess Mary, the princess royal, attended the ceremonies and opened new courts of law in the city.

Court action developed from the Provincial Government's taking over, with legislative approval, British Columbia Electric Company, Ltd., in 1961. In April 1962 the Legislative Assembly approved amalgamating the company and the British Columbia Power Commission, a governmental agency, to form the British Columbia Hydro and Power Authority.

The Legislative Assembly in 1962 approved the reconstitution of the Department of Lands and Forests into the Department of Lands, Forests and Water Resources, thus giving water development status equal to that of land and forest resources. Water development had previously been administered by a branch of the Lands Service.

Construction was begun in 1962 on the diversion tunnels for the 650-foot-high Portage Dam in the Peace River Valley in the Rocky Mountain foothills. Contracts for construction of the dam proper were expected to be let early in 1963. Hydroelectric capacity of the entire Peace River Project will be 3,150,000 kw.

The final section of the Trans-Canada Highway, the Rogers Pass, was opened in July 1962. Its completion cut in half the travel time between Vancouver and Calgary, Alberta.

A severe coastal storm moving up from California and the Pacific Northwest struck British Columbia on October 13, causing at least six deaths and much property damage.

M. Glover,
Director, Bureau of Economics and Statistics.

BRITISH COMMONWEALTH. See Commonwealth of Nations.

BRITISH EAST AFRICA. See Kenya; Tanganyika; Uganda; Zanzibar.

BRITISH GUIANA

The only British possession in South America, the crown colony of British Guiana is situated on the northeast Atlantic coast of that continent. Its area of 83,000 square miles comprises three counties (named from the principal rivers): Essequibo, 61,660 square miles; Berbice, 16,920; and Demerara, 4,420. The census population of April 7, 1960, was 560,620 (mid-1961 est., 582,000), including 268,710 persons of East Indian descent and 186,800 of African origin. The capital is Georgetown (1960 pop., with environs, 148,451).

Government.—British Guiana has been an internally self-governing colony since a new constitution took effect on July 17, 1961. The British governor (Sir Ralph Grey, appointed Oct. 7, 1959) is responsible for foreign affairs and defense. A bicameral legislature consists of a House of Assembly with 35 elected members and a Senate of 13 members appointed by the governor. Political parties and number of seats held in the House (following elections of Aug. 21, 1961): the left-wing People's Progressive Party, 20; the socialistic People's National Congress, 11; and the right-wing United Force, 4. Dr. Cheddi B. Jagan, leader of the majority party, heads a People's Progressive cabinet which took office on Sept. 5, 1961.

Education.—School enrollment, 1961: 137,212 (about two thirds of the school-age population). Enrollments according to educational levels: primary, 78,300; intermediate, 51,100; secondary, 7,224; and vocational, 588.

Finance.—Government revenue, 1961 est.: BWI$56,618,825 (BWI$56,094,734 in 1960); expenditure, BWI$54,948,797 (BWI$50,294,214). National debt: BWI$4.7 million at end of 1960. The British West Indian dollar equals U.S.$0.5833.

Transportation and Communications.—Transport networks (miles, 1960): government-owned railways, 94; private railways, 80; motor roads, 318; forest roads, 244; trails, 400; and navigable waterways, 217. National airline: British Guiana Airways, Ltd., which provides internal air services. The country is also served by five international airlines. Motor vehicles (1960): 21,173; telephones, 8,158.

Production.—Principal economic sectors are agriculture and mining. Chief crops (metric tons, 1961): sugar, 325,000 (down 3% from 1960); rice, 124,000 (down 1%); coconuts; coffee; cocoa; and citrus fruits. Rum production (1961): 1,898,000 gallons. Chief minerals (1961): bauxite, 2,374,000 metric tons (down 4% from 1960); diamonds, 112,679 metric carats (up 11%); and manganese, 122,726 metric tons (1960). About 87% of the land area is forested; timber exports (cubic feet, 1961): 1,356,000 (down 5% from 1960).

Foreign Trade.—Total exports, 1961: £31.0 million (up 14% from 1960); imports, £30.6 million (down 1%). Principal exports: sugar, bauxite, rice, timber, and rum; imports: machinery, flour, and cotton piece goods. British Guiana's chief trading partners are Great Britain, Canada, and the United States.

Events, 1962.—British Guiana's first general strike in history, called to protest the government's new austerity budget, led to riots, violence, and bloodshed in Georgetown from February 12 to 19. The trouble was precipitated when Prime Minister Cheddi B. Jagan's government introduced in the House of Assembly on January 31 a budget which provided for new taxes on capital gains, property, and gifts, and compulsory savings for wage earners, in order to yield $7 million in additional revenues to finance the country's development program. Political opponents charged that the tax increases would discourage foreign investment and excessively burden workers. About 10,000 workers demonstrated on February 12 in Georgetown against the budget and called for the government to resign, and they were joined the following day by 30,000 more demonstrators. The demonstrations virtually shut down the city.

Violence flared on February 16 when demonstrators and police fought pitched battles in which six persons were killed, and rioters looted and set fire to Georgetown's business center. Prime Minister Jagan called for military assistance from Britain, and about 2,000 British troops landed (February 16–17) and restored order in the capital by February 18. The general strike was called off on the following day.

In addition to causing considerable property damage (estimated at $28 million) that dealt the economy a staggering blow, the riots cast doubt on the ability of the Jagan government to either command popular support, maintain law and order, or lead the nation to independence. The disturbances also engendered further racial bitterness between the East Indian supporters of the government and the largely Negro opposition elements. As a further result of the violence, more than 5,000 persons left the colony for Britain and other countries by mid-March. A report issued on October 3 by a three-member British committee of inquiry ascribed the cause of the riots to popular resentment against the allegedly pro-Communist Jagan government.

The government modified its budget requests, but the new budget, which retained provisions

for compulsory savings and other reforms, was defeated in the assembly by a narrow 14-to-13 vote on April 26. Prime Minister Jagan visited England and the United States in May to seek financial aid; he was unsuccessful, however, in obtaining all the immediate aid he wanted, although Britain promised $11 million in assistance over the next three years. Jagan precipitated another crisis on June 15 by dismissing Balram Singh Rai as minister for home affairs because of the latter's outspoken criticism of Jagan as being pro-Communist, but threatened demonstrations by opposition elements failed to materialize.

A constitutional conference, held in London from October 23 to November 6, failed to reach agreement on a new constitution for British Guiana and therefore did not set a date for the colony's independence. Jagan's proposal that new elections by direct popular vote be held after independence was rejected by the opposition leaders, who wanted the elections to be based on proportional representation and to take place before independence.

W. R. F.

BRITISH HONDURAS

Located in Central America on the Caribbean Sea, the crown colony of British Honduras has an area of 8,866 square miles and a population (1960 census) of 90,019. About 60% of the inhabitants are English-speaking and of mixed Negro-white parentage. The northern and western districts and the deep south are inhabited by Spanish-speaking Maya Indians; Caribs predominate in the southern districts of Stann Creek and Toledo. The capital and chief port is Belize (1960 pop. 32,824).

Government.—The chief executive is the governor (Sir Peter Stallard, appointed in March 1961), who is assisted by an 8-member Executive Council. The principal law-making body is the 25-member Legislative Assembly, 18 members of which are elected by universal suffrage. In the elections of March 1, 1961, the left-of-center People's United Party won all 18 seats. The party's leader, George C. Price, became the first minister.

Education and Religion.—School enrollment, 1960: primary, 21,002; secondary, 1,598; technical, 96; teacher-training, 38; special, 23. More than half the population is Roman Catholic; most of the remainder is Protestant.

Finance.—The estimated government budget for 1962 was balanced at $BH8,730,945 ($BH9,538,847 in 1961). One British Honduran dollar equals U.S.$0.70.

Transportation and Communications.—Main roads total 280 miles; feeder roads, 131 miles. Four foreign airlines serve Stanley International Airport near Belize; Maya Airways operates airline service within the country. A freighter-passenger steamship service connects Belize with Jamaica. The government-operated telecommunication services were relinquished to private enterprises in 1962.

Production.—About 90% of the total land area is forested, and only about 600 square miles is cultivated. The timber industry (mahogany, cedar, and pine), which has been the basis of the country's economy, has declined in recent years, while the production of sugar and citrus fruits has expanded. Production for export (thousands of pounds, 1960); grapefruit, 3,599 (1,568 in 1959); oranges, 155 (40.6); grapefruit juice, 2,119 (1,775); orange juice, 8,890 (5,040); sugar, 11,100 tons (14,100); mahogany logs, 36,100 cubic feet (32,100); other logs, 73,500 cubic feet (174,000); sawn timber, 917,000 cubic feet (1,183,000).

Foreign Trade.—Total exports, 1960: £2,840,000 (£2,390,000 in 1959); imports, £4,700,000 (£4,890,000). Major exports were timber, citrus products, sugar, chicle gum, lobster, and fish. Chief imports were food, manufactured goods, machinery and vehicles, chemicals, and fuel. The chief markets were Great Britain, the United States, Jamaica, and Mexico. Imports came primarily from the United States, Great Britain, Trinidad, and Netherlands.

Events, 1962.—The long-standing claim by Guatemala to British Honduras was raised again in late December 1961. On Jan. 21, 1962, Guatemala accepted the British offer to hold talks between the two countries, but nothing conclusive resulted during 1962. On January 21, a group of 19 Guatemalan civilians entered the village of Pueblo Viejo, burned the British flag, and hoisted the Guatemalan flag. The raiders were soon captured and several were sentenced to long terms in prison.

BRITISH MALAYA. See MALAYA, FEDERATION OF.

BRITISH NORTH BORNEO. See BORNEO.

BRITISH SOMALILAND. See SOMALIA.

BRITISH SOUTH AFRICAN TERRITORIES

Situated in southern Africa, the High Commission Territories of Basutoland, Bechuanaland Protectorate, and Swaziland are administered by a high commissioner (Sir John Maud) under the supervision of the British Colonial Office. The three noncontiguous territories have a total estimated area of 293,421 square miles, and an aggregate population (1961 est.) of 1,324,000, of which over 99% are African. The high commissioner has offices in Pretoria and Cape Town, and is assisted by a resident commissioner in each of the territories.

Events, 1962.—During the year, Swaziland moved closer to self-government through the issuance of the report of the Swaziland Constitutional Committee, which called for the establishment of a legislative council for the territory, as well as district and municipal councils. According to the report, the legislative council would be based on the principle of parity between the racial components of the population. Twelve representatives are to be elected by the Swazi National Council, and 12 are to be elected from a common European and Colored roll. The report, which was sent to the British Colonial Office, also called for the establishment of an executive council and for the elevation of the role of the paramount chief. In September, the Swazi National Council and the European Advisory Council called for the convening of a constitutional conference.

In Bechuanaland, the move toward Africanization of the civil service received an impetus through the issuance of a white paper on March 12 which called for the filling of 373 of 676 civil service positions by natives of the protectorate in the next ten years. The plan would require the expenditure of $3.5 million for education in the period 1963–68.

Unemployment in the territories remained at high levels, especially in Basutoland. It was estimated that 65,000 Basutos, 20,000 Bechuanas, and 12,000 Swazis were working in the Republic of South Africa, primarily in the mineral extractive industries.

BASUTOLAND

A mountainous enclave within the Republic of South Africa, the Colony of Basutoland (area, 11,716 sq. mi.)

Looters set fire to business center of Georgetown, British Guiana, February 16, during general strike protesting austerity budget proposed by Prime Minister Cheddi B. Jagan.

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has a population (July 1, 1961, est.) of 697,000, mainly Basuto tribesmen. Maseru (1956 census pop., 5,739) is the capital.

The territory is administered by a resident commissioner (A. F. Giles took office in May 1962), who works in close cooperation with the paramount chief (Moshoeshoe II, installed on March 12, 1960). They are advised by an 8-member Executive Council. The legislature, the Basutoland National Council, comprises 40 appointed members and 40 elected members, the latter being chosen by the 9 district councils, whose 162 members are elected from a common roll. In the 1960 elections, the Basutoland Congress Party won 73 seats in the district councils and 29 elected seats in the National Council.

Government revenue, 1960–61 est.: £1,865,866; expenditures, £2,393,928. In 1960 there were 1,110 schools, with an enrollment of 136,111 (about half of the school-age population). Post-secondary education is provided at the Pius XII Catholic College at Roma (167 students).

Basutoland's economy is mainly agricultural and pastoral. Chief subsistence crops: wheat, peas, maize, and sorghum. Total exports, 1960: £1,473,226; imports, £3,142,873. Chief exports: wool (£731,513), mohair (£329,456), and beans and peas (£52,516). The road network aggregates 980 miles. Maseru is linked by rail with Marseilles in the Orange Free State.

Bechuanaland Protectorate

Situated between the Republic of South Africa and Southern Rhodesia, the Bechuanaland Protectorate has an estimated area of 275,000 square miles and a population (1960 est.) of 350,000, mainly Tswana tribes. Gaberones is the administrative headquarters of the protectorate; Lobatsi is the temporary seat of the Legislative Council.

In accordance with the new constitution which took effect in 1961, the resident commissioner (Robert P. Fawcus) heads an Executive Council of 10 members appointed by the high commissioner, and is assisted by a 31-member Legislative Council, 21 of whom are elected (10 African, 10 European, 1 Asian).

Government reveue, 1961–62 est.: £2,796,820; expenditures, £2,796,820. School enrollment, 1960: 35,993 (29% of the school-age population), including 35,225 pupils in 200 primary schools. The first trade school for Africans, accommodating 72 students, was opened at Gaberones on May 5, 1962.

Dairying and livestock husbandry are basic to the pastoral economy. Some gold (203 fine ounces in 1960), manganese (14,242 short tons), and asbestos (1,849 short tons) are mined. Exports, 1960: £2,716,219; imports, £3,282,692. Chief exports: animal carcasses (£1,577,467), hides and skins (£301,155), meat products (£315,272), and cattle (£150,876).

A railroad traverses eastern Bechuanaland for 394 miles, connecting Ramatlhabama with Remaquabane. The government maintains about 2,500 miles of roads.

Swaziland

Bordering Mozambique and the Republic of South Africa, Swaziland has an area of 6,705 square miles, and a population (1961 est.) of 277,000, mostly Swazi but including 8,000 Europeans. Mbabane is the capital of the territory.

Swaziland is administered by a resident commissioner (Brian A. Marwick). The paramount chief (Sobhuza II) exercises authority over the native reserve (area, 3,516 sq. mi), and is assisted by the Swazi National Council. An elected 10-member European Advisory Council advises the government on matters affecting Europeans.

Government revenue, 1961–62: R6,106,964; expenditure, R4,557,136 (the South African rand equals U.S.$1.40). School enrollment, 1960: 36,146 (39% of the school-age population), including 34,435 in primary schools.

Chief economic sectors are agriculture, animal husbandry, forestry, and mining. Main crops (in metric tons, 1961): sugarcane (573,138), cotton (2,225), pineapples (1,823), rice (4,572), and tobacco (183,969 pounds). Mineral production, (short tons, 1961): asbestos, 30,793; coal, 1,080; barites, 454; diaspore, 492; pyrophyllite, 2,955; gold, 1,325 ounces. Exports, 1961: R12,595,614, including asbestos (R5,070,321), sugar (R3,687,000), cattle (R1,267,380), cotton (R718,604), timber products (R647,470), and rice (R389,739). Total imports, 1960: £3,946,423.

The road network aggregates 1,150 miles. On March 14, 1962, the International Development Association loaned Swaziland $2.8 million to build an all-weather highway transversing the territory from east to west for 112 miles and linking the major towns. A 140-mile railroad was under construction from Ngwenya to the Mozambique border.

J. L. L.

BRITISH VIRGIN ISLANDS

Comprising 36 islands (11 inhabited) in the Caribbean Sea, this British crown colony has an area of 59 square miles, and a population (1961 est.) of 8,000. The principal islands are Tortola (1960 pop., 6,253), Virgin Gorda, Anegada, and Jost Van Dyke. Road Town (1960 pop., 897), on Tortola, is the capital.

The government, which is under an administrator (Gerald J. Bryan, appointed in 1959), includes an 11-member Legislative Council (6 of the members are elected), and a 7-member Executive Council (3 elected). Government revenue in 1961 amounted to $772,360; expenditure, $995,692. In 1961 there were 13 primary schools, 4 community schools, a private school (aggregate enrollment, 2,118), and a government secondary school (119 students).

The economy of the colony is interdependent with that of the Virgin Islands of the United States, which lie to the west. Most of the inhabitants are farmers or fishermen. Livestock is the principal export item; most of the trade is with the United States. In 1961, exports totaled $246,112; imports, $1,325,084. Lack of water for agricultural purposes and domestic needs is a major problem, as the annual rainfall is not large for a tropical area. Tourism, particularly from the United States and Puerto Rico, has become increasingly important to the colony's economy.

BRITISH WEST INDIES. See West Indies Federation; British Virgin Islands; Jamaica; Trinidad and Tobago.

BROADCASTING. See Federal Communications Commission; Radio and Television.

BRUNEI. See Borneo.

BUDDHISM. See Religion.

BUDGET, U.S. See Treasury Department, U.S.

BUILDING AND CONSTRUCTION

A major component of the national economy, the value of new construction put in place in the United States in 1962 was estimated at $61.2 billion, a new record for the second consecutive year. The gain of $3.8 billion (6.7%) over 1961 doubled the increase of approximately $1.8 billion recorded between 1960 and 1961. The physical volume of construction put in place in 1962 (dollar expenditures adjusted for price change) rose only 4.2%, reflecting a moderate increase of 2.5% in construction costs.

Despite the new yearly high achieved in 1962, the seasonally adjusted annual rate of construction had fallen from the previous high of $61.0 billion in November 1961 to $56.7 billion in February 1962. Recovery during the spring was rapid, however, as volume climbed to a seasonally adjusted annual rate of $62.7 billion in June and remained above $62.0 billion through October. Both the private and public segments of the total contributed to the pace-setting volume by establishing new records. New private residential nonfarm building contributed strongly to the private sector by attaining a total value of $25 billion, up 11.3% over 1961 despite hesitation in the rate of new housing starts early in the year.

Privately financed construction expenditures of $43.7 billion or (71% of total new construction) gained significantly more than public construction by rising $3.5 billion or 8.7%. Gains in the private segment were led by expenditures for new housing units, which increased by $2.2 billion (13.7%).

A lesser gain of 5% was recorded by nonresidential buildings (nonfarm) including such building types as industrial plants; office buildings, warehouses, stores, restaurants, and garages in the commercial classification; and religious, educa-

tional, hospital, institutional, and social and recreational buildings. While the increase for the industrial buildings category was nominal (1.5%), office buildings gained 6.4%, compared with 5.9% for the stores and other buildings in the commercial category.

Continued investment in expansion and extension of public utilities services caused a rise of 6.2% in this major classification. Electric utilities contributed a gain of 6.6%, while the rate of gas installations continued unchanged to maintain the high level of outlays previously attained within the public utilities area. Petroleum pipelines in the "other public utilities" classification contributed almost $160 million to the rise in this category.

Total public construction activity, valued at $17.6 billion, added only $360 million to the rise in the year's construction volume. Highways and roads (the largest segment of public construction, which accounted for slightly more than one third of publicly financed expenditures) contributed only 2% to the overall acceleration of construction activity. The category of nonresidential public building declined by 1.6%, due in considerable part to the drop in the important school component. The brightest spot in the publicly financed construction picture was the growth of sewer expenditures, from $914 million to $1,090 million for a rise of 19.3%.

Construction outlays were a major source of strength for the national economy. While there was a slackening in the economy at midyear, construction outlays advanced sharply in the third quarter and were maintained at high levels in the fourth quarter to provide strong support for the business economy, which was also reinforced by improvement in other industrial segments, notably automobile production. At the end of the year, prevailing optimism was due in no small measure to the strength of the construction segment.

New Housing.—In 1962, 1,400,000 new private nonfarm dwelling units were started in the United States. About 25,000 farm dwellings and 35,000 public housing units brought the total number of starts to 1,460,000, the highest point since the record of 1,555,000 units in 1959, when the compilation of the new statistical series for starts was begun. The cyclical economic upturn which began in the spring of 1961 was assisted by a recovery in housing which had started late in 1960 and reached a peak 1,443,000 (seasonally adjusted annual rate) in October 1961. Then came a decline to a low of 1,152,000 units in February 1962. At the same time that starts were declining, however, permits were increasing, and starts soon followed. A rate of 1,431,000 annual starts was achieved in March and continued at about this level through October 1962, assuring a solid contribution to construction and to the general economy.

Noteworthy in the progress of housing in 1962 was the increasing share supplied by apartment construction (here defined as buildings with 2 or more dwelling units). From 20% of all starts in 1959, the proportion of multifamily dwelling units rose to 28% in 1961 and to 30% in 1962.

Influenced in part by the prevalence of apartment building, the proportion of units started inside metropolitan areas continued to increase and accounted for 70% of all units in 1962. One effect of the rising proportion of multifamily buildings was the declining value of the average housing unit. In 1962 the average value for each privately owned housing unit was $12,650, compared with $12,975 in 1961 and $12,675 in 1960. The average construction cost of new private one-family houses alone was $14,275 in 1962.

Housing starts did well in 1962 because of the sustained level of employment in the economy, high disposable personal income, and a favorable mortgage market. Ample funds were available for investment throughout the year at rates satisfactory to lenders and purchasers alike. These conditions made it possible for many builders to finance homes through conventional rather than FHA-VA channels despite the fact that conventional financing generally entails larger down payments and higher interest rates. The number of starts in FHA and VA programs as a proportion of private nonfarm starts dropped to 24%, continuing the steady yearly decline noted since 1959 and significantly below the 29% figure registered in the latter year. The number of housing units financed through conventional sources was greater by nearly 120,000 units in 1962 than in 1961. (See also CENSUS DATA, U.S.; HOUSING.)

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BULGARIA

A Soviet-dominated people's republic of southeastern Europe, Bulgaria has an area of 43,047 square miles and a population (est. 1960) of 7,867,000, of which 51.1% is rural. Principal cities and populations (1956 census): Sofia, the capital, 725,756; Plovdiv, 162,518; Varna, 119,769; Ruse, 83,472; and Burgas, 72,795. The major ethnic groups (est. 1952) are Bulgarians, 91%; Turks, 6%; and gypsies, 2%.

Government.—According to the constitution of 1947, the Bulgarian People's Republic has a unicameral National Assembly, consisting of 321 deputies. An electoral law promulgated in November 1961 created 67 new deputies in the Fourth National Assembly, the previous body being composed of 254. Although the constitution guarantees free elections, citizens cannot organize their own parties or place on the ballot candidates who are not acceptable to the Communist Party. The National Assembly elects and, when not in session, is represented by its Presidium; the chairman of the Presidium is Dimiter Ganev, elected on Nov. 30, 1958, and re-elected on March 15, 1962. The National Assembly also appoints the cabinet, which was headed by Premier Anton Yugov from 1956 to Nov. 5, 1962, when he and close associates were dismissed from the Communist Party Central Committee during a de-Stalinization purge. Todor Zhivkov, first secretary of the Communist Party, was elected premier by the Assembly on November 19. (See below, *Events, 1962.*)

Bulgaria has a totalitarian system of government which controls every phase of national life. Political power is wielded by the Politburo, an organ of the Central Committee of the Communist Party. The party, which claims 485,255 members (1958), is the dominant force in the Fatherland Front, which also includes the Agrarian National Union and splinter groups of one-time democratic parties. On Feb. 25, 1962, parliamentary elections, in which 99.7% of the electorate voted, were held. Fatherland Front candidates garnered 99.9% of the total vote, which exceeded 5 million. In a cabinet reorganization announced on March 19, six new ministers, protegés of party chief Todor Zhivkov, entered the cabinet. Two of the six former ministers, Internal Trade Minister Rusi Hristozov and Foreign Trade Minister Georgi Kumbiliev, were supporters of the deposed Stalinist leader Vulko Chervenkov.

Education.—Elementary education is obligatory between the ages of 7 and 15. Number of schools (with enrollments), 1960: 6,570 preschool (298,790); 5,561 primary (1,054,379); 316 secondary (158,004); 227 technical (91,891); 23 teacher-training (19,531); 19 higher (42,979); and 66 special (7,080). The University of Sofia in 1960 enrolled 56,000 regular and special (correspondence) students.

Religion.—Principal religious groups (est. 1958): Eastern Orthodox (6,000,000), Moslem (638,000), Roman Catholic (56,000), and small communities of Protestant and Jewish faiths. Leadership and administration of the Bulgarian Orthodox Church are vested in a Holy Synod, comprised of the patriarch as head of the church and the metropolitans of 11 dioceses (the patriarch serves as the metropolitan of the Sofia diocese). On May 10, 1953, Metropolitan Kiril of Plovdiv was chosen patriarch in a contrived election that was denounced by the patriarch of Constantinople. The Communist regime has drastically curtailed the cultural and spiritual work of religious institutions.

Finance.—Budget revenues, 1962 est.: 3.76 million new leva; expenditures, 3.75 million, including 2.49 million for the national economy, 0.75 million for social and cultural activities, and 0.23 million for national defense. The new Bulgarian lev replaced the old leva on Jan. 1, 1962. The official rate of the new lev was established at 10 old leva, or 1.17 to the U.S. dollar, 1.30 to the Russian ruble, and 3.29 to the British pound.

Transportation and Communications.—Transport networks (miles): roads, 16,640 (1959); railways, 3,478 (1960). Merchant marine, 1961: 80,000 gross tons. The Bulgarian airline, TABSO, provides internal and external services. Planned capital investment in transportation for 1962 was 958 million leva. Telephones: 158,062 (1959); radios, 1,431,000 (1960); and television sets, 5,000 (1960).

Agriculture.—According to Communist sources, 98% of the cultivated land in Bulgaria had been collectivized by 1961. The fourth five-year plan, initiated in 1961, called for production increases of 8.3% in agriculture, 48% in irrigated area, 140% in use of fertilizers, 70% in farm

mechanization, and 6.5% in capital investment in agriculture. In spite of increased government control, agriculture continues to be the weakest sector in Bulgaria's economy. Agricultural production in 1961 failed to achieve the annual goal of an 18.7% increase over that in 1960. The 1962 annual plan provided for an increase of 22.4% in total agricultural production, and a capital investment of 613 million leva in agriculture (7% of the year's total).

Bulgaria's primary crops (in thousands of metric tons in 1960, with 1959 figures in parentheses): wheat, 2,389 (2,437); rye, 82 (107); maize, 1,505 (1,506); barley, 622 (560); oats, 218 (244); potatoes, 478 (421); and tobacco, 61.9 (98.5).

Industry.—The fourth five-year plan, which will end in 1965, is expected to raise the country's industrial production by 70% over that in 1960. While the Bulgarian government seeks to achieve considerable increases in the production of steel, chemicals, and machinery, the main stress in the new plan is on the production and development of raw materials. Industry is to receive 70% of total capital investment (compared with 62% in the third five-year plan); of this figure 90% is assigned to heavy industry. Planned increases in electric power, metals, machine, chemical, and rubber production range between 14.1% and 17.8%; outputs of the food and textile industries are to rise by 6.9% and 4.2%, respectively. The annual plan for 1962 called for an increase of 9.9% in industrial production over that in 1961.

Chief industrial products (metric tons, 1961): steel, 340,000 tons (up 34% from 1960); coal and lignite, 18.6 million (up 9%); iron ore, 418,000 (up 2%); pig iron, 175,000 (up 29%); rolled metals, 271,000 (up 41%); crude oil, 207,000 (up 3%); cement, 1.7 million (up 10%); and electric power, 5,406 million kw.-hr. (up 16%).

Foreign Trade.—More than 80% of Bulgaria's total foreign trade is with other Communist countries, including over 50% with the Soviet Union. Trade with non-Communist countries in 1961 totaled 1,523 million leva (783 million leva in exports and 740 million leva in imports). There is a growing volume of trade with Asian and African countries, although it remains inconsequential. The fourth five-year plan provides for a substantial increase in foreign trade. The annual plan for 1962 calls for foreign trade in excess of 10,000 million old leva; exports are expected to rise by 19.9% and imports by 11.6%. Bulgaria's principal imports are wheat, petroleum products, chemicals, raw cotton, and machinery; the main exports are tobacco, metal ores, cotton and woolen fabrics, and foodstuffs.

Events, 1962.—Communist Party chief Todor Zhivkov culminated an extensive de-Stalinization campaign in November by purging 27 members from the party's 88-member Central Committee. Zhivkov announced at the opening of the 8th Bulgarian Communist Party Congress on November 5 that Premier Anton Yugov, Deputy Premier Georgi Tsankov, and five other top Communists had been dismissed as the result of alleged "grave violations of socialist legality." In addition, former Stalinist leader Vulko Chervenkov was ousted from Communist Party membership. Twenty additional Central Committee members were purged on November 14, when the Congress closed by electing a new 101-member Central Committee and a nine-member Politburo headed by Zhivkov. The latter's position as undisputed Communist leader of Bulgaria was further consolidated when the National Assembly elected him premier on November 19.

Beginning 6-day state visit to Bulgaria on May 14, Soviet Premier Nikita Khrushchev (left) is met in Sofia by Todor Zhivkov, first secretary of the Bulgarian Communist Party.

UPI

During 1962, Bulgaria continued to engage in lively commercial and diplomatic relations with African and Asian nations. Following the visit of a Bulgarian goodwill mission to the Middle East and North Africa in November 1961, Bulgaria signed a one-year trade pact with Cyprus (Feb. 2, 1962) and a long term trade agreement with Guinea (March 2). Premier Yugov visited Guinea in late March. Diplomatic relations were established with Tunisia, Morocco, Dahomey, and Ceylon. Technical and cultural pacts were concluded with Iraq, Ghana, Mali, Sudan, Syria, Nigeria, and Cuba. The number of African and Asian students attending Bulgarian schools rose to 1,500 in mid-January.

Relations with Yugoslavia showed steady improvement during 1962, but relations with Greece deteriorated. In late January, Bulgaria proposed a trinational regulation of frontier rivers and the granting of free transit zone rights in Salonika to Bulgaria. Greece ignored the overture and subsequently protested against two alleged Bulgarian violations of Greek airspace on July 12.

Bulgaria claimed that a Bulgarian MIG fighter plane which had crash-landed in Italy on January 20 had not intentionally violated Italian airspace, although the Italian government arrested the pilot and charged him with military espionage (see also ITALY).

On March 10, unofficial and nongovernmental delegations from Bulgaria, Greece, Rumania, and Yugoslavia convened in Sofia for the second meeting of the Committee for Balkan Understanding, and approved a resolution advocating that the Balkans should form a "zone of peace" free from the presence of nuclear weapons.

In mid-May a Soviet delegation led by Premier Khrushchev and Foreign Minister Gromyko visited Bulgaria. In Varna, on May 16, Khrushchev said that the positions of the Soviet bloc and Yugoslavia coincide in regard to many international questions, and suggested that the bloc was willing to develop and strengthen relations with Yugoslavia in numerous spheres of activity. Later in the week, in Sofia, Todor Zhivkov, first secretary of the Bulgarian Communist Party, endorsed Khrushchev's view that ideological differences did not preclude close collaboration between Bulgaria and Yugoslavia.

On May 18, Mrs. Eugenie Anderson was appointed United States minister to Bulgaria, replacing Edward Page, Jr., who retired.

On September 8, Turkey's foreign minister, Feridun C. Erkin, charged that Bulgaria was subjecting its 900,000 inhabitants of Turkish origin to pressures which aimed at eradicating all vestiges of Turkish heritage and tradition. Discrimination in the economic and social spheres against the Turkish minority also was cited. Erkin threatened the severance of diplomatic relations if Sofia failed to give full consideration to Turkey's protests. As Turkish-Bulgarian recriminations are a daily occurrence, however, charges and countercharges of the above variety are usually exaggerated.

The government announced that industrial production in the first half of 1962 had overfulfilled its goal by 2.4%. Coal, steel, copper products, and internal combustion engines were areas of overfulfillment. Official reports during the year admitted a continued lag in agriculture. Although the number of sheep and cattle rose, the number of poultry and pigs, as well as milk and egg production, declined. On July 29 the government announced increases in the retail prices of certain foods, ranging from 11.5% on eggs to 31.8% on dairy products. As the result of a poor harvest due

to widespread drought, rationing of some basic foods reportedly went into effect late in the year.

Bulgaria's concern with the loss of Western markets and with economic competition was manifested in attacks on the European Economic Community. Dimitur Velikov, a Communist theoretician, asserted on July 15 that a rise in the community's customs duties against nonmember nations would result in a loss of nearly 9 million leva for Bulgaria by 1960.

In late September the government announced a 20-year plan, similar to the Soviet program introduced in 1961, which aims to increase Bulgaria's national income by 500% and industrial production by 800% by the year 1980.

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BUREAU OF MINES. See MINING.

BUREAU OF STANDARDS. See NATIONAL BUREAU OF STANDARDS.

BURMA

This Southeast Asian republic on the Bay of Bengal has an area of 261,742 square miles, and is bordered by East Pakistan, India, Tibet, China, Laos, and Thailand. The Union of Burma (inaugurated Jan. 4, 1948) comprises Burma proper (160,490 square miles, including the Chin Hills Special Division), and the Shan (61,043), Kachin (33,903), Kayah (4,506), and Karen (1,800) states. The population totals 21,527,000 (mid-1961 est.). Principal cities and populations (1955): Rangoon, the capital and chief port, 737,079; Mandalay, 185,867; Moulmein, 102,777; and Bassein, 77,905. Burmese is the official language; English is taught as the second language.

Government.—The constitution provides for a president (U Win Maung since March 13, 1957) elected for a 5-year term, and a Parliament consisting of a 125-member Chamber of Nationalities (partly elected, partly nominated by the various states), and a 250-member Chamber of Deputies, popularly elected for a 4-year term. Each state has its own legislature. U Nu returned to power in 1960 as prime minister but was ousted by Gen. Ne Win, chief of staff of the armed forces, who suspended the constitution and took over the government on March 2, 1962 (see below, *Events, 1962*).

Education and Religion.—School facilities (with enrollments), 1959–60: 11,557 primary schools (1,543,874 pupils); 520 middle schools (172,581); 273 high schools (47,660); 965 private schools (132,831); and 6 teacher-training colleges (2,791 in 1960–61). Higher education is provided by the University of Rangoon (3,329 enrollments in 1961–62), the University of Mandalay, and the University for Adult Education; there are intermediate colleges at Moulmein, Kyaukpyu, Magwe, and Bassein. Legislation making Buddhism (professed by 84% of Burmese) the state religion was enacted Aug. 17, 1961, but nullified March 2, 1962.

Finance.—The unit of currency is the kyat (K4.790 equal U.S.$1). Government receipts in the first half of fiscal 1961–62: K569 million (exceeding the budget estimate by K8 million); expenditures, K548 million (in the corresponding period of 1960–61: receipts, K403 million; expenditures, K568 million). Internal public debt: K1,519 million in April 1962 (K1,495 million in April 1961). Foreign exchange reserves: K561 million in April 1962 (up K55 million from a year earlier).

Transportation and Communications, 1960–61.—All internal systems are state owned. Burma Railways: passenger miles, 918,764,000; freight ton-miles, 434,599,000. Inland Water Transport Board: passengers, 4,675,000 (down 295,000 from 1959–60); freight tons, 1,088,000. Union of Burma Airways: passengers, 152,788 (up 36,388 from 1959–60); passenger miles, 24,555,000 (up 4,270,000); freight ton miles, 652,000 (up 84,000); international passengers exceeded 400,000. International seaborne tonnage: 2,851,000. Highways maintained: 6,700 miles; new roads under construction, 1,700 miles.

Economic Indicators.—Gross national product, 1959: K5,468 million; national income: K4,920 million in 1960 (K4,637 million in 1959). Index of agricultural production (1952–57 = 100): 113 in 1959–60 (107 in 1958–59). Rangoon consumer price index (1958 = 100): 102 in 1961.

Manufactures and Minerals.—Chief output of state industries (1960–61): cotton yarn, 8,814,000 pounds (up 242,000 from 1959–60); raw silk, 78,752 pounds; cement, 42,821 tons; cigarettes, 1,208.7 million; brine salt, 132,775 tons; sugar, 42,431 tons; bricks, 10,928,000; jute bags, 8,336,000; molasses, 18,027 tons. Oil production (thousand gallons, 1960–61): crude oil, 145,230 (up 3,432 from 1959–60); kerosine, 24,629 (down 1,103); gasoline, 43,698 (up 1,193); other fuel oil, 30,247. Mining production (1960–61) included: lead ore and concentrates, 27,006 tons; zinc, 12,713 tons; mixed tin and tungsten, 1,151 tons; refined silver, 1,373,000 ounces.

Agriculture.—Paddy acreage (1961–62): 10,574,409; rice production, 6,556,000 metric tons (1960–61: 10,370,787 acres; 6,789,000 metric tons). Output of cotton, peanuts, and wheat increased in 1961–62. Teak extraction (cubic tons, 1960–61): 175,200 (down 86,234 from 1959–60). Other hardwoods: 408,600 (down 185,829).

Foreign Trade.—Total imports, 1960–61: K1,080.4 million; total exports, K1,012.2 million. Chief imports (in million kyat, 1960–61): machinery and transport equipment, K172.8; base metals, K99.5; gunny sacks, K44.5; and consumer goods, K804.4 (including cotton fabrics, K138.2; cotton yarn, K69.7; dried milk, K47.9; and pharmaceutical products, K31.2). Chief exports (with tonnage and value in million kyat): rice and rice products (1,541,000 tons), K664.4; other agricultural products (372,000 tons), K177.1; teak (94,000 tons), K91.9; and base metals and ores (29,000 tons), K34.9.

Events, 1962.—Declaring that Burma was in danger of becoming "another Laos," Gen. Ne Win, chief of staff of the armed forces, took over the government on March 2 at the cost of a single civilian casualty. The constitution was suspended, and both chambers of Parliament were dissolved. Arrested and held in detention were President Win Maung, Prime Minister U Nu (who had returned to power in 1960 after being ousted in a less drastic coup by Ne Win in 1958), five other ministers, tribal princes, and numerous dissident leaders in the Shan and four other states, where existing regional councils were dispersed and five new Supreme State Councils were instituted.

The U Nu government, it was alleged, had become incapable of assuring external security, and had reacted weakly to threats of the Shan state to secede. Failing to prevent "spiraling prices," it had risked further curtailment of the country's international trade by moving to socialize import business. (At the time of Ne Win's return to power, Burma's foreign exchange transactions showed a deficit of K20 million, compared with a deficit of K15 million a year earlier, while rice exports in 1960–61 had fallen a half million tons short of the requirements of the 4-Year Plan).

The military takeover accomplished, a 17-member revolutionary council was formed on March 3; its authority received the de facto recognition of the United States and other principal governments, Washington officials viewing the army coup as a "purely internal political change" without effect on Burma's policy of nonalignment in the international field. A new cabinet took office headed by Ne Win as prime minister, who assumed responsibility also for defense, finance, revenue, judiciary, and national planning. Soon afterward, the Supreme Court and the High Court were abolished; in their place a Chief State Court of six new judges was established. Additional special courts were set up, with power to impose the death sentence for acts of insurrection, following a riot on the campus of Rangoon University on July 7, where 15 students were killed and 27 wounded by army troops, who blew up the Student Union building.

Early in the new regime the business community was reassured by postponement for two years of the previous administration's plan to take over Burma's import trade. Food prices eased with the removal of the ban on cattle slaughter; the licensing requirements for food dealers were liberalized; and transportation charges on consumer items were lowered. Efforts were begun to stimulate factory production.

Reviewing development plans, the new regime

cancelled "prestige projects," including a national theater and a new Parliament building. Two Russian construction projects, involving loans totaling $14 million, also were cancelled. Plans were confirmed, however, to utilize credits of $84 million by Communist China covering seven major projects in Burma. Utilizing $30 million in United States aid, the administration gave high priority to the construction of a highway between Rangoon and Mandalay. Further aid from nonofficial agencies was declined; the Ford Foundation accordingly terminated its service to Burma on July 15.

Under an economic and technical assistance agreement signed on August 30 by Burma and the Soviet Union, Burma will receive a 30-year loan of 3.5 million rubles for the construction of a reservoir at Kyetmanktaung, in Myingyan District.

The government announced on July 3 the organization of a single political group to form eventually a national party capable of taking over the leadership of Burma.

A Burmese-Chinese joint commission concluded a survey in 1962 of a common boundary of 1,370 miles, involving 402 boundary markers between the two countries.

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BURUNDI

The Kingdom of Burundi became an independent country on July 1, 1962, when the former Belgian-administered United Nations trust territory of Ruanda-Urundi achieved independence as the separate states of Burundi and Rwanda (q.v.). Burundi is situated in east-central Africa and is bordered by the Republic of Rwanda on the north, Tanganyika on the southeast, Lake Tanganyika on the southwest, and the Republic of the Congo on the west. The new nation's total area of 10,747 square miles is nearly equal to that of Belgium.

As of Dec. 31, 1960, Burundi's indigenous population totaled 2,234,144: (About three fourths of some 8,000 Belgians living in Ruanda-Urundi left the territory prior to independence.) The Hutu (Bahutu), agriculturalist tribes of Bantu ethnic composition, comprise about 85% of the population; the Tutsi (Batutsi or Watusi), Hamitic pastoralists noted for their tall stature, account for about 14%. Capital and principal city: Usumbura (1960 est. pop., 45,000).

The Burundi flag has a red and green field quartered diagonally by a white cross whose circular intersection is inscribed with a green stalk and a yellow drum (symbolic of the power of the mwami or king).

Government.—Mwambutsa IV is the constitutional monarch (mwami) and head of state. He is advised by a Crown Council and is assisted by a National Assembly of 64 members. In elections of Sept. 18, 1961, the National Union and Progress Party, which is supported by both Hutu and Tutsi tribal chiefs, won 58 seats in the assembly. André Muhirwa, son-in-law of the mwami, was elected premier by the assembly on Oct. 20, 1961.

Education and Religion.—Most schools are conducted by Christian missions, chiefly Roman Catholic. About 40% of children aged 7 to 12 attend school, but only about 1% proceed beyond the elementary level. School enrollment (in Ruanda-Urundi, 1960): 270,809, of whom 262,058 were enrolled in African primary schools. About half the population is Catholic (2,377,577 adherents in Ruanda-Urundi, 1960); there are small Protestant and Moslem minorities.

Finance.—Trust territory revenue, 1960: 817.2 million francs; expenditure, 1,468.5 million (the Ruanda-Urundi franc equals the Belgian franc; 50 francs equal the U.S. dollar). Belgian aid toward meeting budget deficits totaled 700 million francs from 1958 to 1962. In addition, Belgium contributed 4,200 million francs for Ruanda-Urundi's ten-year development plan (1952–61). Territorial debt: 5,201.6 million francs in 1960.

Transportation and Communications.—Burundi has no railways or navigable rivers, but steamboats connect the port of Usumbura, on Lake Tanganyika, with the Tanganyika Railways. Road network (Ruanda-Urundi, 1961): 6,600 miles. Usumbura and Kitega have airfields and radio broadcasting stations. Telephones (1960): 2,407.

Production.—About 90% of the population is engaged in farming and livestock raising (1.1 million catttle and 1.8 million goats in Ruanda-Urundi, 1960). Main subsistence crops: beans, manioc, and sweet potatoes (totaling 5.6 million metric tons in the trust territory, 1960). Chief products (with metric tons exported from Ruanda-Urundi in the 1960 crop year): coffee, 20,675; cotton fiber, 3,000; cottonseed cake and oil, 4,400; palm oil, 1,063; tobacco, 1,231; and hides and skins, 750. Principal industries: food processing, textile manufacturing, and mining (exports of cassiterite and amblygonite totaled 5,000 metric tons in 1960).

Foreign Trade.—Direct exports from Ruanda-Urundi, 1960 (in million francs): 2,250; imports, 2,488. Coffee accounted for about 90% of total export value. Chief imports: machinery, vehicles, fuels, cement, and foods. Belgium was the trust territory's chief trading partner.

Events, 1962.—The heavily populated, economically underdeveloped Kingdom of Burundi achieved independence on July 1 after comprising part of the Belgian territory of Ruanda-Urundi for 39 years (under a League of Nations mandate from 1923, and as a United Nations trusteeship since 1946). Independence ceremonies held in Usumbura on that date were simple and subdued (more extravagant celebrations took place on August 15); Mwami Mwambutsa IV reviewed the new Burundi Army, thanked Belgium for granting independence, and called on all Burundi citizens to unite in building a "happy, peaceful, and hard-working country."

(Left) Celebrants in Usumbura mark the independence of Burundi on July 1. (*Right*) Burundi's new flag is raised as guard of honor salutes.

WIDE WORLD

Independence for the former trust territory as two separate states was approved by the U.N. General Assembly by a vote of 93 to 0 on June 27. The resolution called on Belgium to withdraw troops from the former territory by August 1 unless the new nations requested that they remain; established a technical aid group to assist the state administrations; and authorized the expenditure of up to $2 million for maintaining essential services in both countries. A United Nations commission had reported (June 6) that the trust territory should become separate countries because "mutual distrust" by the leaders in both states precluded political unification. The commission had previously arranged (in April) for an agreement to continue existing monetary, customs, telecommunications, and limited fiscal unions between the two states. Burundi and Rwanda were admitted to the United Nations on September 18.

Fears that anti-Belgian riots might break out in Burundi after independence proved groundless. The Burundi government appeared to be in firm control of the country, so that the withdrawal of Belgian troops and the exodus of most Belgian and other European civilians did not disrupt public law and order. Unlike Rwanda, Hutu and Tutsi tribal leaders in Burundi cooperated in forming a stable government, for Premier André Muhirwa's ruling National Union and Progress Party, although dominated by Tutsi leaders, has considerable Hutu support.

Although a peaceful transition to self-government was accomplished, the primitive and underdeveloped country faces many financial and economic difficulties, including a first-year budget deficit estimated at $10 million. As the economy is far from being self-sufficient, Burundi will probably be dependent on foreign aid and technical assistance from the United Nations, Belgium, and other countries for many years.

W. R. F.

BUSINESS DATA, U.S.

There were an estimated 4.8 million business concerns operating in the United States at the beginning of 1962—about 40,000, or almost 1%, more than a year earlier. (This figure excludes several million farms which are not counted in the statistics summarized in Table 1.)

About 440,000 new businesses were established in 1961, roughly the same number as in 1960 when a 10-year record of new business formations was reached. Nearly 400,000 companies discontinued operations in 1961 (3½% over 1960).

Table 1—NUMBER OF FIRMS IN OPERATION AND NUMBER OF NEW AND DISCONTINUED BUSINESSES, 1960–62

(Thousands)

	1960	1961	1962[1]
New businesses formed	438	437	...
Businesses discontinued	384	398	...
Firms in operation, January 1:			
All industries	4,658	4,713	4,752
Contract construction	476	477	473
Manufacturing	323	322	318
Wholesale trade	317	322	326
Retail trade	1,997	2,011	2,022
Service industries	872	895	917
All other	674	686	696

[1] Based on incomplete data. (Source: U.S. Department of Commerce, Office of Business Economics. Estimates based primarily on data from the U.S. Department of Health, Education, and Welfare, Bureau of Old-Age and Survivors Insurance.)

The number of discontinued businesses was greater than the number of new formations in two broad industry groups—contract construction and manufacturing. The net increase in the aggregate of operating concerns occurred primarily in the service industries and retail trade.

The slight contraction in the number of firms involved in commodity production (construction and manufacturing) was, in part, a reflection of the 1960–61 business recession and was a repetition of their 1957–58 experience. On the other hand, concerns in the distribution and service industries continued to expand in number during both cyclical slowdowns.

The great majority of American firms are classed as "small business," many of them having no more than three paid employees. Approximately 90% of all jobs in private nonfarm business are provided by larger concerns, however.

Fixed Capital Investment.—The amount of capital required for the business operations of corporations in the United States is shown in Table 2. More than a million corporations have combined total gross assets valued on the companies' books at $1,400 billion. This total includes not only plant, equipment, and inventories, but also the financial assets of banks and other enterprises.

The capital needed to carry on a business, like the number of employees, varies a great deal from one line of activity to another. The average corporation in trade, services, or contract construction has total assets of about $250,000, while communications companies average $7 million in assets and public utilities $16 million. There are also, of course, wide differences within industries.

Investment in New Plant and Equipment.—The gross assets of corporations shown in Table 2 have been accumulated over a period of many years, as have those of noncorporate business. New investment purchases in excess of amounts required for

Table 2—GROSS ASSETS OF CORPORATIONS, 1959 AND 1960[1]

	Number of companies		Total gross assets: Average per company reporting ($ million)		Total gross assets: Total ($ billion)		Gross plant, equipment, and inventories: Gross depreciable assets ($ billion)		Gross plant, equipment, and inventories: Inventories ($ billion)	
	1959	1960	1959	1960	1959	1960	1959	1960	1959	1960
All industries, total	*1,074,120*	*1,140,575*	1.2	1.2	1,290	1,373	409	438	88	91
Manufacturing	156,297	165,863	2.1	2.1	333	350	166	177	55	56
Durable-goods industries	77,990	85,646	2.1	2.0	161	169	75	81	31	32
Nondurable-goods industries	78,307	80,217	2.2	2.3	172	182	91	96	24	24
Finance	318,592	334,388	1.9	2.0	617	662	39	43	..[2]	..[2]
Transportation	32,454	33,491	1.9	1.9	63	65	49	51	1	1
Public utilities	4,847	4,930	15.3	16.2	74	80	66	72	1	1
Communications	5,894	5,431	5.9	7.0	35	38	29	31	1	1
Trade	334,717	355,623	0.3	0.3	98	104	24	25	27	28
Service	110,005	121,024	0.2	0.2	24	26	13	14	1	1
Construction	66,260	72,332	0.3	0.3	17	18	5	5	2	2
Mining and miscellaneous	45,054	47,493	0.6	0.6	29	31	18	19	1	1

[1] Asset values are shown gross of accumulated depreciation, depletion, and amortization. [2] Under $0.5 billion. (Source: Based on reports to the U.S. Internal Revenue Service in connection with Federal income tax returns.)

the replacement of obsolete and worn-out equipment have brought about a steady growth in capital assets.

The country's capacity to produce was at a high level in 1962, and business expenditures for new plants and equipment were estimated at $37.2 billion, almost $3 billion above purchases in 1961. (See Table 3.)

Table 3—EXPENDITURES ON NEW PLANT AND EQUIPMENT BY U.S. BUSINESS, 1960–62[1]

(Millions of dollars)

	1960	1961	1962[2]
Manufacturing	14,480	13,680	14,570
Durable	7,180	6,270	6,980
Nondurable	7,300	7,400	7,590
Mining	990	980	1,100
Railroads	1,030	670	830
Transportation other than railroad	1,940	1,850	2,060
Public utilities	5,680	5,520	5,430
Commercial and other[3]	11,570	11,680	13,160
Total	35,680	34,370	37,160

[1] Data exclude expenditures of agricultural business and outlays charged to current account. [2] Estimates based on anticipated capital expenditures reported by business in August 1962. [3] Includes communications, trade, service, construction, and finance. (Source: U.S. Department of Commerce, Office of Business Economics, and Securities and Exchange Commission.)

Capital spending by manufacturing firms had fallen off in 1961 from the high level of 1960, but projections for 1962 exceeded the previous high with manufacturers of durable goods increasing their outlays at a faster rate than nondurable goods firms. There was a steady increase throughout the year in the estimated quarterly expenditures of durable goods industries, while the spending of soft-goods producers leveled off.

Net Income.—Increased capital outlays by business in 1962 were in large part stimulated by the sharp recovery experienced by corporate profits. (See Table 4.)

Table 4—BUSINESS NET INCOMES, 1961–62

(Billions of dollars)

	Seasonally adjusted at annual rates[1]					
		1961 (Quarter)			1962 (Quarter)	
1961	I	II	III	IV	I	II
Corporate profits 45.6	39.8	44.8	46.3	51.4	50.1	50.9
Taxes 22.3	19.4	21.9	22.6	25.1	24.4	24.9
After-tax profits 23.3	20.3	22.9	23.7	26.3	25.6	26.1
Dividends 15.0	14.7	14.8	14.9	15.5	15.8	15.8
Income of nonfarm noncorporate enterprises 34.8	33.7	34.5	35.1	36.0	36.2	36.8

[1] The annual rate is the quarterly total multiplied by 4. It is designed to facilitate comparisons between full- and part-year experiences. Source: U.S. Department of Commerce, Office of Business Economics.)

Corporate earnings before taxes dropped 20% in the 1960–61 business recession to a cyclical low of $40 billion in the first quarter of 1961. Their subsequent recovery carried the total to over $51 billion in the last quarter of 1961, and profits remained at about that level into 1962.

Dividend payments to stockholders are not particularly sensitive to cyclical fluctuations, but may be expected to rise fairly steadily. Net corporate dividends in 1962 reached almost $16 billion, compared with $15 billion in 1961 and $14 billion in 1960.

Table 5 shows the industrial distribution of the recent gains in corporate earnings. The strongest advance occurred in the durable goods manufacturing industries where the biggest decline had taken place earlier. Nondurables manufacturers also improved their profits position as did most other industries, although to a lesser extent.

The nation's industrial and trading corporations with sales of $1 billion or more in 1961 are listed in Table 6 with their sales and profits totals. Of the 49 companies on the list, four were not

Table 5—CORPORATE PROFITS, BEFORE TAX, AND INVENTORY VALUATION ADJUSTMENT, BY BROAD INDUSTRY GROUPS, 1961–62

(Billions of dollars)

	Seasonally adjusted at annual rates					
		1961 (Quarter)			1962 (Quarter)	
1961	I	II	III	IV	I	II
All industries, total 45.5	40.1	45.0	46.0	51.1	50.4	50.7
Manufacturing 23.5	19.4	22.9	24.0	27.5	27.0	27.1
Durable goods 11.7	8.7	11.2	12.1	14.9	14.2	14.3
Nondurable goods 11.7	10.7	11.7	11.9	12.6	12.8	12.8
Transportation, communications, and utilities 7.4	6.7	7.2	7.5	8.0	8.1	8.0
All other industries 14.7	14.0	14.8	14.5	15.6	15.4	15.7

(Source: U.S. Department of Commerce, Office of Business Economics.)

there a year earlier; three firms on the 1960 list did not reach the $1 billion level in 1961.

Table 6—INDUSTRIAL AND TRADING CORPORATIONS WITH SALES OF OVER $1 BILLION, 1961

	Sales ($ billion)	After-tax profits ($ million)
General Motors	11.4	893
Standard Oil (N.J.)	8.4	758
Ford Motor	6.7	410
Great Atlantic & Pacific Tea	5.2	57
General Electric	4.5	242
Sears, Roebuck	4.3	220
Socony Mobil Oil	3.3	211
U.S. Steel	3.3	190
Texaco	3.0	430
Gulf Oil	2.7	339
Western Electric	2.6	122
Safeway Stores	2.5	37
Swift	2.5	12
Du Pont (E.I.) de Nemours	2.2	418
Chrysler	2.1	11
General Dynamics	2.1	−143
Standard Oil of California	2.0	294
Bethlehem Steel	2.0	122
Standard Oil (Ind.)	2.0	154
Westinghouse Electric	1.9	45
Shell Oil	1.9	140
Kroger	1.8	17
Boeing Airplane	1.8	36
National Dairy Products	1.8	50
Armour	1.7	13
International Business Machines	1.7	207
International Harvester	1.6	48
Union Carbide	1.6	142
J. C. Penney	1.6	52
Procter & Gamble	1.5	107
Radio Corp. of America	1.5	36
Goodyear Tire & Rubber	1.5	76
Lockheed Aircraft	1.4	26
Montgomery Ward	1.3	16
North American Aviation	1.3	28
General Telephone & Electronics	1.2	74
Phillips Petroleum	1.2	114
Martin Marietta	1.2	45
Sinclair Oil	1.2	36
Firestone Tire & Rubber	1.2	64
Sperry Rand	1.2	28
General Foods	1.2	67
Continental Can	1.2	36
United Aircraft	1.1	10
American Can	1.1	45
F. W. Woolworth	1.1	46
International Paper	1.0	72
American Stores	1.0	13
Borden	1.0	30

Source: From the "Directory of the 500 Largest Industrial Corporations," *Fortune* (July 1962), and the "Directory of the 50 Largest Merchandising Firms," *Fortune* (August 1962).

Combined total sales of the billion-dollar companies were almost $115 billion in 1961, 2% higher than in 1960. The total net income increased only 1%, however, as margins contracted slightly.

(See also INCOME; INDUSTRIAL PRODUCTION; RETAIL STORE SALES; WHOLESALE SELLING.

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BUTTER. See DAIRY PRODUCTS; FATS AND OILS.

CUBA—United States troops at the Guantánamo Bay Naval Base, Cuba, maintain guard during prelude to crisis which began in October.

WIDE WORLD

CABINET, U.S. For a list of cabinet members and their biographical sketches, see the article UNITED STATES.

CADMIUM. See MINERAL PRODUCTION.

CALIFORNIA

A Western coastal state of the United States, California ranks 3d among the states in area (land, 156,573 square miles; inland water, 2,120) and 2d in population (16,970,000 on July 1, 1962, an 8% increase from the 1960 census figure of 15,717,204). (See also below, *Events, 1962.*) Urban places with 1960 populations above 30,000:

Alameda	61,316	Manhattan Beach	33,934
Alhambra	54,807	Modesto	36,585
Altadena[1]	40,568	Montebello	32,097
Anaheim	104,184	Monterey Park	37,821
Arcadia	41,005	Mountain View	30,889
Arden-Arcade[1]	73,352	National City	32,771
Bakersfield	56,848	Norwalk	88,739
Baldwin Park	33,951	Oakland	367,548
Bellflower	45,509	Ontario	46,617
Berkeley	111,268	Oxnard	40,265
Beverly Hills	30,817	Palo Alto	52,287
Buena Park	46,401	Pasadena	116,407
Burbank	90,155	Pico Rivera	49,150
Carson[1]	38,059	Pomona	67,157
Castro Valley[1]	37,120	Redondo Beach	46,986
Chula Vista	42,034	Redwood City	46,290
Compton	71,812	Richmond	71,854
Concord	36,208	Riverside	84,332
Costa Mesa	37,550	Sacramento (*capital*)	191,667
Culver City	32,163	San Bernardino	91,922
Daly City	44,791	San Diego	573,224
Downey	82,505	San Francisco	740,316
E. Los Angeles[1]	104,270	San Jose	204,196
El Cajon	37,618	San Leandro	65,962
Florence-Graham[1]	38,164	San Mateo	69,870
Fremont	43,790	Santa Ana	100,350
Fresno	133,929	Santa Barbara	58,768
Fullerton	56,180	Santa Clara	58,880
Garden Grove	84,238	Santa Monica	83,249
Gardena	35,943	Santa Rosa	31,027
Glendale	119,442	South Gate	53,831
Hawthorne	33,035	S. San Francisco	39,418
Hayward	72,700	Stockton	86,321
Inglewood	63,390	Sunnyvale	52,898
Lakewood	67,126	Temple City[1]	31,838
La Mesa	30,441	Torrance	100,991
Lennox[1]	31,224	Vallejo	60,877
Long Beach	344,168	W. Covina	50,645
Los Angeles City	2,479,015	Whittier	33,663
Lynwood	31,614		

[1] Unincorporated place.

Government.—Chief executive and judicial officers in 1962 included Edmund G. Brown (Democrat), governor, serving a four-year term; Glenn M. Anderson, lieutenant governor; Frank M. Jordan, secretary of state; Bert A. Betts, treasurer; Alan Cranston, controller; Stanley Mosk, attorney general; Roy E. Simpson, superintendent of public instruction; and Phil S. Gibson, chief justice of the 7-member Supreme Court.

The California Legislature, which convenes annually, comprised 30 Democrats and 10 Republicans in the Senate in 1962 and 47 Democrats and 33 Republicans in the Assembly.

Legislation, 1962.—In even-numbered years legislative activity is usually restricted to a budget session, at which the budget is normally passed by the state Legislature without undue difficulty, even though approval requires a two-thirds majority in both houses. In 1962, however, confronted by the largest budget ($2.9 billion) in the state's history, the Republican minority, voting as a bloc, refused assent. This forced an extraordinary session, which, after some token reductions by Governor Brown, finally passed a budget of $2.89 billion.

The Legislature also met in special session to consider reapportionment of the state Senate and other matters. An Assembly-sponsored constitutional amendment which would have reapportioned the Senate to the advantage of heavily populated Los Angeles County was defeated in the Senate. This action induced the forces working for greater representation for the county to undertake an initiative amendment. The movement, led by Los Angeles County Supervisor Frank Bonelli, secured placement of the reapportionment measure on the November ballot, where, however, it met defeat, being turned down in every county except Los Angeles.

The special session also placed on the November ballot two amendments to raise the salary of legislators, both of which were defeated. However, the voters did approve a $270 million bond issue providing for college and university construction designed to keep California abreast of the educational needs of its citizens.

Finance.—In the 1962 fiscal year, revenue of $2,451,226,110 included $2,314,209,736 from state taxes and $2,528,180 in federal funds. Chief tax yields were the 3% general sales tax ($749,522,774), licensing ($942,605,948), and taxes on motor fuels ($363,771,305) and individual income ($299,033,797). Spending of $2,402,090,849 included $1,034,128,299 for education, $274,569,495 for health, welfare, and safety, and $318,655,817 for highways.

Education.—In the 1961–62 school year, public elementary schools staffed by 76,879 teachers enrolled 2,377,918 pupils; the 414,283 junior high school pupils and 752,599 senior high pupils were taught by 46,643 teachers; and parochial schools with 8,789 teachers enrolled 319,020. College enrollment totaled 417,175.

Estimated public school spending in the 1961–62 school year totaled $2,355 million, including current expenditures of $1,600 million ($471.98 per pupil) and capital outlays of $530 million. Revenue of $2,490 million was drawn chiefly from state funds ($730 million) and local districts ($1,100 million). The state reported teachers' salaries averaging $6,849 (high school, $7,257; elementary, $6,499). Actual spending for higher education (1961 fiscal year) totaled $524,668,000.

Public Assistance.—In the 1962 fiscal year, public assistance payments to a monthly average of 638,626 persons totaled $571,388,207. This amount included $292,828,667 for the aged and $192,544,357 for dependent children.

Transportation and Communications.—Road construction contracts awarded by the state in the 1961 fiscal year involved work on 1,431 centerline miles. *Highways and roads* on Dec. 31, 1961, totaled 150,198 miles (105,285 hard-surfaced). These served 8,590,022 *motor vehicles* (as registered on June 30, 1962), including 6,777,700 automobiles. Operating in the state in 1961 were 40 *railroads* (using, in 1960, 7,630 line miles of track) and 216 commercial, state, and municipal *airports* (served in 1960 by 25 regularly scheduled *airlines*).

Communications media included (1961) 192 AM and 89 FM *radio stations;* 30 *television stations;* 130 daily *newspapers* (circulation, 4,562,960); and (Jan. 1, 1962) 2,530,800 business and 5,768,900 residential *telephones.*

Labor Force.—The state's labor force in August 1962 included 469,000 agricultural workers. Nonagricultural employment totaled 5,245,100, compared with 5,029,400 a year earlier and an average of 4,962,400 for the full year 1961. Of nonfarm employees, 27% were in manufacturing, 21.6% in trade, and 17.6% in government services. Unemployment in August 1962 stood at 356,000, compared with 419,000 a year earlier. (See also below, *Events, 1962.*)

Manufacturing.—Manufacturing engaged 1,296,053 workers in 1960, including 862,090 in produc-

UPI; WIDE WORLD

California's Governor Brown (*left*) was reelected in 1962 after bitter campaign against former Vice President Nixon.

tion, and provided a payroll of $7,921,112,000. Adjusted value added by manufacture totaled $13,857,442,000.

LEADING CALIFORNIA MANUFACTURES, 1960

Industry group	Total employees	Total payroll (in thousands)	Adjusted value added by mfr.[1]
Transportation equipment	240,172	$1,673,926	$2,597,981
Food and products	159,858	872,246	2,132,457
Electrical machinery	134,581	822,487	1,300,743
Fabricated metal products	88,305	528,443	941,691
Nonelectrical machinery	82,806	522,030	853,660
Printing and publishing	66,277	388,011	692,519
Chemicals and products	33,521	207,918	689,968
Stone, clay, glass products	44,224	239,208	560,735
Primary metals	51,400	312,015	560,664
Petroleum and coal products	20,669	136,748	441,196
Lumber and wood products	52,138	268,611	420,188
Apparel and related products	54,834	195,579	376,146
Paper and allied products	25,884	148,426	295,593
Rubber and plastics products	26,747	147,782	293,518
Furniture and fixtures	28,116	147,584	245,732

[1] For definition, see footnote 1 in the article *Industrial Production*. (Source: *1960 Annual Survey of Manufactures*.)

Mining.—California ranked third among the states in 1961 in the value of mineral output, with 7.84% of the national total. It was the sole producer of boron; ranked first in cement, diatomite, gypsum, iodine, mercury, sand and gravel, sodium sulfate, sulfur ore, and tungsten; second in asbestos, feldspar, lithium, magnesium compounds, platinum-group metals, potassium salts, pyrites, pumice, rare earth metals, sodium carbonate, talc, soapstone, pyrophyllite, and wollastonite; and third in magnesite and petroleum.

CALIFORNIA MINERAL PRODUCTION, 1961

(In short tons, except as noted)

Mineral	Quantity	Value
Boron minerals	602,613	$ 46,936,000
Cement (bbl.)[1]	41,090,000	129,836,000
Clays	3,041,000	6,405,000
Gold (fine ounces)	97,644	3,418,000
Gypsum	1,574,000	3,673,000
Lime	518,000	9,412,000
Magnesium compounds (MgO equivalent)	90,534	6,467,000
Mercury (76-pound flasks)	18,688	3,693,000
Natural gas (1,000 cubic feet)	556,241,000	157,416,000
Natural gasoline (1,000 gal.)	762,878	57,645,000
Petroleum (1,000 bbl.)	300,062[2]	729,151,000[2]
Petroleum gases (1,000 gal.)	424,767	21,805,000
Pumice	610,000	2,202,000
Sand and gravel	110,181,000	124,111,000
Stone	33,850,000	50,327,000
Talc and pyrophyllite	161,068	1,524,000
Other minerals	...	83,107,000
Total	...	$1,420,749,000[3]

[1] Excludes certain cement, value of which is included in "Other minerals." [2] Preliminary. [3] Excludes duplication of clays and stone. (Source: U.S. Bureau of Mines.)

Fisheries.—The commercial fish and shellfish catch in the state in 1961 totaled 598,965,569 pounds, a 10% increase from the 1960 total. Leading species landed were tuna (all varieties), 307,262,677 pounds, and mackerel, 141,716,498.

Agriculture.—Cash farm income for the first nine months of 1962 (excluding government payments) totaled $2,139,908,000, compared with $2,125,452,000 for the corresponding period of 1961. For the full year 1961, income comprised $1,278,726,000 from livestock, $1,944,921,000 from crops, and $27,938,000 in government payments. Principal income sources in 1961 were cattle, $538,199,000; wholesale milk, $326,048,000; cotton lint, $291,146,000; and eggs, $173,751,000.

The state's 99,000 farms in 1959 had an acreage of 36,888,000 (8,023,000 in harvested cropland). Livestock on farms on Jan. 1, 1962, included 4,232,000 cattle, 1,959,000 sheep, 40,697,000 chickens, and (1961), 227,128,000 broilers. An average of 143,000 family and 235,000 hired workers engaged in farming during 1961.

CALIFORNIA CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Almonds (tons)	45,090	66,400	46,000
Apples (1,000 bu.)	8,730	10,300	10,300
Apricots (tons)	183,600	180,000	155,000
Asparagus (1,000 cwt.)	1,738	1,980	1,998
Avocados (tons)	35,680	50,000	40,000
Barley (1,000 tons)	1,589	1,772	1,716
Beans, dry edible (1,000 cwt.)	3,996	3,542	3,542
Broccoli (1,000 cwt.)	1,297	1,656	1,359
Cantaloups (1,000 cwt.)	5,939	7,097	7,260
Carrots (1,000 cwt.)	6,282	5,762	5,992
Celery (1,000 cwt.)	8,311	8,348	7,345
Cherries (tons)	26,280	27,500	28,500
Cotton lint (1,000 bales)	1,650	1,689	1,740
Cottonseed (1,000 tons)	663	682	736
Figs, dried (tons)	23,900	18,800	18,300
Grapes (1,000 tons)	2,732	2,804	2,800
Hay (1,000 tons)	6,572	7,342	7,182
Lemons (1,000 boxes)	14,952	15,000	13,500
Lettuce (1,000 cwt.)	20,404	22,030	18,743
Nectarines (tons)	25,480	54,000	50,000
Olives (tons)	50,300	44,000	50,000
Oranges (1,000 boxes)	37,000	25,000	20,800
Peaches (1,000 tons)	830	967	1,030
Pears (1,000 bu.)	15,472	14,460	15,917
Prunes (1,000 tons)	150	139	140
Potatoes (1,000 cwt.)	27,093	34,447	27,134
Rice (1,000 cwt.)	11,806	13,630	14,993
Strawberries (1,000 lb.)	168,679	207,000	199,500
Sugar beets (1,000 short tons)	3,710	4,593	5,000
Tomatoes (1,000 tons)	2,326.8	2,633	3,462
Walnuts (tons)	67,900	61,200	78,000

(Sources: California State Department of Agriculture and U.S. Department of Agriculture.)

Events, 1962.—Political activity remained in the forefront in California during the year. At stake in the November elections were all of the elective offices in the state administration, half of the 40 seats in the state Senate, the 80 seats of the state Assembly, the 38 congressional seats, and 1 U.S. Senate seat. The primary was dominated by the race for the Republican gubernatorial nomination between former Vice President Richard M. Nixon and the conservative Republican minority leader of the Assembly, Joseph C. Shell. (Earlier, former Gov. Goodwin J. Knight had withdrawn from contention because of ill health.) Nixon won the nomination, although Shell received 35% of the Republican vote. In the Republican race for the U.S. Senate nomination, incumbent Thomas H. Kuchel defeated his two right-wing opponents.

For the most part, Democratic incumbents were renominated, and the state senator from Los Angeles County, Richard Richards, was chosen to

run against Senator Kuchel. In the other races which eventually gained national prominence, three avowed members of the John Birch Society won the Republican nomination for Congress. The emergence of Ralph Richardson, Democrat, and Maxwell Rafferty, Republican, as the leading contenders for the nominally nonpartisan post of state superintendent of schools presented two sharply opposed viewpoints concerning the direction which education ought to take in the State of California.

The general election campaign opened with Governor Brown stressing the positive accomplishments of his administration: the Feather River Project, a billion-dollar aqueduct to supply water from the northern Sierras to the dry counties of Southern California; the master plan for higher education; the fair employment law; increased state aid to schools, mental hospitals, and highways; and four straight years of balanced budgets. Nixon sought to counter Brown's campaign by promising more competent administration, greater economy in government, lower taxes, and a better climate for business as a means of meeting California's employment needs.

Toward the end of the campaign, Nixon attacked Brown as a "bumbler," and promised if elected to end welfare chiseling, big-time dope peddling, and administrative inefficiency. Nixon's promise to bar Communists, and persons under indictment for pleading the Fifth Amendment, from University of California campuses brought him into conflict with the Board of Regents, which has autonomous discretion in such matters. Brown accused Nixon of opportunism in seeking the governorship as a steppingstone to the presidency, of ignorance of California affairs, and of "smearing" both Brown and the Democratic Party. Nixon charged the Democrats with a "smear" in discussing a loan made by the Hughes Tool Company to a member of his family when he was vice president.

On November 6, true to form, the second largest turnout (78.4%) of the electorate gave Democrat Brown a 300,000-vote margin (3,037,109 to 2,740,351). Only the traditionally conservative counties of Marin, Orange, Riverside, and San Diego went strongly for Nixon. In a statement following the election, at what he called his "last press conference," Nixon gave utterance to a bitter attack on newsmen whom he accused by implication of being biased against him.

In the other politically significant races, Senator Kuchel was reelected by an overwhelming majority (3,179,727 to 2,455,676); the three Republican congressional candidates of John Birch affiliation were defeated; and Rafferty, a conservative educator, won election as superintendent of schools on a platform of stronger emphasis on intellectual content and the teaching of the American heritage in the public schools. In the congressional races, Democrats won 7 of 8 newly created seats, giving them 25 of the state's 38 congressmen.

Second only to politics in public interest was the improved state of the California economy. In September, as compared with 12 months earlier, employment was up 4.3%, personal income was up 5.1%, and the average weekly earnings of factory employees were up 4.4%. The greatest employment increases occurred in manufacturing (5.6%), service industries (5.3%), and trade (3.2%). The major declines occurred in the motion picture and railroad industries. Unemployment in California as a whole remained slightly above the national average, however.

President Kennedy and Governor Brown took part in groundbreaking ceremonies at Los Banos, August 18, for the San Luis Reservoir, a $433 million federal-state project which is a key unit in California's vast, 20-year program for water conservation and distribution. The earth-fill dam, on completion in 1968, will alleviate the perennial water shortage of the San Joaquin Valley. (See also DAMS.)

In late November, Governor Brown claimed that California had passed New York as the most populous state in the Union. State projections showed that California assumed the lead—at about the 17,300,000 point—on November 24. The U.S. Census Bureau, however, maintained that the change in ranking would come in early 1963.

(See also LOS ANGELES; SAN FRANCISCO.)

"Legislation" and "Events" by: DAVID S. MCLELLAN,
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CAMBODIA

The Kingdom of Cambodia in Southeast Asia is bordered on the north by Laos and Thailand, on the west by Thailand, on the south by the Gulf of Siam, and on the east by Vietnam. It has an area of 66,800 square miles, about the size of the State of Washington, and a population of 5.7 million (1962 census est.), including minorities of 300,000 Chinese, 400,000 Vietnamese, an unknown number of hill tribes and Chams (Cambodian Moslems), and 5,000 Europeans, mainly French. The capital is Phnom Penh (1960 est. pop., 500,000). Cambodian or Khmer is the language used by all Cambodians and many minority groups; Vietnamese and Chinese are used in domestic commerce, and French is the accepted language in government circles.

Government.—The Cambodian Constitution, promulgated on May 6, 1947, provides for a limited monarchy. Executive power is vested in the Council of Ministers (cabinet), responsible to a popularly elected National Assembly (lower house). The Council of the Kingdom (upper house) has limited powers, its members representing professional and regional interests. Cambodia is led by a chief of state, Prince Norodom Sihanouk, who has held the office since June 20, 1960. In the elections of 1955 and 1958, the Sangkum Reastr Niyum (People's Socialist Community), created and controlled by Prince Sihanouk, won all seats in the Assembly. The two chief opposition parties are the Kanapac Pracheathipatay (Democratic Party), founded in 1946, and the Pracheachon (Khmer Communist Party), launched officially in 1955.

For administrative purposes Cambodia is divided into 16 provinces (khet). Phnom Penh is administered by a governor assisted by an appointive municipal commission. Each provincial governor represents the central government and supervises the administration of provincial districts (srok), townships (khum), and villages (phum).

Education and Religion.—School enrollment, 1959–60: 562,165. Number of schools (with enrollments): 3,446 primary (543,450); 31 secondary (16,839); 4 higher (523, excluding the Royal School of Medicine); 4 technical (778); 3 arts (575). The United States, Communist China, and other countries provide assistance in agricultural and teacher-training education. Most Cambodians are Hinayana (Lesser Vehicle) Buddhists. About 82,000 students were enrolled in Buddhist temple schools in 1961.

Finance.—Authorized expenditure, 1961: $140 million; estimated revenues, $108 million. The budget deficit of $32 million was covered by $12 million in United States aid funds and by $20 million in Cambodian treasury reserves. Of total 1961 expenditure, 25.9% was allocated for defense, 15.9% for education, and 14.6% for economic development. The basic currency is the riel; 35 riels equal the United States dollar at the official exchange rate, but the special tourist rate is 60 riels to the dollar. Currency in circulation: 2.7 billion riels in 1961 (2.3 billion in 1959).

Transportation and Communications.—Inland waterways are the chief means for transporting goods within Cambodia. Railways, 240 miles of single-track line; national highways, 2,360 miles; provincial highways, 890 miles. The port of Phnom Penh handled 1.2 million tons of freight in 1960. Air service is provided by Transports Ariens Intercontinentaux Airlines, Air France, Czech Airlines, Royal Air Cambodge, Thai Airways, and Air Vietnam; passenger arrivals (1960), 13,374; departures, 14,711. Registered passenger cars (1961), 11,140; telephone subscribers (1960), 1,757.

Economic Indicators.—Gross national product (1961): $542 million (per capita, $108). Annual rate of economic growth: 5%. Agricultural share of national income: about 50%. Trade as percentage of gross national product: 25%.

Manufactures and Minerals.—Manufacturing consists mainly of processing agricultural products and making handicraft articles. About 100,000 persons are engaged in handicrafts and 6,000 in large-scale modern factories, including an automobile assembly plant, match factory, three cigarette plants, textile spinning and weaving mills, and metal-fabricating plants. Mining activities involve the limited production of building materials, potter's clay, salt, precious stones, and gold (150 kilograms in 1960). Unexploited mineral deposits include limestone, iron ore, phosphate, and coal.

Agriculture.—Rice and rubber account for about 20% of the national revenue. Some 45% of the land is capable of cultivation, but only 9% is under cultivation. Chief products (tons, 1960–61): rice, 1.5 million; rubber, 36,700 (1960); cotton, 7,000; fish (annual catch), 100–150,000; maize, 108,000; tobacco, 5,600; sugar, 56,400. Number of livestock (1960): cattle, 1,200,000; pigs, 550,000; buffalo, 400,000.

Foreign Trade.—Total exports, 1961: 2,220 million riels (down 9% from 1960); imports, 3,395 million (up 5%). Chief exports (in millions of riels, 1960): rubber, 977.9; rice, 811.5; corn, 289.6; timber, 52.6; pepper, 52.3. Chief imports: agricultural products and foods, minerals, textiles, drugs, metal products, and chemical products. Chief customers: France and the franc zone, Hong Kong, Malaya, Great Britain, and the United States. Main suppliers: France and the franc zone, Japan, Hong Kong, and the United States.

Events, 1962.—Cambodia's first five-year plan (1960–64) has surpassed its final goals in cotton production and in some branches of education. Agricultural stations in Battambang showed an eightfold increase in rice production per acre since 1958. Swamps have been converted into gardened boulevards in Phnom Penh. Conference halls, model villages, four-lane highways, infirmaries, and schools of Khmer arts and crafts have been opened.

Cambodia receives aid from 14 countries, mainly the United States, the Soviet Union, and Communist China. United States aid, totaling $24.3 million in 1961, has exceeded the combined assistance of all other countries, and is mainly used for the armed forces and the import program. The Soviet Union has constructed a large hospital where Cambodians receive free medical treatment, and two technical-training centers. Chinese aid has been allocated for four factories, irrigation projects, plant nurseries, rural roads, and small hospitals and schools.

Cambodia's claim to the ruined temple of Preah Vihear on the Cambodian-Thai border was upheld by the International Court of Justice on June 15. Thailand declared it would accept the court's decision and was reported on July 16 to have vacated the temple. (See also INTERNATIONAL LAW.) Cambodia on July 9 rejected a claim by South Vietnam to two small Cambodian islands in the Gulf of Siam.

The United States, in September, was reported to be considering new military aid for Cambodia's 29,000 troops in their struggle with Viet Cong guerrillas infiltrating over the unmarked border from North Vietnam. Orders were given the Cambodian Army to fire on all planes violating the air space from Thailand and South Vietnam. Charges were made that aircraft of these countries had flown into Cambodia 191 times since December 1961.

Chief of State Sihanouk, on August 25, stated that Washington had rejected his plan for a new international conference to guarantee Cambodia's frontiers against incursions by Thailand and South Vietnam. On November 6, he warned that Cambodia would break diplomatic relations with South Vietnam unless alleged border provocations ceased. He later called on Communist China to protect his country from "imperialist threats," and implied that he feared aggression from South Vietnam and Thailand.

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CAMERAS. See PHOTOGRAPHY.

CAMEROONS. See CAMEROUN; NIGERIA.

CAMEROUN

The Federal Republic of Cameroun, situated on the west coast of central Africa, comprises two former United Nations trust territories: French-administered Cameroun (now East Cameroun), which became an independent republic on Jan. 1, 1960; and British-administered Southern Cameroons (now West Cameroun), which joined the republic on Oct. 1, 1961. The total area is 183,376 square miles. The population of 4,097,000 (mid-1960 est.) comprises mainly Sudanese and Bantu peoples, and 16,200 French and other nonindigenous persons. French and English are the official languages. Principal cities (with 1961 est. populations): Yaoundé, the capital (58,000); and Douala, the main port (150,000).

Ahmadou Ahidjo, president of Republic of Cameroun, is welcomed to Washington on March 13 by President Kennedy.

UPI

Government.—The new constitution effective as of Oct. 1, 1961, provides for a federal form of government with strong executive powers invested in the office of president. Ahmadou Ahidjo, leader of the ruling Cameroun Union party in East Cameroun, was elected president for a five-year term by the Cameroun National Assembly on May 5, 1960. John N. Foncha, head of the National Democratic Party in West Cameroun and formerly prime minister of Southern Cameroons, has served as federal vice president since Oct. 1, 1961. The Federal National Assembly consists of 50 deputies elected by universal suffrage for five-year terms; 40 deputies are elected from East Cameroun, and 10 from West Cameroun. East Cameroun has its own legislative assembly of 100 members; the legislative assembly in West Cameroun comprises 37 seats, of which 25 were won by the National Democratic Party in elections on Dec. 30, 1961.

Education and Religion.—School attendance reportedly exceeds 90% of the school-age population in the progressive south, but is far lower in the feudal and backward north; in 1959 an estimated 33% of the total school-age population attended school. School enrollment, 1959: primary, 371,421; secondary, 8,721; technical, 4,359; teacher-training, 728. Christians comprise about half the population; Moslems number some 500,000, chiefly among the Hamitic tribes of the north.

Finance.—East Cameroun revenue, fiscal year 1962 est.: 15,995 million francs CFA (15,700 million in fiscal 1961); expenditure, 18,747 million (15,068 million). French assistance, fiscal 1962: 1,885 million francs CFA (246.85 francs CFA equal the U.S. dollar). The franc CFA was made the only legal tender in West Cameroun as of April 2, 1962 (see below, *Events, 1962*).

Transportation and Communications.—A two-line railroad system connects Douala with Yaoundé and with Nkongsamba, and totals 314 miles. Road network: 7,450 miles, including 3,000 miles of all-weather roads and 390 miles of hard-surfaced highways. The port of Douala has an annual traffic capacity of 1,120,000 tons, and an international airport. Passenger cars (1960): 9,800; commercial vehicles, 20,000; telephones, 6,120; radios, 10,000 (1959).

Agriculture.—Principal economic activities are subsistence agriculture, fishing, and livestock raising. Main subsistence crops: millet and sorghum, cassava, corn, yams, rice, bananas, and peanuts (80,000 metric tons produced in 1961–62). Chief cash crops (metric tons exported, 1961): cacao, 58,302; bananas, 51,280; green coffee, 35,484; palm kernels, 14,564; cotton, 10,395; and peanuts (shelled), 9,924.

Manufactures and Minerals.—Principal manufactures: vegetable oils and products, cotton fiber and clothing, rubber, plastic sandals, soap, beer, wood products, and

UPI

Governor General Georges Vanier opens the Canadian Parliament on September 27 by reading the Throne Speech. Seated at left is Prime Minister John Diefenbaker; at right is Mrs. Vanier. Senators and Supreme Court Justices are in foreground.

timber (170,075 metric tons exported in 1961). Chief mineral (metric tons exported, 1961): aluminum, 46,144.

Foreign Trade.—Total exports, 1961: 24,177 million francs CFA (up 1% from 1960); imports, 23,687 million (up 14%). Chief exports (in million francs CFA, 1961): cacao, 6,254; green coffee, 5,121; aluminum, 4,798; timber, 1,745; cotton fiber, 1,447. Principal imports: foodstuffs, metal products, machinery, petroleum products, and textiles. In 1961, France took 59% of Cameroun's exports and provided 54% of imports.

Events, 1962.—East and West Cameroun took further steps in 1962 to secure integration of their regional economies. As of April 2, Nigerian currency which had been legal tender in West Cameroun was withdrawn and replaced by the franc CFA as the only legal currency in the federal republic. The import licensing programs of both regions were also integrated on that date.

President Ahmadou Ahidjo paid a five-day state visit to the United States in mid-March. He conferred (March 13–14) in Washington with President Kennedy on African problems, and discussed ways by which the United States could assist the economic development of his country.

Charles Okala, former foreign minister, and three other leaders of opposition parties rejected, on June 23, President Ahidjo's proposal for a united political party because, they declared, such a development would lead to a "fascist-type dictatorship." They were subsequently arrested and charged with "inciting hatred against the government."

Douala was the scene of a tragic airplane accident on March 4. A chartered British airliner carrying 101 passengers and 10 crewmen crashed into a jungle swamp shortly after taking off from the Douala airport. All 111 persons aboard were killed. The DC-7C aircraft had flown to Cameroun from southern Africa, and was en route to Europe.

W. R. F.

CANADA

Canada is the second largest in area of the countries of the world, and is a sovereign state of the Commonwealth of Nations. The nation is a federal union of 10 provinces, the Northwest Territories, and the Yukon Territory. The capital of Canada is Ottawa, in the Province of Ontario.

Area and Population.—Canada's total area of over 3.8 million square miles is second only to that of the Soviet Union. The census population of June 1, 1961, was 18,238,247, representing an increase of 2,157,456 or 13.4% since the census of 1956; estimated population (Oct. 1, 1962), 18,683,000. According to the 1961 census, 69.6% of the total population lived in urban areas (66.6% in 1956), and 11.3% of the population lived on farms (17.1% in 1956). The census reported that English was the only language spoken by 67.4% of the population; French, by 19.1%; both English and French, by 12.2%; and other languages, by 1.3%.

Principal Canadian cities and their populations (final 1961 census): Montreal, 1,191,062 (metropolitan area, 2,109,509); Toronto, 672,407 (metropolitan area, 1,824,481); Vancouver, 384,522; Edmonton, 281,027; Hamilton, 273,991; Ottawa, 268,206; Winnipeg, 265,429; and Calgary, 249,641.

Table 1—AREA AND POPULATION OF CANADIAN PROVINCES AND TERRITORIES

Province or territory	Area (sq. mi.)	Population 1961 census	Population Oct. 1, 1962 estimate
Newfoundland*	156,185	457,853	474,000
Prince Edward Island	2,184	104,629	106,000
Nova Scotia	21,425	737,007	750,000
New Brunswick	28,354	597,936	608,000
Quebec	594,860	5,259,211	5,405,000
Ontario	412,582	6,236,092	6,377,000
Manitoba	251,000	921,686	940,000
Saskatchewan	251,700	925,181	931,000
Alberta	255,285	1,331,944	1,383,000
British Columbia	366,255	1,629,082	1,670,000
Yukon Territory	207,076	14,628	15,000
Northwest Territories	1,304,903	22,998	24,000
Total, Canada	3,851,809	18,238,247	18,683,000

*Including Labrador. (Source: Dominion Bureau of Statistics.)

Vital Statistics.—The Canadian birth rate, relatively high for an industrialized country, fell to 26.1 in 1961 (from 26.9 in 1960), the lowest since 1945. The death rate, one of the lowest in the world, was 7.7 in 1961 (7.8 in 1960), and the infant mortality rate remained at a record low of 27 per 1,000 live births.

National Derivation.—The native-born population comprised 84.4% of the total in 1961 (85.3% in 1951). In 1961, Canadians of British descent made up 43.8% of the population, French, 30.4%; other European, 21.8%; Indians and Eskimos, 1.2%; and Asian, 0.7%.

Immigration.—Immigrants entering Canada in 1961 numbered 71,689, down 31% from 1960 and the lowest total since 1947. Immigration is chiefly from Italy, the United Kingdom, and the United States. Citizenship certificates in 1961 were granted to 56,476 persons (down 9% from 1960).

Religion.—Adherents of religious denominations, according to percentage of total population in 1961, are: Roman Catholic, 45.7%; United Church of Canada, 20.1%; Church of England, 13.2%; Presbyterian, 4.5%; Lutheran, 3.6%; Baptist, 3.3%; Jewish, 1.4%; Greek Orthodox, 1.3%; Ukrainian (Greek) Catholic, 1.0%; Mennonite, 0.8%; Pentecostal, 0.8%; and other, 4.2%.

Government and Social Welfare

Government.—Canada is a self-governing, independent nation, whose sovereign is Queen Elizabeth II. The Canadian government is administered by a prime minister and a cabinet of departmental ministers who are members of the Parliament at Ottawa. The ministry is responsible to the lower house, or House of Commons, and holds office as long as it retains the confidence of that body.

Governor General.—Executive power is nominally vested in a governor general appointed by the British crown on the advice of the Canadian cabinet, usually for a term of five years. The governor general, representing the sovereign, acts under the advice of the Canadian ministry. Maj. Gen. George P. Vanier was installed as governor general on Sept. 15, 1959

Judiciary.—The Supreme Court of Canada, composed of a chief justice and eight puisne judges, is the final court of appeal in both civil and criminal cases throughout Canada. Patrick Kerwin was appointed chief justice on July 1, 1954.

Parliament.—The Canadian Parliament consists of a House of Commons and a Senate. The influence of the Senate on legislation is considerably less than that of the House of Commons, in which most public bills are introduced.

The Senate, or upper house, consists of 102 members appointed for life by the governor general on the advice of the ministry. It is composed of 24 senators from Ontario, 24 from Quebec, 10 from Nova Scotia, 10 from New Brunswick, 6 each from Newfoundland, Manitoba, Saskatchewan, Alberta, and British Columbia, and 4 from Prince Edward Island.

The House of Commons consists of 265 members elected for a five-year term, or less, if Parliament is earlier dissolved. As a result of the elections of June 18, 1962, party seating in the House of Commons was as follows (with previous number of seats held in parentheses): Progressive Conservatives, 116 (208); Liberals, 99 (49); Social Credit, 30 (0); New Democratic Party (formed in 1961, previously the Co-operative Commonwealth Federation), 19.

Ministry.—John G. Diefenbaker (q.v.) took office as prime minister of a Conservative government on June 21, 1957; the other ministers, in order of precedence as of Jan. 1, 1963, were as follows:

Howard Charles Green (q.v.), secretary of state for external affairs.

Donald Methuen Fleming (q.v.), minister of justice and attorney general.

George Harris Hees, minister of trade and commerce (appointed 1960): b. Toronto, Ont., June 17, 1910; first elected to the House of Commons for Toronto-Broadview in 1950; served as minister of transport, 1957–60.

Léon Balcer, minister of transport (appointed 1960): b. Trois-Rivières, Que., Oct. 13, 1917; first elected to the House of Commons for Trois-Rivières in 1949; served as solicitor general, 1957–60.

Gordon Churchill, minister of veterans affairs (appointed 1960): b. Coldwater, Ont., Nov. 8, 1898; first elected to the House of Commons for Winnipeg South-Centre (Man.) in 1951; served as minister of trade and commerce, 1957–60.

Edmund Davie Fulton, minister of public works (appointed 1962): b. Kamloops, B.C., March 10, 1916; first elected to the House of Commons for Kamloops in 1945; served as minister of justice and attorney general, 1957–62.

George Clyde Nowlan, minister of finance and receiver general (appointed 1962): b. Havelock, N.S., Aug. 14, 1898; first elected to the House of Commons for Digby-Annapolis-Kings (N.S.) in 1948; served as minister of national revenue, 1957–62.

Douglas Scott Harkness, minister of national defense (appointed 1960): b. Toronto, Ont., March 28, 1903; first elected to the House of Commons for Calgary East (Alta.) in 1945 (re-elected for Calgary North in 1953); served as minister of agriculture, 1957–60.

Ellen Louks Fairclough, postmaster general (appointed 1962): b. Hamilton, Ont., Jan. 28, 1905; first elected to the House of Commons for Hamilton West in 1950; served as secretary of state, 1957–58, and minister of citizenship and immigration, 1958–62.

John Angus MacLean, minister of fisheries (appointed 1957): b. Lewis, Beaton's Mills, P.E.I., May 15, 1914; first elected to the House of Commons for Queens (P.E.I.) in 1951.

Michael Starr, minister of labor (appointed 1957): b. Cooper Cliff, Ont., Nov. 14, 1910; first elected to the House of Commons for Ontario in 1952.

William Joseph Browne, solicitor general (appointed 1960): b. St. John's, Nfld., May 3, 1897; first elected to the House of Commons for St. John's West in 1949 (defeated 1953); re-elected in 1957; served as minister without portfolio, 1957–60.

Jay Waldo Monteith, minister of national health and welfare (appointed 1957): b. Stratford, Ont., June 24, 1903; first elected to the House of Commons for Perth (Ont.) in 1953.

Francis Alvin George Hamilton, minister of agriculture (appointed 1960): b. Kenora, Ont., March 30, 1912; first elected to the House of Commons for Qu'Appelle (Sask.) in 1957; served as minister of northern affairs and national resources, 1957–60.

Raymond Joseph Michael O'Hurley, minister of defense production (appointed 1958): b. St. Gilles, Que., Oct. 1, 1909; first elected to the House of Commons for Lotbinière (Que.) in 1957.

Joseph Pierre Albert Sévigny, associate minister of national defense (appointed 1959): b. Quebec, Que., Sept. 12, 1917; first elected to the House of Commons for Longueuil (Que.) in 1958.

Hugh John Flemming, minister of forestry (appointed 1960) and minister of national revenue (appointed 1962): b. Peel, N.B., Jan. 5, 1899; first elected to the House of Commons for Royal (N.B.) in 1960.

Walter Gilbert Dinsdale, minister of northern affairs and national resources (appointed 1960): b. Brandon, Man., April 3, 1916; first elected to the House of Commons for Brandon in 1951; re-elected for Brandon-Souris in 1953.

George Ernest Halpenny, secretary of state (appointed 1962): b. Plantaganet, Ont., June 14, 1903; first elected to the House of Commons for London (Ont.) in 1957; served as minister without portfolio, 1960–62.

Paul Martineau, minister of mines and technical surveys (appointed 1962): b. Bryson, Que., April 10, 1921; first elected to the House of Commons for Pontiac-Témiscamique (Que.) in 1958.

Richard Albert Bell, minister of citizenship and immigration (appointed 1962): b. Britannia Heights, Ont., Sept. 4, 1913; first elected to the House of Commons for Carleton (Ont.) in 1957.

Malcolm Wallace McCutcheon, minister without portfolio (appointed 1962): b. London, Ont., May 18, 1906; appointed to the Senate in August 1962.

Provincial Government.—Each of Canada's 10 provinces has a lieutenant-governor appointed by the governor general of Canada, its own premier and executive council or cabinet, and a popularly elected unicameral Legislative Assembly (Quebec alone retains an appointive Legislative Council in addition to its Legislative Assembly). The Northwest Territories and the Yukon Territory are under the jurisdiction of the federal government.

Finance.[1]—The federal government on May 2, 1962, announced the establishment of a fixed par value for the Canadian dollar equivalent to U.S.$0.925 (previously the exchange rate for the Canadian dollar varied widely). Federal budgetary revenue for the fiscal year ended March 31, 1962, totaled $5,729.6 million ($5,617.7 million in fiscal year 1961); expenditure, $6,520.6 million ($5,958.1 million). Chief sources of revenue in the 1962 fiscal year were (in millions): personal income tax, $1,792.7; corporate income tax, $1,202.1; excise (including sales) taxes, $1,022.2; and customs import duties, $534.5. Expenditure for national defense and defense production totaled $1,650.0 million. Other major expenditure items were (in millions): public debt charges, $838.9; subsidies and tax-sharing payments to provinces, $541.2; family allowances, $520.8; transport, $410.4; and veterans affairs, $333.2. The net public debt as of March 31, 1962, totaled $13,228.1 million (up $791 million from a year earlier).

The federal budget for the fiscal year 1963, presented to Parliament on April 10, 1962, forecast revenue at $5,780 million, and expenditure at $6,525 million, for an anticipated deficit of $745 million. It was announced on Oct. 18, 1962, that current expenditure would be reduced by $227.9 million from the official estimate in order to reduce the budget deficit. Estimated revenues of the provincial governments for the fiscal year 1963 totaled $3,095 million (up 9.8% from the fiscal year 1962); estimated expenditures, $3,480 million (up 12.7%).

Defense.—Canada's active armed forces comprised 120,055 men and women as of March 31, 1961. Personnel was divided as follows (with reserves shown in parentheses): Canadian Army, 48,051 (militia, 43,229); Royal Canadian Navy, 20,655 (3,672); and Royal Canadian Air Force, 51,349 (3,130).

[1] All monetary figures used in this article are in Canadian dollars.

Social Welfare.—The federal government pays a pension of $65 per month (increased from $55 per month as of Feb. 1, 1962) to persons aged 70 and over who have lived in Canada at least 10 years. In the fiscal year 1962, old-age pension payments totaled $625 million, to more than 800,000 persons. Under the family allowance program, the federal government pays $6 per month for children under 10 years and $8 for children aged 10–15; payments in fiscal 1962 totaled an estimated $520.9 million. Federal contributions toward programs administered by the provinces for aid to the needy aged (65–69 years), blind, and disabled in fiscal 1962 totaled $50.9 million (old-age assistance, $30.7 million; disabled, $16.2 million; blind, $4.1 million). The federal government also administers the nation's unemployment insurance program and contributes one fifth of total employer-employee contributions. Other federal programs include veterans benefits, grants to provincial and municipal health and rehabilitation programs, grants to provinces for unemployment assistance, and aid to Indians and Eskimos. (See also CHILDREN AND YOUTH; MARRIAGE AND DIVORCE; STANDARDS OF LIVING.)

Education.—The provinces control education in Canada, but the federal government provides grants for vocational education, higher education, and research, and operates Indian schools and schools in the Northwest Territories. School attendance is generally compulsory for children aged 7–15, with minor age variations in certain provinces. School enrollment of students aged 5 to 19 years totaled 3,968,000 in 1960 (77% of the school-age population). In the 1960–61 academic year, teachers in public elementary and secondary schools numbered 159,282 (7.2% over 1959–60), of whom 28.3% were men; the median salary (excluding Quebec) was $4,247, a rise of 4.7% from 1959–60. Educational expenditures in 1961 totaled an estimated $1.75 billion. Canada's largest universities and enrollments as of Dec. 1, 1961 (including enrollment at affiliated institutions) were: Université de Montreal, 17,762; University of Toronto, 14,518; University of British Columbia, 14,357; Université Laval, 10,984; McGill University, 8,528; and University of Alberta, 8,200.

Table 2—CANADIAN EDUCATION STATISTICS
(Data for 1960–61)

Type of School	Schools	Teachers	Pupils
Elementary and secondary education:			
Public and separate schools	25,604	151,407	3,993,125
National Defence (overseas)	21	379	7,274
Indian schools[1]	464	1,306	32,643
Schools for the blind	6	98	714
Schools for the deaf	10	263	1,980
Private schools	1,114	8,743	167,804
Higher education:			
University grade institutions	354	...	114,000
Teacher training:			
Teachers colleges	127	1,697	18,607
Faculties of education	27[2]	307	10,753[2]
Vocational education:			
Trade courses (pre-employment)	...	...	18,020
Trade courses (apprentices)[3]	...	...	13,858
Vocational high school courses	...	...	115,479
Postsecondary courses	...	...	9,441
Private business schools	...	...	19,150[4]
Adult education (part-time):			
Enrollment	...	...	664,046[5]

[1] Day, residential, and hospital schools administered by the federal government. [2] Also included with "Higher education." [3] Includes indentured apprentices taking full-time, part-time, and correspondence courses. [4] Estimate. [5] Includes enrollment in courses sponsored by federal government departments, public libraries, business colleges, and teacher-training institutions. (Source: *Canada Year Book 1962.*)

Libraries.—Public library service is provided mainly by the municipalities. Public libraries in urban centers numbered 171 in 1960 (148 in 1959), and in rural centers, 627 (831). They served 12,901,107 persons in 1960. The book stock totaled 13,866,935 volumes, and circulation aggregated 56,187,325. (See also LIBRARIES.)

THE CANADIAN ECONOMY

The Canadian economy in 1962 registered sharp gains in most sectors over the previous year. The economic recovery begun in late 1961 was continued in early 1962; the seasonally adjusted gross national product was estimated at a record annual rate of $38.6 billion for the first quarter of 1962. The government's currency devaluation in May stimulated domestic production; and high consumer spending, caused in part by an increase in prices, was a key factor in economic expansion. Manufacturing increases were led by the 10% gain in steel output, which reflected the large increase in automobile production. Planned capital spending in the first half of the year rose by 2%, and expenditures for housing construction were up 4.5%.

Canadian foreign trade in the first three quarters of 1962 was up about 10% over the comparable period of 1961. Agriculture recovered from the severe drought of 1961 and registered marked gains in the output of grains and most other crops in 1962 as the result of favorable weather conditions. The bumper wheat crop was estimated at 551.4 million bushels in 1962, or nearly double the 1961 estimate because of much higher acreage yields. The unemployment situation also was improved; the labor force in October 1962 numbered 6,326,000, up by 71,000 from a year earlier, and unemployed workers constituted only 4.3% of the labor force in the same month, as compared with 4.9% in October 1961.

National Income and Product.—The slowdown in economic activity that had characterized the year 1960 was reversed by the upward trend of consumer demand in 1961. Gross national product was estimated at $36.8 billion in 1961, a rise of 2.5% in dollar terms and 2% in physical volume over 1960. The economic upswing was

Table 3—CANADIAN NATIONAL PRODUCT AND EXPENDITURE[1]
(In millions of current dollars)

Item	1959	1960	1961
Gross National Product			
Wages, salaries, and supplementary labor income	$17,463	$18,119	$18,884
Military pay and allowances	596	509	550
Corporation profits before taxes and before dividends paid to nonresidents	3,498	3,277	3,438
Deduct: dividends paid to nonresidents	−501	−470	−588
Rent, interest, and miscellaneous investment income	2,281	2,390	2,529
Accrued net income of farm operators from farm production	1,118	1,194	937
Net income of nonfarm unincorporated business	2,192	2,190	2,249
Inventory valuation adjustment	−130	−55	−86
Net national income at factor cost	$26,417	$27,154	$27,913
Indirect taxes less subsidies	4,251	4,446	4,643
Capital consumption allowances and misc. valuation adjustments	4,159	4,293	4,349
Gross national product at market prices[2]	$34,784	$35,928	$36,844
Gross National Expenditure			
Personal expenditure on consumer goods and services	$22,495	$23,367	$24,253
Government expenditure on goods and services	6,449	6,683	7,183
Business gross fixed capital formation:			
New residential construction	1,734	1,443	1,458
New nonresidential construction	2,589	2,577	2,647
New machinery and equipment	2,571	2,672	2,388
Value of change in inventories	−350	−359	−238
Exports of goods and services	6,683	7,022	7,578
Deduct: imports of goods and services	−8,131	−8,160	−8,487
Residual error of estimate	−44	−35	62
Gross national expenditure at market prices	$34,784	$35,928	$36,844

[1] All figures are subject to revision. [2] Includes residual error of estimate. (Source: Dominion Bureau of Statistics.)

spurred by increases in exports, business inventories, and capital investments during the latter half of 1961. After a weak first quarter, consumer expenditures rose moderately, particularly in the durable goods sector. Increased government outlays for new goods and services contributed to the rise in economic activity. However, a poor grain harvest in western Canada marred the generally favorable economic picture by causing an estimated reduction of 1% in the total gross national product.

The principal contributor to the 2% increase in national output during 1961 was again the service-producing industries. The construction industry ended a three-year decline as output rose slightly. Manufacturing production, featured by a 3.5% rise in nondurables and a 0.5% decline in durables, was up 2% from the previous year.

Personal income in 1961 totaled $28 billion (up 3.2% from 1960). The consumer price index (1949 = 100) registered 129.2 in 1961 (128.0 in 1960).

Manufacturing.—Manufactures contribute about one fourth of the value of all goods and services produced in Canada and employ an equal proportion of the labor force. The gross value of factory shipments in 1961 was estimated at $23,933 million, up 2.6% from $23,327 million in 1960. Leading manufacturing industries and 1960 output values (in millions of dollars) were: pulp and paper, $1,578; nonferrous metals smelting and refining, $1,495; petroleum refining, $1,175; and motor vehicles, $970.

In 1961, the volume index of manufacturing production (1949 = 100) rose to 153.0, as compared with 149.3 in 1960. The rise was featured by increases in output of durable and nondurable manufactures. Among important durables, steel ingot output totaled 6,356,400 tons in 1961 (up 11% from 1960); and pig iron, 4,924,800 (up 15%). Production of motor vehicles amounted to 390,731 units (including 327,897 passenger cars), a decline of 1.4% from 1961. (See also ALUMINUM; IRON AND STEEL; TEXTILE INDUSTRY.)

Building and Construction.—The total value of construction in 1961 was estimated at $7 billion, up 2.2% from 1960. New construction totaled $5,573 million; repair construction, $1,466 million. Building construction, which increased slightly in value to $4,085 million, was featured by a substantial increase in residential construction. Housing starts numbered 125,577 units (up 15.4% from 1960); completions, 115,608 (down 6%). Engineering construction in 1961 was valued at $2,954 million, which included substantial increases in outlays for dams and reservoirs, electric power plants, and gas and oil facilities.

Retail Sales.—Retail sales in 1961 totaled $16,663 million, representing an increase of nearly 1% over 1960. Sales of the leading trades in 1961 (in millions): food and beverage stores, $4,806; motor vehicle dealers, $2,519; department stores, $1,500; clothing stores, $779; hardware and lumber, $761; furniture and appliances, $556.

Labor.—The civilian labor force in 1961 averaged 6,518,000, including 691,000 agricultural and 5,827,000 nonagricultural workers. Of the total labor force, an average of 469,000 (7.2%) were without jobs and seeking work (448,000 and 7.0% in 1960). Average hourly earnings of hourly-rated wage earners in manufacturing were $1.83 in 1961 (up 2.8% from 1960); average weekly wages, $74.27 (up 3.2%); and the average workweek, 40.6 hours (40.4 in 1960). Time lost in labor disputes totaled 1,335,100 man-working days, or nearly double that in 1960. Membership in trade unions in 1960 approximated 1,447,000. Women workers numbered 1,653,000, or about 26% of the labor force.

Corporate Profits.—Corporate profits before taxes totaled $3,438 million in 1961, an increase of 4.9% over 1960. Dividends paid to nonresidents amounted to $588 million in 1961. The 1961 increase in profits was most marked in the food and beverage, wood and paper products, and mining industries, but all industries registered gains with the exception of the iron and steel industry, whose profits declined slightly.

Banking.—The government's fiscal agent is the Bank of Canada, which is owned by the federal government and performs central banking functions. Canada's 8 privately owned chartered banks had 5,201 branch offices at the end of 1960. Total Canadian dollar deposits of chartered banks amounted to $14,244 million as of June 30, 1962 (up about 11% from a year earlier), including $7,993 million in personal savings deposits (up 5%). (See also BANKING.)

Agriculture.—Canadian agricultural productivity has increased greatly in the past two decades. In 1940 a worker in Canadian agriculture supplied, on the average, sufficient food for himself and nine other persons; in 1960 he produced enough for himself and 22 others. From 1956 to 1961 the number of farms declined by 16% to 480,903. The average size of farms increased from 302.5 acres in 1956 to 359 acres in 1961, and farm area totaled 172.5 million acres (173.9 million in 1956), of which 62.4 million acres were under crops.

Farm Income.—Farm cash income from the sale of farm products and from government payments under the Prairie Farm Assistance Act and other programs totaled a record $2,964.6 million in 1961 (prelim.), up 3.7% from 1960. Income from wheat totaled $607 million in 1961; livestock and livestock products, $1,285 million; dairy products, $534 million; and fruit, $54 million. Realized net income from farming operations in 1961 totaled $1,341 million, or nearly 3% above revised figures for 1960 and 4.5% over the 1956–60 yearly average.

Farm Output.—Canadian crop production for 1961 and 1962 are shown in the accompanying table. Output of grains in 1962 was markedly above that of the poor 1961 crop year. In the crop year ended Sept. 30, 1961, output of tobacco totaled 209.7 million pounds (green weight), down slightly from the record 214.2 million in the 1960 crop year. The 1961 apple crop amounted to 16,206,000 bushels, up 8.7% from 1960. Milk production totaled 19.1 billion pounds (prelim.) in 1961 (up 3.9%); and eggs, 447 million dozen (down 1%). Number of livestock, as of June 1, 1961: cattle, 11,941,184; pigs, 5,332,736; sheep, 1,563,534; horses, 512,021; and goats, 23,492.

Table 4—ACREAGE AND PRODUCTION OF PRINCIPAL FIELD CROPS[1]

(Figures in thousands)

Crop and unit of measurement	Acreage		Production	
	1961	1962[2]	1961	1962[2]
Wheat (bushels)	25,316	26,893	283,394	557,554
Oats for grain (bushels)	8,543	10,591	283,965	493,610
Barley (bushels)	5,529	5,287	112,640	165,888
Rye (bushels)	561	667	6,519	12,644
Flaxseed (bushels)	2,075	1,415	14,318	15,685
Mixed grains (bushels)	1,566	1,522	61,310	72,186
Corn for grain (bushels)	400	421	29,208	32,025
Buckwheat (bushels)	58	45	1,217	1,122
Peas, dry (bushels)	66	50	1,040	827
Beans, dry (bushels)	65	65	1,325	1,423
Soybeans (bushels)	212	221	6,631	6,608
Potatoes (hundredweights)	304	284	44,031	44,742
Mustard seed (pounds)	121	121	37,500	72,900
Rapeseed (pounds)	710	404	561,000	318,000
Sunflower seed (pounds)	34	21	27,157	16,000
Tame hay (tons)	12,229	12,370	20,813	22,536
Fodder corn (tons)	360	367	4,054	4,409
Field roots (tons)	27	26	288	282
Sugar beets (tons)	85	85	1,106	1,079

[1] Not including Newfoundland, for which data are not available
[2] November estimate. (Source: Dominion Bureau of Statistics.)

Mineral Production.—Canada produces more nickel and asbestos than any other nation, and is a leading producer of zinc, uranium, gold, silver, platinum metals, and other minerals. Canadian mineral production in 1961 was valued at a record $2,573.8 million, or 3.2% above the $2,492.5 million in 1960. The leading mineral producer among the provinces was Ontario, which supplied 36.7% of the total 1961 value; Alberta provided 18.0%; Quebec, 17.5%; and Saskatchewan, 8.5%. (See also IRON AND STEEL.)

Table 5—CANADA'S LEADING MINERALS

(Figures are in thousands; data for 1961 are preliminary.)

Mineral and unit of production	1960		1961	
	Quantity	Value	Quantity	Value
Asbestos (tons)	1,118	$121,400	1,171	$131,053
Cement (tons)	5,787	93,261	6,145	100,692
Clay products	...	38,226	...	38,045
Coal (tons)	11,011	74,676	10,367	69,983
Copper (pounds)	878,524	264,847	889,271	258,582
Gold (troy ounces)	4,629	157,151	4,425	156,851
Iron ore (tons)	21,551	175,082	20,383	180,457
Lead (pounds)	411,300	43,927	462,394	47,395
Natural gas (million cubic feet)	522,972	52,197	646,018	63,607
Nickel (pounds)	429,013	295,640	475,896	357,515
Petroleum (billion barrels)	189,534	422,926	220,460	487,305
Sand and gravel (tons)	192,074	111,164	178,502	106,413
Silver (troy ounces)	34,017	30,244	31,981	30,069
Stone (tons)	45,359	60,641	45,315	60,666
Uranium oxide (pounds)	25,495	269,938	19,645	204,138
Zinc (pounds)	813,745	108,635	824,727	103,782

(Source: Dominion Bureau of Statistics.)

Forestry.—Forests occupy nearly half of Canada's total land area. About 715,000 square miles of forest land are accessible for commercial operations, and provide the material for some of the nation's leading industries. Forest production in 1960 totaled 3,405.4 million cubic feet of wood, a rise of 6.9% over 1959; value of output was $806,488,000, up 12.7%. Production of leading primary forest products in 1960 was (in millions of cubic feet): logs and bolts for sawing, 1,728.0; logs for pulping, 196.6; pulpwood, 1,189.3; and fuelwood, 240.3. British Columbia led the provinces in primary forest production, with a 1960 output value of $304,978,000; Quebec, $212,620,000; and Ontario, $154,474,000. (See also FORESTRY; LUMBER.)

Fisheries.—In 1961, landings of sea fish totaled 1,856.7 million pounds (up 11% from 1960) and were valued at $96,841,000 (up 8%). Atlantic coast landings, mainly lobster, cod, and haddock, had a value of $58.8 million; the Pacific catch, chiefly salmon, herring, and halibut, $38.0 million. The overall increase in 1961 was due to much greater catches of salmon and herring off the Pacific coast.

Furs.—Wildlife pelts taken in the 1960–61 season numbered 5,019,260 (up about 2% from 1959–60), with a value of $11,702,725 (down 5%). Fur farms numbered 2,331 in 1960, and 1,219,031 pelts were taken from ranch-raised animals. Mink, fox, and chinchilla pelts taken on fur farms had a value of $17,027,197, of which mink accounted for $16,888,441.

Hydroelectric Power.—Canada is second only to the United States in hydroelectric power installation. Canada's capacity turbine installation totaled 26,688,094 hp. at the end of 1961, with net new capacity added during the year amounting to 294,650 hp. Electrical energy generated from water power totaled 103,668 million kw.-hr. (down about 2% from 1960).

Foreign Trade.—Canada's total foreign trade in 1961 was up 7.2% from the previous record attained in 1960. Exports (excluding re-exports) totaled $5,755.5 million, or 9.5% over the $5,255.6 million of 1960. Imports amounted to $5,771.0 million, or 5.5% above the 1960 total of $5,482.7 million. Export gains in 1961 were registered in many products, notably wheat, petroleum, nonfarm machinery, nickel, newsprint, lumber, wood pulp, fish products, and aircraft and parts; decreases occurred in exports of aluminum, copper, uranium, iron ore, farm machinery, rolling mill products, and wheat flour. Increases in value of imports were registered by most major commodities, principally nonfarm machinery, automobile parts, crude petroleum, electrical apparatus, and farm implements and machinery; declines occurred in imports of automobiles and rolling-mill products. For the first 9 months of 1962, Canadian exports totaled a record $4,623.1 million (up 9.1% from the comparable period of 1961); imports were valued at $4,708.4 million (up 12.8%).

Canada's geographical pattern of trade in 1961 was featured by increased exports to the United States, Canada's leading trading partner, and to Communist China, Japan, and West Germany. The increases were somewhat offset by a decline in exports to the United Kingdom and other Commonwealth countries. The pattern of imports in 1961 was largely unchanged from the previous year. (See also INTERNATIONAL TRADE.)

WIDE WORLD

Conservative Prime Minister John Diefenbaker (*left*) and Liberal leader Lester Pearson vote in Canada's parliamentary election on June 18, in which Diefenbaker's party lost control of the House of Commons, but kept a plurality of the seats.

Table 6—CANADIAN TRADE BY LEADING COMMODITIES
(In millions of dollars)

Commodity	1960	1961
Exports[1] to all countries:		
Newsprint paper	$ 757.9	$ 761.3
Wheat	410.5	661.8
Lumber and timber	346.3	354.9
Wood pulp	325 1	346.7
Nickel	251.2	338.5
Aluminum and products	269.4	250.7
Copper and products	222.5	201.8
Uranium ores and concentrates	263.5	192.7
Crude petroleum	94.5	154.3
Fish and fishery products	134.6	141.1
Other commodities	2,180.1	2,351.7
Total exports	$5,255.6	$5,755.5
Imports from all countries:		
Machinery (nonfarm) and parts	579.8	603.1
Automobile parts	296.6	304.5
Crude petroleum	280.1	291.2
Electrical apparatus	260.5	265.3
Farm implements and machinery	228.7	231.6
Aircraft and parts	116.5	217.0
Engines and boilers	141.4	182.6
Automobiles, freight and passenger	243.4	179.3
Fruits	161.4	170.6
Rolling mill products	134.8	111.9
Other commodities	3,039.5	3,213.9
Total imports	$5,482.7	$5,771.0

[1] Domestic exports, not including re-exports (amounting to about $140 million in 1961. (Source: Dominion Bureau of Statistics.)

Table 7—DISTRIBUTION OF CANADIAN TRADE BY LEADING COUNTRIES
(In millions of dollars)

Country	1960	1961
Exports[1] to:		
United States	$2,932.2	$3,109.1
United Kingdom	915.3	908.8
Japan	178.9	231.6
West Germany	165.6	212.8
Communist China	8.7	122.8
Imports from:		
United States	3,686.6	3,864.0
United Kingdom	588.9	618.2
Venezuela	195 2	216.6
West Germany	127.0	136.5
Japan	110.4	116.6

[1] Domestic exports, not including re-exports. (Source: Dominion Bureau of Statistics.)

Transportation and Communications.—Expenditure on Canadian highways and rural roads in the 5-year period ended March 31, 1961, totaled $3.8 billion, including $2.6 billion for new construction and major reconstruction work. As a result of this intensive program, surfaced mileage of Canadian highways increased from 209,328 miles in 1956 to 275,897 miles in 1960. Of the total, paved and bituminous surfaced mileage was 50,617 (up 36.8%). Registered motor vehicles in 1961 totaled 5,517,023 (up 5% from 1960), including 4,325,682 passenger cars.

The 4,860-mile Trans-Canada highway was officially opened on Sept. 3, 1962. The cross-country highway was constructed over a 12-year period and cost an estimated $700 million.

Railroads.—Canada ranks third among the nations of the world in total railroad mileage. First main or single track mileage in operation at the end of 1961 totaled 43,689 miles. The two major systems are the government-owned Canadian National Railways, which operated 24,854 miles of track in 1961, and the Canadian Pacific Railway, which operated 17,033 miles. All Canadian railways in 1961 carried 18.7 million passengers (down 3.7% from 1960) and 153 million tons of revenue freight (down 3.4%).

Commercial Aviation.—The two chief scheduled operators are the Trans-Canada Air Lines and the Canadian Pacific Air Lines. Revenue passengers carried by Canadian air carriers in 1961 totaled 4,950,897 (up 4.7% from 1960); revenue freight, 228,077,376 pounds (down 4.2%). (See also AERONAUTICS.)

Shipping.—The aggregate number of vessels on the Canadian shipping registry at the end of 1960 was 20,381, with a gross tonnage of 1,903,300. Canadian vessels transported 37.4 million tons of cargo through Canadian canals in 1961; vessel transits through the St. Lawrence Seaway numbered 2,328 in the same year. The volume of freight handled at Canadian ports in 1961 rose by 7.8% to 184,711,700 tons (92,916,200 in foreign and 91,795,500 in coastwise service).

Communications.—In 1960, about 83% of all households had telephones, and the total number of telephones was 5,728,167 (up 5.3% from 1959). Over 90% of Canadian homes had television sets in 1961, and 98% had radios. In 1961 there were 21 Canadian Broadcasting Corporation and 78 privately owned television transmitters in operation, and 36 CBC and 196 privately owned radio stations. Daily newspapers in 1960 numbered 113 (91 in English and 12 in French), with a total circulation exceeding 4 million. Post offices in operation in 1960 numbered 11,421. (See also MAGAZINES; NEWSPAPERS; RADIO AND TELEVISION.)

(For further references, see the Index entry, *Canada.*)

W. R. F.

THE YEAR 1962 IN CANADA

Canada in 1962 enjoyed a continuation of the general prosperity which has been her lot since the end of World War II. Yet the general election in June revealed that Canadian voters felt a confusion and uneasiness about their political leadership which led to their refusing a majority support to any party. Coinciding in time with the election was a crisis in the country's foreign exchange position which compelled drastic action by the government, but which disappeared with astonishing rapidity. The reasons for the exchange crisis, as well as its disappearance and general significance, apparently remained incomprehensible to most Canadians. The Cuban crisis in October left Canadians with the feeling that they had not measured up to their best. At the end of the year, with a minority government in office, Canadians expected to have another general election sometime in the new year. There were few signs, however, that the electorate was any clearer in its mind about national issues than it had been when it voted on June 18, 1962.

Queen Mother Elizabeth, on a 10-day visit to Canada, chats with choir members after Montreal church services, June 10.

UPI

Federal Political Developments.—The last session of the 24th Parliament of Canada opened on January 18 and closed on April 21 with a dissolution after the government's announcement that a general election would be held on June 18. It was a pre-election session in the worst sense of the term, all three parties (Conservative, Liberal, and Co-operative Commonwealth Federation) being chiefly intent on an election campaign rather than on a legislative program. Although the government had an overwhelming majority, Prime Minister John G. Diefenbaker (q.v.) eventually announced the dissolution on the ground that opposition obstruction was preventing the House of Commons from getting on with business. The main achievement was an increase in the old-age pension to $65 a month.

On April 10 the minister of finance, Donald M. Fleming (q.v.), introduced his annual budget. His speech was a review of the benefits which the government had bestowed upon individuals, provinces, and regional groups since 1957, but it contained few new provisions. His survey of economic conditions was optimistic, and he forecast an increase of 7% in the gross national product for the fiscal year. He estimated a budget deficit of $745 million, the sixth successive deficit under the Conservative government.

In the election campaign, Canadian newspapers reported that Prime Minister Diefenbaker did not appear so effective a campaigner as in the past. The Liberals were much better organized and financed than in 1958, and the New Democratic Party was expected to do well under its vigorous new leader, T. C. Douglas, former premier of Saskatchewan. The election results were a spectacular upset and indicated some new trends in Canadian politics.

The Conservative Party, which in 1958 had won 54% of the votes and had amassed a record 208 seats in the House of Commons, received only 37.31% of the votes and 116 House seats in 1962. The Liberals, the main opposition party, obtained 37.36% of the votes and 100 seats. The New Democratic Party won 13.48% of the votes and 19 seats, although its leader and all of its other candidates in Saskatchewan were defeated. (T. C. Douglas later obtained a seat in the House from British Columbia.) Social Credit, owing to its unexpected success in some of the rural areas of Quebec, collected 11.66% of the votes and 30 seats. Only four of the party's seats were obtained in Alberta and British Columbia, both of which were governed by Social Credit ministries.

The Conservatives lost the hold which they apparently had won in Quebec in 1958, and with it all hope of forming a government which would represent all ethnic groups. Under the flamboyant leadership of Real Caouette, Social Credit made an effective appeal in the more backward rural areas of northern and eastern Quebec, and thereby defeated the hopes of the Liberals that the French province would once again attach itself to the Liberal Party.

In the country as a whole, the Liberals were most successful in urban areas, winning 53 of their

100 seats in cities and suburbs. The Conservatives were most successful in rural areas, where they won 69 of their 116 seats. The prairie provinces remained overwhelmingly Conservative, while Ontario began to swing toward the Liberals. In four great cities of Canada—Montreal, Toronto, Vancouver, and Winnipeg—the Liberals won 37 seats, the New Democratic Party 10, and the Conservatives only 7. It seemed clear that electoral redistribution, which was due after the census of 1961 and which would give more representation to the urban areas, would have helped both the Liberals and New Democrats at the expense of the Conservatives. Trade union support might increase the New Democratic Party's representation in another election, but its hopes of becoming a genuinely national party were frustrated by its failure to make any impact in Quebec. Generally speaking, however, none of the parties could claim as the result of this election to be genuinely national in the sense that they could win solid support in all sections of the country.

Prime Minister Diefenbaker on August 9 reorganized his cabinet. He appointed as minister without portfolio Malcolm Wallace McCutcheon, a leading Toronto businessman who was expected to play an important part in the making of the economic policy of the new government. Donald M. Fleming was transferred from the Ministry of Finance to that of Justice, and was succeeded as finance minister by George C. Nowlan of Nova Scotia. E. Davie Fulton of British Columbia, who had not got on well with the prime minister, was demoted from minister of justice and attorney general to public works minister, and shortly thereafter he left federal politics to take up the leadership of the Conservative Party in British Columbia.

The 25th Parliament opened its first session on September 27. In the new Parliament most of the time before the Christmas recess was taken up by intricate party maneuvers to determine whether the two minor parties would support the Conservatives in office or would vote them out for the benefit of the Liberals. Neither the New Democratic Party nor Social Credit wanted an immediate election which would result from a vote of no confidence in the government, and so the Diefenbaker government remained in office. It provided for the creation of a National Economic Development Council and an Atlantic Development Board, thereby committing itself to the concept of national planning. By the end of 1962, however, there was little sign of what plans the government had beyond this for dealing with the vulnerable international economic position of the country.

Provincial Political Developments.—The most exciting events in provincial politics centered in Saskatchewan and Quebec. In the prairie province the Co-operative Commonwealth Federation, elected in 1960 on a program that promised to introduce a complete medical care scheme, passed a bill for this purpose which was to come into effect on July 1, 1962. The organized doctors in the province bitterly opposed the measure, and on July 1 they closed their offices. The extremely confused conflict was ended on July 24 after mutual agreement had been reached on a modified plan suggested by Lord Taylor, an eminent surgeon from Great Britain who acted as a mediator. The doctors were a minority who refused to obey a law which had been approved after due democratic processes; on the other hand, they claimed that their professional freedom was being infringed by the law. The conflict in Saskatchewan was recognized as an initial trial development affecting the decisions about public medical care in the other provinces. (See also SASKATCHEWAN).

CANADIAN GOVERNMENT TRAVEL BUREAU

Section of Trans-Canada Highway opened in 1962 traverses rugged beauty of Glacier National Park, British Columbia.

In Quebec the Liberal government of Jean Lesage, which had been elected in 1960, brought on a fresh election to give itself a mandate for nationalizing all hydroelectric corporations in the province. The policy was advocated on the ground that only in this way could the people of the province obtain control of their own economic destinies, which were allegedly in the hands of non-French business interests. Daniel Johnson, the leader of the Union Nationale opposition, found himself in a weak position on this issue, since the whole appeal of the Union Nationale Party under its late leader, Maurice Duplessis, had been based on French-Canadian nationalism. The Lesage government was returned with an increased majority on November 14. This success of the Liberals in making themselves the leaders of Quebec nationalism on a program of advanced social and economic reform helped the federal Liberal Party in its campaign to become once again the party of Quebec in federal politics.

In three other provinces there were provincial elections toward the end of the year. The voters returned the Liberal government of Joseph R. Smallwood in Newfoundland, the Conservative government of Walter R. Shaw in Prince Edward Island, and the Conservative government of Dufferin Roblin in Manitoba. (See also the articles on these provinces.)

Federal Financial Policies.—In 1961, Finance Minister Fleming had announced his intention of manipulating the exchange value of the Canadian dollar downward, so as to encourage exports and discourage imports, and thus bring about a better trade balance. By the early months of 1962 the value of the dollar was moving downward so rapidly because of a falling-off of foreign investments in Canada that the government had to take steps to counter the decline. On May 2, in the middle of the election campaign, the exchange rate of the Canadian dollar was set at 92.5 cents in terms of the U.S. dollar. The government on June 24 announced that it had borrowed more than $1 billion from Great Britain, the United States, and the International Monetary Fund in order to be able to hold the dollar at this level. It also imposed temporary surtaxes of from 5% to 15% on a long list of imports.

Informed observers had warned for months that the country was heading for trouble in its exchange position, but the government had always denied any cause for worry until the election was well out of the way. With this outside help toward establishing financial stability, international confidence in Canada's economic position apparently revived quickly, foreign investments poured into the country again, and by the end of the year stability seemed secure. The question remained, however, as to the wisdom of the government's handling of economic and fiscal policies which had made possible such a crisis. (See also FOREIGN INVESTMENTS; INTERNATIONAL TRADE.)

Commonwealth Relations.—The determination of the British government to join the European Economic Community had raised insistent vocal protests from members of the Canadian government in 1961. At the conference of Commonwealth prime ministers in London in September 1962, the conflict in policy between the British government on one side and most of the other Commonwealth governments on the other, came into the open. Previous conferences had been in the nature of quiet and confidential discussions among friendly governments, but this one was carried on practically as a public and very impolite debate. The British were accused of deserting the Commonwealth for Europe, and replied that they had a perfect right to pursue their own interests as they saw them. The Canadians seemed to regard the Commonwealth as primarily an instrument for their own economic interests. The conflict had not been resolved by the end of 1962. (See also COMMONWEALTH OF NATIONS; GREAT BRITAIN; EUROPE.)

Defense Policies.—Canada's defense commitments for the protection of the North American continent, as arranged with the United States through the North American Air Defense Command, and for the protection of western Europe through NATO involved the use of nuclear weapons. The decision to adopt these weapons had been steadily delayed by the Diefenbaker government. It was generally understood that Howard C. Green (q.v.), secretary of state for external affairs, was opposed to Canada's having nuclear arms; that Douglas S. Harkness, minister of national defense, was for nuclear arms; and that Prime Minister Diefenbaker had thrown his support behind the former.

When the Cuban crisis broke out in October, the inability of Canada to play an effective role in continental defense became embarrassing. Canada was not a member of the Organization of American States and had been persistently trading with Cuba against the wishes of the United States. The government hesitated for four days before making (on October 25) a very definite public statement aligning itself with the United States. The crisis ended quickly, but the uncertainty about Canada's defense policy remained.

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CANADIAN LITERATURE

Canadian writing in 1962 exhibited few new or genuinely exciting achievements. Beginners produced the most interesting fiction, whereas the most notable poetry was provided by poets of established reputation. Achievements in drama and criticism were unspectacular, but important work appeared in biography, history. and lexicography.

Fiction.—After a long absence, Hugh Garner returned from journalism to fiction with *The Silence on the Shore,* portraying boarding-house life in his favorite big city setting. W. O. Mitchell, whose popular *Jake and the Kid* sketches (1961) won a Leacock Medal for humor, also used his favorite setting, an Alberta country town, for *The Kite.* Some first novels, on the other hand, were unusual. *The Jokeman,* by Leo Vaughan, is an amusingly written novel set in England and Iran about an improbable picaresque hero blessed with both wit and an ironic affection for the errant human race. George Elliott's *The Kissing Man* exhibits a strangely compelling blend of the real and the other-worldly in portraying a rural Ontario township. *Not For Every Eye* is the first appearance in English translation of Gérard Bessette. It is a wry satire on small-town conformism in Quebec. Another interesting first novel was *Royal Murdoch,* by Robert Harlow. A highly promising first effort by Hugh Hood, *Flying a Red Kite,* was the only significant collection of short stories.

Drama and Poetry.—In drama, there were only two books of note. John Coulter's *Riel* is an ambitious but not very successful play built around the complex and controversial leader of the Northwest Rebellions. The poet James Reaney made his debut as dramatist with *The Killdeer and Other Plays,* which mixes the macabre and farcical, the familiar and fantastic, in Reaney's characteristic manner.

In poetry, the year's achievement was outstanding. Earle Birney's first book of new poems in ten years proved worth waiting for. Although scenes and experiences in Japan, Siam, India, and especially Mexico bulk larger than those in Canada, the point of view in *Ice Cod Bell or Stone* is nonetheless Canadian; and the poetry displays a higher craftsmanship combined with a more varied sensibility. By contrast, A. J. M. Smith's *Collected Poems* merely consolidated his past achievements; yet it is a memorable year when the 100 choicest poems of so skilled a poet as Smith are gathered together. Raymond Souster's *Place of Meeting* (1961) had an equally pleasing successor in *A Local Pride.* Other established poets who contributed to the year's harvest were James Reaney (*Twelve Letters to a Small Town*), Roy Daniells (*Chequered Shade*), and Phyllis Webb (*The Sea Is Also a Garden*).

Of the younger poets, most of the best were ably represented in *Poetry 62,* edited by Elias Mandel and Jean Pilon. Another anthology, containing poetry as well as short stories and articles, was *The First Five Years,* in which Robert Weaver offered the best contributions by some 40 authors to the quarterly *Tamarack Review* (founded in 1956).

Autobiography and Biography.—Among the more interesting reminiscences was *The Migration of Skivins,* an engagingly humorous account of a city man pioneering a prairie farm in the 1890's, written and charmingly illustrated by John Francis Wilson. The art historian Donald W. Buchanan recreated a country boyhood in *A Nostalgic View of Canada,* while John Glassco's *The Journals of St. Denis Garneau* threw new light on a fascinating personality in French-Canadian literature.

Biographers rescued from neglect several colorful lives. W. H. Graham's *The Tiger of Canada West* portrayed William Dunlop, settlement agent for the Canada Company; Marjorie W. Campbell's *McGillivray—Lord of the Northwest* dealt with the North West Company fur trader; and *Cuthbert Grant of Granttown,* by M. A. Macleod and W. L. Morton, presented the Manitoba fur trader and colonizer. George Whalley's *The Legend of*

John Hornby recreated the more recent life of an extraordinary man who was so fascinated by the risks and challenges of the Canadian North that he repeatedly subjected himself to the most extreme tests. More orthodox in subject and treatment was *The Fall and Rise of Mackenzie King: 1911–1919,* in which F. A. McGregor depicts King's single-minded pursuit of his goal, leadership of the Liberal Party.

The first four volumes of *The Gallery of Canadian Art,* edited by Alan Jarvis, inaugurated a series of well-illustrated studies of the work of individual artists.

History.—As the 1967 centennial of Canadian confederation approaches, the number of studies keyed to that occasion will steadily increase. In *The Life and Times of Confederation, 1864–1867,* P. B. Waite has sifted the publications of a century ago to show how the idea of confederation appeared to persons of widely divergent views. W. Stewart MacNutt's *New Brunswick, 1784–1867* also tied in neatly. Gerald M. Craig's *Upper Canada, The Formative Years, 1784–1841,* though the first to be published, is actually volume 7 of the projected 16-volume history of Canada in the Canadian Centenary Series. More narrowly localized are Edith G. Firth's *The Town of York, 1793–1815,* a vivid presentation of early Toronto, and *Vancouver, Sights and Insights,* by George Kuthan and Donald Stainsby, a combined portrait in line drawings and words.

Aspects of recent history were the concern of W. A. Riddell's *Documents on Canadian Foreign Policy 1917–1939* and Terence Robertson's *The Shame and the Glory—Dieppe.*

Other Nonfiction.—The only significant book of literary criticism was *Masques of Poetry,* edited by A. J. M. Smith. This is a collection of some twelve essays by as many critics of Canadian verse, and is a companion volume to the same editor's *Masques of Fiction* (1961). Though both books provide a fine sampling of Canadian criticism, the editor's modesty seriously weakened them: not one of his own influential essays was included.

In sociology and economics, S. D. Clark's *The Developing Canadian Community,* an analysis of the social forces operating in Canada, was supplemented by *The Public Purse, a Study in Canadian Democracy* by Norman Ward and *Labour Policy and Labour Economics in Canada* by H. D. Woods and Sylvia Ostry. Much wider in its implications is Marshall McLuhan's *The Gutenberg Galaxy: The Making of Typographic Man,* which presents the controversial thesis that whereas in the past Western society has been shaped by forces released by the development of printing, the future must be utterly different because of the transformations now being wrought by electronic communication.

Communication within Canada itself was a principal editorial concern of *The Canadian Dictionary, English-French, French-English,* the first work of its kind specifically designed for the nation's two official languages. Its special feature is the attempt to designate and define those words, phrases, and concepts in each language considered uniquely Canadian. A different group of lexicographers, also concerned with Canadian usages, but only in English, issued *The Beginning Dictionary,* the first of a projected four-volume set with the general title *The Dictionary of Canadian English.*

Perhaps the most unexpected offering of the year was *Wild Plums in Brandy* by Sylvia Boorman. This unique cookbook provides a collection of recipes enabling outdoorsmen and gourmets to create tempting fare from Canada's wild game, fish, fowl, and plants. The most predictable offering, on the other hand, was probably the seasonal volume of Eric Nicol's attractive humor, announced in 1962 under the title *A Herd of Yaks.* The most beautiful book was Roloff Beny's *A Time of Gods,* a magnificently designed and produced blend of ancient poetry with modern photography and scholarship. The poetry is Homer's *Odyssey,* in Chapman's translation, imaginatively used to complement superb photographs of Greek landscape, architecture, sculpture, and the rest. Informative notes help to interpret the living meanings in what was recorded by poet and camera.

Children's Books.—The best of the many books for children was unquestionably *Four Ages of Man: the Classical Myths,* by the poet Jay Macpherson. Here the most enduring of the ancient tales are imaginatively retold in a fresh poetic prose, and unobtrusively accompanied by sufficient supplementary material to make the book authoritative as well as entertaining. *The Winkle Pickers* by Bill Straiton offered delightful nonsense rhymes brilliantly illustrated by the Vancouver cartoonist Len Norris. *The Island of Fish in the Trees* by Eva-Lis Wuorio possessed the sort of charm that is memorable but indescribable. Also worthwhile were Roderick Haig-Brown's *Fur and Gold* and Margaret Mason Shaw's *The Bush Pilots.*

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French-Canadian Literature

Some of the most significant books published in 1962 by Canadian authors writing in French are noted in the following article.

Fiction.—The two best novels of 1962 were also among the shortest. *Laure Clouet,* by Adrienne Choquette, is the portrait of an austere and retiring spinster; her simple life is troubled by the visit of a young couple, whose love brings her the revelation of the flesh. The other, *L'aquarium,* by the young poet Jacques Godbout, is a satire about a small group of European and American technical advisers to an African country, whose natives bore them. Gabrielle Roy's novel, *La montagne secrète,* is the unconvincing story of a Canadian painter in quest of ideal beauty, first in the Arctic, then in Paris.

Other novels of merit include *Quand j'aurai payé ton visage* (the eternal triangle) by Claire Martin; *Les commettants de Caridad* and *Amour au goût de mer* by the prolific Yves Thériault; *L'or des Indes* by Pierre Gélinas; *Le poids de Dieu* (about a priest) by Gilles Marcotte; and *Délivrez-nous du mal* by the beatnik Claude Jasmin.

The best short-story collections are by Jacques Ferron, *Cotnoir* and *Contes du pays incertain,* whose dark naturalism contrasts with his fanciful *Cécile Chabot el le cheval vert.*

Poetry.—Gilles Hénault collected in book form his best recent poems, including the forceful *Voyage au pays de mémoire,* under the title *Sémaphore.* Also worthy of mention are Jean-Paul Filion's *Demain les herbes rouges;* François Hertel's *Poèmes européens;* Jean Ménard's *Plages;* and Suzanne Paradis' *La chasse aux autres.*

Nonfiction.—Three remarkable collections of essays appeared in 1962. Jean Le Moyne collected in *Convergences* (his first book) his best essays, which were scattered among 25 years of periodicals; they show deep religious insight and force. The painter Jean Simard, in *Répertoire,* which is in the form of a diary, comments on art and literature and their place in society. The younger writer Gilles Marcotte collected in *Une littérature qui se fait* his best critical essays on French-Canadian authors. Two ironical books of essays are *Le scandale est nécessaire,* by Pierre Baillargeon, and *Journal philosophique et littéraire,* by François Hertel. The most significant historical works are *Témoignages d'hier* by the diplomat Jean Bruchési, and Julienne Barnard's *Mémoires Chapais;* the papers of Jean Charles Chapais, Marcel Gagnon's *La vie orageuse d'Olivar Asselin* and André Laurendeau's *La crise de la conscription* are also noteworthy.

Guy Sylvestre,
Associate Parliamentary Librarian,
Library of Parliament.

CANAL ZONE. See Panama Canal.

CANALS

Major improvement projects continued in 1962 on the Panama and Suez canals, and considerable canal construction moved forward in the United States, Pakistan, and the Soviet Union.

Panama Canal.—Important progress was made in 1962 toward widening the treacherous man-made Gaillard Cut section of the Panama Canal to speed the passage of ships. A $7.5 million contract for widening 1½ miles of the 8-mile cut from 300 to 500 feet was completed ahead of schedule. This narrow passage, subject to landslides, has impeded traffic since the canal's early days. The work completed in 1962 involved blasting and excavating over 10 million cubic yards of earth and rock.

In the year ending June 30, 1962, a record number of toll-paying ships used the Panama Canal. Over 11,000 vessels, carrying 67.6 million long tons of cargo, were lifted from ocean to ocean and paid fees of $58.4 million. (See also PANAMA CANAL AND CANAL ZONE.)

Suez Canal.—A record revenue of more than $150 million was registered by the Suez Canal in 1962, compared with $103.7 million in 1959. Tonnage was 185.3 million in 1960, compared with 115.7 million in 1955. To exploit this traffic increase, the United Arab Republic's Suez Canal Authority in 1962 had nearly completed the first stage of its $185 million improvement program, called the Nasser Project but actually initiated by the old Suez Canal Company. A widening contract awarded in February 1962 involves removal of 2.2 million cubic yards of sand and silt in the vicinity of a railroad bridge under construction. Contractors working in other stretches had removed about 13.7 million cubic yards of material above the canal's water line and about 110 million cubic yards below the water line. According to the authority, vessels drawing 37 feet can now transit the canal, compared with a 34-foot 6-inch draft in 1956.

Mississippi River–Gulf Outlet.—Second-stage work on New Orleans' shipping shortcut to the Gulf of Mexico—a 76-mile tidewater ship channel—was virtually complete by late 1962. The channel will cut 40 miles off the present river route to the Gulf. In 1962 the channel was 36 feet deep and 250 feet wide. The final stage of the work, to be completed in 1967, will widen the waterway to 500 feet and provide clear sailing for oceangoing shipping.

West Pakistan.—Major canal construction got under way in 1962 on the huge Indus Basin Project. Work started on a $25 million contract to construct one irrigation canal and relocate another. The new one, the Trimmu-Sidhnai Canal, will run 44 miles from Trimmu on the Chenab River to Sidhnai on the Ravi River. The canal will be 250 feet wide at the bottom and 11 feet deep, and will have a capacity of 11,000 cubic feet of water per second. A group of Italian firms has begun work on another 59-mile section, the $42 million Sidhnai-Mailsi Canal, which links the Ravi River with the Sutlej River running south from the Trimmu-Sidhnai link.

Soviet Union.—The USSR in May 1962 announced completion of the 500-mile-long Kara Kum Canal in the central Asian desert. The new waterway, 100 to 150 feet wide, taps the Amu Darya, a major stream in central Asia north of Afghanistan, and delivers irrigation water to Ashkhabad, capital of the Turkmen Republic, 90% of which is desert. The canal is expected to increase by 50% the amount of land under irrigation, mostly for cotton production. The Soviet Union also announced that work had started on a canal system to link the Baltic Sea with the Black Sea. The system will involve the Dnieper, Pripyat, and Neman rivers, and will include a 43-mile-long connecting canal. The total length of the navigation link will be about 1,500 miles.

Yugoslavia.—A $100 million multipurpose water project in Yugoslavia was scheduled for completion in 1966. The project involves a 356-mile network of canals and 13 navigation locks, and will provide irrigation for 360,000 acres as well as flood protection and drainage for 1.9 million acres.

(See also INLAND WATERWAYS and the Index entry, *Canals.*)

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CANARY ISLANDS. See SPAIN.

CANCER

The increasing activity in cancer research throughout the world was clear in the attendance of 5,000 scientists at the 8th International Cancer Congress, which was held in Moscow, July 22–28, 1962. Support for research and training in the field of cancer remains high in the United States. For the fiscal year 1962–63, Congress appropriated $63,280,000 for research, $13,470,000 for training, and $4,788,000 for fellowships; and the American Cancer Society has allocated 34% of its annual budget of over $36,000,000 for research.

Incidence.—The incidence of gastric cancer continues to decrease in the United States. In some clinics the number of cases seen has decreased almost 50% in the past 10 years. Meanwhile, lung cancer becomes more common; in Great Britain, from 1956 to 1960 it has increased from 72 to 86 per 100,000 persons, and lung cancer is responsible for 35% of all cancer deaths in males in that country. A report of the British Royal College of Physicians stated that cigarette smoking is a cause of lung cancer, and the British government is attempting to discourage smoking, particularly among the young. The United States government also has undertaken an investigation into smoking and lung cancer. (See also HEART DISEASE.)

A recently recognized form of cancer, a lymphoma in children, has been described in equatorial Africa. While it often presents itself as a tumor of the jaw, it is a generalized disease that is fatal within a few months. Because of its peculiar geographical distribution, the possibility that it is of infectious origin, possibly due to a virus transmitted by an insect vector, is under study.

In studies on Enovid, a hormonal antifertility preparation (see ENDOCRINOLOGY), it was noted that the expected incidence of carcinoma of the cervix of the uterus was markedly reduced in the women who have been receiving the preparation up to six years. If this preliminary observation is confirmed, it may be possible to administer appropriate hormones prophylactically to prevent the development of cancers in organs influenced by sex hormones, such as the breast and uterus. Techniques to improve the ability to diagnose early breast cancer are urgently needed. Two methods now under study are X-ray examination of the breast (mammography) and infrared thermometry to detect abnormal nodules.

Carcinogenic Viruses.—The viral etiology of cancer gains strong support in animal studies. Two strains of adenovirus, types 12 and 18, which produce relatively minor infections in man, were found by J. J. Trentin and R. J. Huebner, respectively, to produce tumors in newborn hamsters. Of perhaps greater importance, a simian virus (SV–40) was shown by Bernice E. Eddy to induce malignant tumors in hamsters and to cause nuclear changes in normal human cells exposed to the virus in tissue culture. SV–40 has contaminated some vaccines grown on monkey kidney tissue, such as polio vaccine, and careful efforts are being made to eliminate it. The fact remains that there are many viruses which are carcinogenic in some laboratory animals, although their relation to human cancer remains unclear.

Prevention and Treatment.—Various new procedures are under study to prevent cancer or to improve the treatment of established cancer. Dr. Bertil Bjorklund of Stockholm has vaccinated patients with cancer tissue, on the premise that the injected cancer tissue has a specific antigen which may immunize the patient against subsequent de-

velopment of the disease. This study has received wide publicity, although it remains a very questionable procedure.

In lung cancer, the preoperative use of radiation to the diseased area may improve the resectability and 5-year "cure" of the disease. The hope is that the "cure rate" may be raised from the present level of less than 5% to 20%. Hydrogen peroxide has been infused into the arterial supply to tumors in man in order to increase the local oxygenation of the tissue and thereby improve the local effects of radiotherapy. This combined approach has been the subject of a preliminary experimental report by John T. Mallams, George A. Balla, and James W. Finney of Dallas.

The depression of blood platelet levels with bleeding manifestations and low leukocyte counts resulting in infection are complications that occur in some patients with neoplastic disease, principally with leukemia. Methods have been developed to produce platelet concentrates from blood, and these are used to prevent bleeding. White cells have been obtained from patients with chronic myelocytic leukemia who have high leukocyte counts and transfused into patients with low leukocyte counts to treat severe infections.

Chemotherapy.—The systematic search for drugs effective against cancer continues, but no major therapeutic advances were recorded during 1962. The chemical structures of the alkaloids of *Vinca rosea*, vinblastine, and leurocristine have been reported by chemists of Eli Lilly & Company. Leurocristine has induced brief remissions in acute leukemia in children, and is a useful addition to the other drugs temporarily effective for this condition. The chemical structure of Mitomycin C, an anticancer antibiotic originally discovered in Japan, and several related chemicals has been elucidated by chemists of American Cyanamid Company. Clinical studies with Mitomycin C have been conducted principally in Japan and the United States, and its practical role in the treatment of cancer is uncertain. Other drugs undergoing early clinical trials against various forms of cancer include a number of terephthalanilides, hydroxyurea, hadacidin, and methylglyoxal *bis* (guanyl hydrazone). Further studies with progestational hormones such as Delalutin have shown that they are temporarily effective in about 20% of patients with metastatic carcinoma of the endometrium.

(For further references, see the Index entry, *Cancer.*)

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CANDY. See Confectionery.

CANNING INDUSTRY

One of the major areas of research in the canning industry is the replacement of expensive hand-picking operations by mechanical picking. By the end of 1962, mechanical harvesting techniques had cut in half the cost of picking red sour cherries, prunes for drying, and high-bush blueberries, and further improvements in the methods were awaited. Engineers were trying to perfect mechanical techniques for picking apples, clingstone peaches, and apricots. One of the major unsolved problems remained the mechanical harvesting of tomatoes.

The factors involved in mechanical picking involve the position of fruits near base limbs, rather than on long flexible limbs, and simultaneous ripening of all the fruits (a problem which involves genetic characteristics; for tomatoes, no solution to this problem had been devised). Other considerations are damage to the bark of the trees from limb attachment devices, and bruising resulting from the collecting arrangements.

Edward F. Kohman,
Research Chemist and Consultant.

U.S. PRODUCTION OF CANNED FRUITS AND VEGETABLES

Product	Number of Cases 1960	1961
Fruits:		
Apples[1,2]	3,325,982	3,985,869
Applesauce[2]	17,570,622	18,093,370
Apricots	7,443,362	5,797,501
Blackberries	286,847	284,916
Blueberries	505,331	553,250
Cherries (red, pitted)	2,218,860	3,138,522
Cherries (sweet)	980,528	1,704,489
Citrus salad (orange and grapefruit)[2]	546,313	378,483
Cranberry sauce	4,243,666	6,547,693
Figs	658,165	586,590
Fruit cocktail	18,135,249	19,236,300
Fruits (mixed California pack)	390,526	442,820
Fruits for salad (California pack)	1,101,058	1,042,143
Gooseberries	43,165	42,156
Grapefruit sections[3]	4,374,917	4,766,088
Olives (ripe)[2]	2,869,689	2,050,000[5]
Peaches	34,388,829	34,953,902
Peaches (spiced)	847,831	648,497
Pears	10,671,452	11,360,760
Pineapple[2]	20,946,766	20,978,425
Plums (purple)	438,348	1,877,603
Plums (not purple)	46,103	80,903
Raspberries (black)	181,503	67,473
Raspberries (red)	88,874	64,570
Strawberries	70,719	60,324
Other berries (boysenberries, loganberries, youngberries)	121,374	131,339
Juices:		
Apple juice[2]	6,288,541	6,973,649
Grapefruit juice[2]	9,862,346	9,565,722
Grapefruit and orange juice (blended)[3]	3,765,751	2,643,635
Orange juice[3]	18,022,064	13,169,336
Pineapple juice[2]	12,950,725	13,508,064
Tangerine juice[2]	190,623	452,331
Tomato juice	29,936,714	28,844,786
Vegetables:		
Asparagus (green)	5,586,074	5,273,121
Asparagus (white)	2,140,776	2,786,556
Beans (green)	25,661,331	31,392,702
Beans (wax)	3,550,110	3,666,482
Beans (fresh lima)	3,445,373	3,853,863
Beets	7,895,960	9,377,117
Carrots	3,961,341	3,097,633
Carrots and peas (mixed)	1,712,229	1,636,214
Chili sauce	2,567,442	2,489,210
Corn	34,435,087	44,414,688
Greens (other than spinach)	2,473,612	2,032,427
Mixed vegetables	2,376,485	2,182,876
Okra	622,176	512,645
Peas (black-eyed, etc.)	1,973,222	2,099,563
Peas (green)	26,822,384	29,869,942
Pimientos	2,598,033	3,488,716
Potatoes (sweet)	4,837,995	5,835,727
Potatoes (white)	4,010,203	4,301,601
Pumpkin and squash	3,501,165	3,019,350
Sauerkraut	6,280,492	7,481,655
Spinach	6,338,336	6,212,750
Succotash	344,627	326,561
Tomatoes	24,558,494	27,228,732
Tomato catsup[4]	33,817,510	33,705,501
Tomato purée	3,436,329	4,408,286

[1] Six No. 10 cans per case. [2] Packing seasons 1960–61 and 1961–62. [3] Packing seasons 1959–60 and 1960–61. [4] Cases may be of bottles or cans. [5] Estimated.

CANOEING. See Sports, Games, and Shows.
CAPE VERDE ISLANDS. See Portuguese Territories.
CAROLINE ISLANDS. See Pacific Islands.
CARPENTER, Malcolm Scott. See Space Flight.
CARROTS. See Vegetables.
CARTOGRAPHY. See Index entry.

CASTRO, Fidel

Cuban premier (full name: Fidel Castro Ruz): b. Mayarí, Oriente Province, Cuba, Aug. 13, 1926.

As the great powers united against Castro in late 1962 to force his acceptance of their proposed agreement to end the Cuban crisis, the "maximum leader" of the Cuban revolution was the subject of intense speculation throughout the world. Despite the most careful scrutiny of his remarkable history, however, the questions about him persisted—how old and how deep-seated were his Marxist-Leninist convictions, and to what extent was he using or being used by the Sino-Soviet bloc.

WIDE WORLD

Cuban Premier Castro (left) and President Dorticós (right) welcome Algerian Premier Ben Bella to Havana, October 17.

The son of a sugar plantation owner, Fidel Castro received a doctor of law degree in 1950 from the University of Havana. On July 26, 1953, he led an abortive attack on a government post in Santiago de Cuba and was imprisoned until amnesty was declared in 1954. In Mexico, in 1955, he organized another strike against President Fulgencio Batista's government, and on Dec. 2, 1956, he returned to Cuba with about 80 followers, all but 11 of whom were killed or captured. From his headquarters in the Sierra Maestra, in Oriente Province, he gradually expanded a guerrilla war against the government. His 26th of July Movement overthrew the regime of President Batista and seized power on Jan. 1, 1959. Since then, Castro's nationalization of industry, his agrarian and educational reforms, and his attacks on religion have followed the Communist pattern, while in foreign trade and foreign relations he has brought Cuba closer to the Sino-Soviet orbit.

On Jan. 2, 1962, Castro reiterated his declaration, initially made one month earlier, that he was a Marxist-Leninist and had been for years. Addressing young Cubans on March 14, he urged a more intense Communist spirit in them and promised them a future in a Communist society. On March 26, however, he delivered a fierce attack against one of the principal Communists in the government, Anibal Escalante, who was dismissed the next day from his position in the directorate of the all-powerful Integrated Revolutionary Organizations (ORI). Castro's speech, which criticized the "sectarianism" of militant Communists, encouraged some observers to infer the existence of a breach between Castro and old-line Cuban Communists. Others interpreted Escalante's ouster as a party purge, and noted the continuance in office of such Communist stalwarts as Blas Roca and Carlos Rafael Rodriguez, who on February 14 had replaced Castro as president of the agency controlling Cuban agriculture.

Castro was plagued by agricultural and other economic difficulties throughout 1962. In a number of the long, histrionic speeches for which he is famous, he repeatedly imputed responsibility for Cuban troubles to the United States. On February 4 he accused the United States of "economic aggression" in maintaining the embargo on Cuban trade that was declared on Oct. 19, 1960; and on March 12, when he announced an extension of rationing, he cited the embargo as the reason for it. His warnings to the Cubans of imminent invasion attempts became more insistent as the year progressed, as he apparently tried to exploit anti-American feeling to unify his people and distract them from their hardships. Some authorities attributed the installation of Soviet missile bases on Cuban soil chiefly to Castro's need for them to implement his campaign against the United States.

Responding on October 23 to the announcement of the United States quarantine of Cuba, Castro called the quarantine a violation of Cuba's sovereign rights, and announced his adamant refusal to allow United Nations inspectors into Cuba. On October 28, in his first official reaction to the agreement reached by President Kennedy and Premier Khrushchev, Castro demanded that the United States relinquish its naval base at Guantanamo as part of its assurance that it would not invade Cuba. He invited UN Acting Secretary General U Thant to Havana to discuss the inspection of Cuban missile sites (which had been pledged by Khrushchev), but their meetings on October 30–31 failed to resolve the issue. It was taken up by Soviet First Deputy Premier Mikoyan, who after 24 days of discussions in Havana in November, finally secured Castro's agreement to return the Soviet jet bombers that he had earlier claimed as Cuban property. It was generally agreed that Castro had suffered an enormous loss of prestige as a result of the Soviet withdrawal of offensive weapons from Cuba, but he again reiterated his belief in communism after Mikoyan's departure.

(See also CUBA; INTER-AMERICAN AFFAIRS.)

CATHOLIC CHURCH. See RELIGION—*Catholicism;* ROMAN CATHOLIC CHURCH.

CATTLE. See the Index entry, *Livestock.*

CAULIFLOWER. See VEGETABLES.

CELEBREZZE, Anthony J. See biographical sketch under UNITED STATES.

CELERY. See VEGETABLES.

CEMENT. See MINERAL PRODUCTION.

CENSORSHIP. See Index entry.

CENSUS DATA, U.S.

The total population of the United States, excluding armed forces abroad, was estimated at 185,822,000 on July 1, 1962. There had been an increase of 6,498,000, or 3.6%, since April 1, 1960, the date of the latest census, and of 2,779,000, or 1.5%, since July 1, 1961. Including armed forces overseas, the population on July 1, 1962, was estimated at 186,591,000. (See Table 1.)

Characteristics of the Population.—Early in 1962 the Census Bureau published its first estimates by age, color, and sex since the 1960 census. Persons of high school age (14 to 17) increased more rapidly than any other age group between April 1960 and July 1961. Children under 5 and of elementary school age (5 to 13), who had increased so rapidly in the 1950–60 decade, had rates of growth less than the average for all ages between April 1960 and July 1961. During the same period, the number of persons aged 18 to 24 increased sharply, whereas the number in the 25 to 34 group declined slightly. The number of persons 35 to 64 grew somewhat more slowly than the population of all ages, while the group aged 65 and older increased faster than the population as a whole. (See Table 2.)

The nonwhite population continued to grow more rapidly than the white population, increasing by 3% between April 1960 and July 1961. The white population grew by 1.9% in the same period. In 1961, the nonwhite population numbered approximately 21 million, or 11.5% of the total.

The excess of females in the population continued, with 97.7 males per 100 females in 1961. In 1960 the sex ratio was 97.8 males per 100 females; in 1950 it was 99.3 to 100.

Household Characteristics.—In 15% of the estimated 54.7 million households in the United States in March 1962, the household head lived alone or with nonrelatives only. In 2 out of 3 of these 8.5 million households the heads were women. The 46.2 million households where there were relatives of the household head were composed of 40.3 million husband-wife households,

Table 1—POPULATION OF STATES, 1960 AND 1962[1]

	Population		Percent increase (+) or decrease (−) 1960–62
	July 1, 1962 (prov.)	April 1, 1960 (census)	
United States	185,822,000	179,323,175	+3.6
Alabama	3,358,000	3,266,740	+2.8
Alaska	246,000	226,167	+8.7
Arizona	1,509,000	1,302,161	+15.9
Arkansas	1,823,000	1,786,272	+2.1
California	16,970,000	15,717,204	+8.0
Colorado	1,907,000	1,753,947	+8.7
Connecticut	2,597,000	2,535,234	+2.4
Delaware	469,000	446,292	+5.2
District of Columbia	784,000	763,956	+2.6
Florida	5,459,000	4,951,560	+10.3
Georgia	4,100,000	3,943,116	+4.0
Hawaii	693,000	632,772	+9.5
Idaho	698,000	667,191	+4.6
Illinois	10,146,000	10,081,158	+.6
Indiana	4,715,000	4,662,498	+1.1
Iowa	2,777,000	2,757,537	+.7
Kansas	2,219,000	2,178,611	+1.8
Kentucky	3,082,000	3,038,156	+1.5
Louisiana	3,330,000	3,257,022	+2.2
Maine	999,000	969,265	+3.0
Maryland	3,191,000	3,100,689	+2.9
Massachusetts	5,161,000	5,148,578	+.2
Michigan	7,991,000	7,823,194	+2.1
Minnesota	3,475,000	3,413,864	+1.8
Mississippi	2,248,000	2,178,141	+3.2
Missouri	4,346,000	4,319,813	+.6
Montana	709,000	674,767	+5.1
Nebraska	1,484,000	1,411,330	+5.2
Nevada	335,000	285,278	+17.3
New Hampshire	632,000	606,921	+4.1
New Jersey	6,245,000	6,066,782	+2.9
New Mexico	1,020,000	951,023	+7.2
New York	17,402,000	16,782,304	+3.7
North Carolina	4,731,000	4,556,155	+3.8
North Dakota	642,000	632,446	+1.5
Ohio	10,097,000	9,706,397	+4.0
Oklahoma	2,448,000	2,328,284	+5.2
Oregon	1,864,000	1,768,687	+5.4
Pennsylvania	11,376,000	11,319,366	+.5
Rhode Island	865,000	859,488	+.7
South Carolina	2,436,000	2,382,594	+2.3
South Dakota	721,000	680,514	+5.9
Tennessee	3,634,000	3,567,089	+1.9
Texas	10,116,000	9,579,677	+5.6
Utah	967,000	890,627	+8.6
Vermont	390,000	389,881	..[2]
Virginia	4,177,000	3,966,949	+5.3
Washington	3,006,000	2,853,214	+5.4
West Virginia	1,773,000	1,860,421	−4.7
Wisconsin	4,092,000	3,951,777	+3.6
Wyoming	365,000	330,066	+10.7

[1] Figures include persons in the armed forces stationed in each state, and exclude members of the armed forces abroad. [2] Gain of less than 0.05 percent.

1.3 million other households with male head, and 4.6 million with female head.

Family Income.—The average (median) income of families in the United States was $5,700 in 1961, according to the results of a sample survey conducted in March 1962. The estimate for 1961 was about $120, or 2%, higher than in 1960. Consumer prices rose by about 1% during the same period. (See also INCOME.)

School Enrollment.—School enrollment early in the 1961–62 school year reached a new high of 47.7 million students. Of these, 2.3 million were in kindergartens, 30.7 million were in elementary schools (grades 1 to 8), 11.0 million were in high schools, and 3.7 million were in colleges and universities. (See also EDUCATION.)

Table 3—NUMBER OF U.S. FAMILIES BY 1961 FAMILY INCOME

Family income	Number of families
Total	46,341,000
Under $1,000	2,316,000
$1,000 to $1,999	3,573,000
$2,000 to $2,999	4,037,000
$3,000 to $3,999	4,387,000
$4,000 to $4,999	4,845,000
$5,000 to $5,999	5,439,000
$6,000 to $6,999	4,714,000
$7,000 to $7,999	4,231,000
$8,000 to $9,999	5,375,000
$10,000 to $14,999	5,219,000
$15,000 and over	2,205,000

Mobility of the Population.—About 35.5 million people had moved at least once in the March 1960–March 1961 period. This figure represented 20% of the population of 177.4 million people 1 year old and over in the United States in March 1961. Of these movers, about 24.3 million, or 13.7% of the total population 1 year old and over, moved within the same county; 5.5 million, or 3.1%, moved between counties in the same state; and 5.8 million, or 3.2%, moved between states.

Retail Trade.—The Census Bureau's monthly retail trade reports showed cumulative sales of all retail stores for the first six months of 1962 amounting to $111.4 billion, 8% above the $103.6 billion for the same period in 1961. (See also RETAIL STORE SALES.) In 1962 the Census Bureau began a new series of weekly reports measuring weekly sales of retail stores.

Wholesale Trade.—Monthly wholesale trade reports showed cumulative sales of merchant wholesalers for the first six months of 1962 totaling $71.0 billion, up 6% over sales in the same period of 1961. (See also WHOLESALE SELLING.)

Manufacturing.—During 1961 the value added by manufacture in the United States amounted to $163.8 billion, according to figures published in 1962, based on the 1961 Annual Survey of Manufactures. Total manufacturing employment for 1961 averaged 16.3 million employees. Capital expenditures for plant and equipment, excluding plants not yet in operation, amounted to $9.4 billion. (See also INDUSTRIAL PRODUCTION; LABOR; WAGES AND HOURS.)

Construction Statistics.—Spending for new construction in the first six months of 1962 amounted to $27.7 billion, 6% above the $26.1 billion spent in the comparable period of 1961. New private construction expenditures amounted to $20.0 billion in the first six months of 1962, compared with $18.5 billion in the like period of 1961; public construction expenditures totaled $7.8 billion in the first half of 1962, compared with $7.6 billion in the first half of 1961.

A new monthly sample survey begun in 1962 added to the Census Bureau's construction series a report on sales and financing of new houses. The first report showed a total of 185,000 private nonfarm single-family dwellings started during the first quarter of 1962, of which 118,000 —or 64%—were intended for sale. Homes built by a single general contractor for the exclusive use of the owner accounted for 30,000 units, or 16%. The remaining 37,000 units, or 20% of the total, were shell homes, rental homes, and those for which the owner acted as his own general contractor or performed some or all of the work. Among homes sold in the first quarter of 1962, 68% were reported as sold for under $20,000, and 30% at higher prices, while

Table 2—U.S. POPULATION CHANGE, BY AGE: 1950 TO 1961
(Numbers in thousands)

Age	Population including Armed Forces abroad			Population change			
				April 1, 1960, to July 1, 1961		April 1, 1950, to April 1, 1960	
	July 1, 1961	April 1, 1960	April 1, 1950	Number	Per cent	Number	Per cent
All ages	183,642	180,004	151,718	+3,638	+2.0	+28,286	+18.6
Under 5 years	20,609	20,321	16,243	+288	+1.4	+4,078	+25.1
5 to 13 years	33,271	32,726	22,281	+545	+1.7	+10,445	+46.9
14 to 17 years	12,035	11,162	8,447	+873	+7.8	+2,715	+32.1
18 to 24 years	16,923	15,971	16,149	+952	+6.0	−178	−1.1
25 to 34 years	22,668	23,007	23,999	−339	−1.5	−992	−4.1
35 to 44 years	24,383	24,181	21,572	+201	+0.8	+2,609	+12.1
45 to 64 years	36,743	36,076	30,731	+667	+1.9	+5,345	+17.4
65 and over	17,011	16,560	12,295	+451	+2.7	+4,265	+34.7

prices were not reported for 2%. (See also BUILDING AND CONSTRUCTION; HOUSING.)

Governmental Statistics.—According to the Census Bureau's annual summary of governmental finances, taxes collected by all governments in the United States—federal, state, and local—amounted to $116.3 billion in their fiscal years that ended during 1961, as compared with a 1960 total of $113.1 billion. Most of the change was accounted for by state and local governments, whose tax revenue rose from $36.1 billion to $38.9 billion. Taking account of all other revenue sources as well as taxes, governmental income in the fiscal year 1961 totaled $158.7 billion, up $5.6 billion from 1960. Expenditure totaled $164.9 billion in fiscal 1961, up $13.6 billion from 1960. Indebtedness of all governments at the end of their 1961 fiscal years totaled $364 billion. This total included federal public debt amounting to $289 billion on June 30, 1961, or $3.7 billion more than a year before. State and local government debt rose $5.1 billion during the fiscal year 1961 to a record of $75 billion.

A preliminary report of the 1962 Census of Governments showed that property subject to local property taxes in the United States is officially assessed altogether at $367 billion.

RICHARD M. SCAMMON,
Director of the Census.

CENTRAL AFRICAN FEDERATION. See RHODESIA AND NYASALAND.

CENTRAL AFRICAN REPUBLIC

An independent state of the French Community, the Central African Republic is situated in central Africa north of the equator. Estimated area, 238,200 square miles. The population of 1,227,000 (mid-1960 est.) consists chiefly of Bantu ethnic groups, 90% of whom live in rural areas, and includes about 6,000 Europeans. The official language is French. Principal towns: Bangui, the capital (1962 est. pop., 100,000); Bouar (1959 est., 20,700); Bambari (19,700); and Berbérati.

Government.—The Central African Republic, formerly the French overseas territory of Ubangi-Shari (within French Equatorial Africa), became independent on Aug. 13, 1960. The Legislative Assembly of 50 members, elected for a five-year term by universal suffrage, elects the president of the republic. David Dacko, leader of the Movement for the Social Emancipation of Black Africa (MESAN), was elected president in April 1959, after his party won a large majority in elections to the assembly. The republic is a member of the Union of the Republics of Central Africa.

Education and Religion.—About 90% of the population is illiterate. School enrollment, 1960: 70,714 (16% of the school-age population), including 67,510 primary, 1,551 secondary, 1,305 technical, and 348 teacher-training students. Higher education is provided by the University of Dakar in Senegal. The majority of the population are animists, but Christianity has penetrated into many areas.

Transportation.—As the landlocked republic is without railroads, chief means of transport are the road network (3,600 miles of all-weather roads), and the Ubangi River (navigable for 370 miles in the republic) and other rivers. External trade passes through Bangui, one of the great river ports of Africa. Major airports are located at Bangui, Berbérati, and Bouar.

Agriculture.—Principal subsistence crops: millet, rice, cassava, bananas, and citrus fruits. Chief cash crops (metric tons, 1961 est.): cottonseed, 27,000; coffee, 8,000; sesame seed, 1,500; palm kernels, 800; rubber, 800; and tobacco, 250. Estimated number of livestock, 1962: cattle, 350,000; sheep, 80,000.

Industry.—Industry is confined to processing agricultural products. Chief minerals are diamonds (50,000 carats produced in 1961) and gold. Exploitation of the considerable forest resources is limited by lack of transport facilities; output of lumber totaled 142,000 cubic meters in 1960.

Foreign Trade.—Total exports, 1961: $13.8 million; imports, $21.0 million. (Figures exclude trade with the neighboring republics of Congo and Chad.) Chief exports: cotton and coffee; chief imports: fuels, cotton cloth, foods and beverages, metals, and cement. France is the republic's chief trading partner.

Events, 1962.—The government continued to restrict the activities of opposition elements. Early in the year a governmental court sentenced two opposition leaders and former government officials, Abel Goumba and Pierre F. Maleombho, to six-month jail terms for allegedly "endangering the security of the state."

President David Dacko was host to the chiefs of state of the so-called Brazzaville group of 12 African nations at a conference held in Bangui on March 25–27. The leaders agreed to establish a permanent secretariat for their organization and to formulate a common policy toward the European Economic Community. (See also AFRICA.)

W. R. F.

CENTRAL AMERICA. See BRITISH HONDURAS; COSTA RICA; EL SALVADOR; GUATEMALA; HONDURAS; NICARAGUA; PANAMA; and PANAMA CANAL AND CANAL ZONE.

CENTRAL TREATY ORGANIZATION. See MIDDLE EAST.

CENTURY 21 EXPOSITION

The Seattle World's Fair, or Century 21 Exposition, held in Seattle, Wash., from April 21 to Oct. 21, 1962, was the first world's fair to be held in the United States in 23 years. It presented a preview of the life that the advancement of science promises to make possible for man in the 21st century.

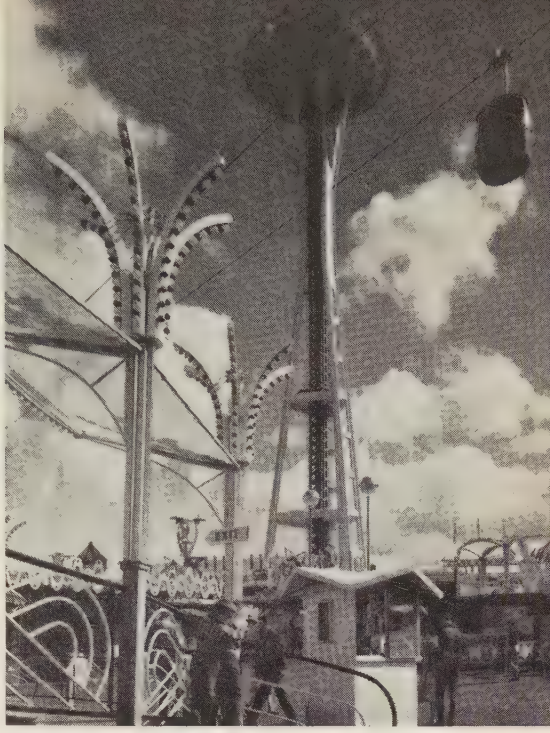
The fair was first conceived as a semicentennial celebration of the Alaska-Yukon-Pacific Exposition, held in Seattle in 1909 on what is now the campus of the University of Washington. This concept was later discarded in favor of providing a wider understanding of the role of science in promoting man's progress. Supported by a bond issue approved by the citizens of Seattle for a community center, fair planners obtained matching support from the State of Washington and commitments from King County (Seattle) to construct certain exhibit halls. These efforts and the interest of the National Science Foundation in a world's fair of science encouraged Congress to authorize federal participation, both financially and with exhibits.

The major symbol of the fair was the 607-foot steel and glass Space Needle. The spire, which was taller than the Washington Monument, was topped by a circular glass-enclosed restaurant which made one complete revolution every hour, and above it an observation deck from which visitors could view Seattle and Puget Sound. High-speed elevators, shaped like space capsules, were mounted on the outside of the Needle's steel core. Part way up the Needle a platform held the stentors for the world's largest electronic carillon. Built by private funds at a cost of $3.5 million, the Needle was designed to withstand nearly twice the earthquake shock and half again the highest wind velocity ever recorded in Seattle.

A monorail with two 4-car trains operated on separate precast concrete beamways above tree-lined streets between downtown Seattle and the fair site. The monorail was studied by representatives of many metropolitan areas which are searching for solutions to mass-transit problems.

The Federal Science Pavilion contained the most complete and authentic science exhibit ever assembled. This five-building pavilion presented a digest of all that had been discovered about outer space and a feeling of the immensity of space and the relative smallness of man's place in the universe. The other major exhibit was the Washington State Coliseum, which provided nearly four acres of unobstructed viewing space under a hyperbolic-paraboloid aluminum roof, 11 stories high. The Coliseum housed the theme exhibit of the fair, depicting in a cubistic floating city how man would live in the space age.

A total of 48 foreign countries exhibited at the fair, as did many major United States companies and government agencies. One of the most popu-



PARIS MATCH FROM PICTORIAL PARADE; THE SEATTLE WORLD'S FAIR: (BELOW) TED BRONSTEIN FROM RAPHO-GUILLUMETTE

Scenes at Seattle's Century 21 Exposition. (*Above*) Passengers on simulated space flight pass model of moon. (*Right*) Various rides and amusements are on the Gay Way; in background is the 600-foot-high Space Needle. (*Bottom of page*) The United States Science Exhibit, illuminated at night.

lar exhibits was that of the National Aeronautics and Space Administration (NASA), showing the progressive steps toward conquering space. The NASA exhibit contained an array of full-sized models of the entire NASA inventory of scientific vehicles that were being used in space exploration. For much of the duration of the fair, NASA exhibited *Friendship 7*, the space capsule in which Lt. Col. John H. Glenn, Jr., became the first American to orbit the earth.

Continuous entertainment in the performing arts was presented in the 3,100-seat Opera House, a new playhouse, an arena, and an outdoor stadium. Many of the world's leading artists in ballet, opera, symphony, drama, comedy, and jazz performed in these facilities. One of the world's largest collections of museum masterpieces of paintings and sculpture from the Renaissance to the 20th century was also shown.

The fair, one of the very few world's fairs to be successful financially, drew a total paid attendance of nearly 9.7 million persons. The economic impact of these visitors was reflected in the statistics of nearly every indicator of trade and service activity in the Northwestern states and western Canada.

Unlike most world's fairs, which have consisted primarily of temporary buildings, the Seattle fair left permanent structures that were being converted into an imposing cultural, trade, and sports center. Before the fair had closed its gates the Seattle Center Commission had developed plans for site restoration and conversion of the fair buildings into an imposing Seattle Center. Plans called for the Space Needle to continue as a symbol, a landmark, and a restaurant. The monorail, for a year at least, will continue to link downtown Seattle with the Seattle Center. The Federal Science Pavilion will be turned over to the Pacific Science Center Foundation, and will be known as the Science Center. The Washington State Coliseum will be converted into a sports and convention hall capable of seating up to 18,000 persons. The International Fountain, Opera House, Playhouse, Arena, the perimeter buildings of the Coliseum, the Hall of Industry, the Commerce-Fashion-Interiors Pavilion, the overhead tramway, and a small amusement zone were also to be retained.

After removal of the temporary buildings and concession kiosks, malls will be created between the Opera House and the Federal Science Pavilion and from the Coliseum through the International Fountain to the Space Needle. The new Seattle Center was expected to open in April 1963 with an Easter festival, to be followed by a summer festival.

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CERAMICS

Gross production in the ceramic industry for 1962 was at a high level in the United States, totaling approximately $7.5 billion. Equal to that of 1961, this volume was considerably influenced by increased activity during the last quarter of the year. Competition from imported, low-cost products continued to force American industry into the use of mechanical operations and automation to effect lower production costs.

Glass.—The glass industry again experienced a successful year of high production and extensive business, but the margin of profit declined somewhat. Increased competition was faced from abroad, especially in the fields of flat glass, fine crystalware, and tableware, as well as various electronic products. Shipment of glass containers, glass fibers, and electronic products maintained a very high level.

The electronics field, in particular, showed a marked increase in volume, and probably the brightest spot of the industry was the public's acceptance of color television. This has been due to technological advances, cheaper sets, and improved broadcasting facilities of some of the major companies.

Corning Glass Works announced an exciting new product, Chemcor, said to possess five times the strength ever before developed in glass. The method of production employs a chemical treatment which represents a major advance in glass technology. (See also CHEMISTRY.)

Whitewares.—Developments in the whiteware industry have centered around making stronger and thinner bodies. The use of extremely fine, micron-size silica has shown promise. Production costs have been reduced by the utilization of better prepared or tailored clay mixtures. The economic threat of imported ware from Japan still exists, although it is not as acute as it has been in previous years. Because the major interest of Japanese industry is in larger volume exports, its interest in whitewares has declined somewhat. In an attempt to lower production costs, the industry has resorted to the reduction of decorations, special shapes, and other unusual items which require increased labor costs. The industry also has begun to benefit from a Whiteware Research Association. The floor- and wall-tile industry has been increasingly affected by imports. It is hoped that technical advances may aid this industry.

Vitreous Enamels.—Vitreous coatings for metal products continued at a high level, and high-temperature coatings for nuclear ceramics have shown increased use. The conventional enameled appliances and architectural enamels maintained levels close to those of 1961.

Refractories and Abrasives.—Production in the refractory and abrasive industry continued at a high level, probably exceeding 1961 by 2 to 3 per cent. The most promising development in the abrasive-grain area has been sintered abrasives. This makes possible production of new shapes and controlled microcrystallinity for special application. The improved properties have permitted a trend to higher grinding speeds and pressures.

In the refractory field, improvements continued in the fusion casting of refractory tile and block so that more corrosion resistance is permitted. Diamond grinding provides better assembly so that joint wear is considerably reduced in many furnaces.

Brick and Structural Clay Products.—The structural clay products industry has been greatly aided by the use of lightweight aggregates, producing clay units of lighter weight. The decrease in weight, however, has necessitated the development of improved surface coatings and glazes, which, in turn, have provided better protection from exposure, enhanced the appearance of the product, and increased its decorative possibilities.

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CEREAL GRAINS. See AGRICULTURE; GRAINS.

CEYLON

Separated from India by the Palk Strait and the Gulf of Mannar, this island in the Indian Ocean is 270 miles long, extends 140 miles at its greatest width, and has an area (with outlying islands) of 25,332 square miles. A crown colony of Great Britain from 1802, Ceylon attained independence within the Commonwealth of Nations on Feb. 4, 1948, and is a member of the United Nations. The population (8,154,580 at the 1953 census) was estimated at 10,167,000 in mid-1961. Sinhalese (6,993,000 in 1960) comprise about 70% of the population; Ceylon Tamils and Indian Tamils about 22%; other chief ethnic groups are Ceylon Moors, Indian Moors, Malays, Burghers, and Eurasians. Sinhalese was made the sole official language in 1961. Colombo (pop., 426,127 in 1953) is the capital.

Government.—A governor general (William Gopallawa, former ambassador to the United States, was sworn in March 2, 1962, succeeding Sir Oliver Goonetilleke) represents the British crown. Parliament consists of a House of Representatives of 151 elected members and 6 additional members nominated by the governor general; and a Senate of 30 members, half of whom are elected by the House and half appointed by the governor general. The government is headed by Mrs. Sirimavo R. D. Bandaranaike (sworn in as prime minister on July 21, 1960), who holds also the portfolios of defense and external affairs.

Education and Religion.—Nationalization of the educational system was continued in 1961–62. Government and assisted schools (with enrollments), 1960: 8,277 (2,224,804); teacher-training colleges 22 (4,613). Higher education is provided by the University of Ceylon (3,177 students in 1960); Vidyalankara and Vidyodaya Universities; and Ceylon Technical College. Principal religions (1953): Buddhists, 5,209,439; Hindus, 1,610,561; Christians, 724,461; Moslems, 541,506.

Finance.—One rupee equals U.S.$0.21. Government revenue, 1962–63 est.: Rs.1,682 million (Rs.1,611 million in 1961–62); expenditure, Rs.2,173 million (Rs.2,312 million in 1961–62); the deficit (Rs.491 million) was to be met in part by Rs.122 million in foreign aid.

Transportation and Communications.—Roads, 1960–61: 11,848 miles (9,814 motorable); state-owned railways, 898 miles; registered motor vehicles, 136,976 (private cars, 82,576; buses, 6,243). Air Ceylon Limited and five foreign airlines—British Overseas Airways Corporation, Indian Airlines, Qantas Empire Airways, Trans World Airlines, K.L.M. (Royal Dutch Airlines)—serve Ceylon. Telephones, 1960: 35,822.

Economic Indicators.—Gross national product rose by 2.4% in 1961; per capita GNP declined by 0.4%. The government cash deficit (1961) exceeded Rs.400 million for the third successive year. Foreign exchange assets, July 31, 1961: Rs.499.8 million (down Rs.6.9 million from 1960); gross public debt, 1960: Rs.2,230.4 million; notes of the Bank of Ceylon in circulation, Jan. 1, 1961: Rs.644.6 million.

Manufacturing and Mining.—The labor force in 1960–61 included 738,569 members of 576 employees' unions, and 166,190 members of 17 employers' unions. Production of consumer items, 1960–61: cotton piece goods, 24,689 yards; leather manufactures, 12,833 cwt.; coir yarn, 9,406 cwt.; coir fiber, 1,448,412 cwt.; pharmaceutical products, 346 cwt.; electricity production (1960), 301.2 million kw.-hr. Graphite mines (14 in 1960) produced 9,024 export tons; in 1961, gem pits yielded 321,871 carats of precious stones (export value, Rs.2,359,576).

Agriculture.—Tea is Ceylon's most valuable crop; 1961 production, from 587,000 acres: 455.2 million pounds (up 5,000 acres and 20.5 million pounds from 1960). Other chief export crops are rubber (97,276 tons, from 668,213 acres, in 1960); and coconuts (2,043 million nuts, from 1,071,000 acres, in 1959). Rice is the staple cereal; output (crop year 1960–61): 42,011,000 bushels, from 1,434,624 acres.

Foreign Trade.—Exports (including re-exports), 1961 (in millions): Rs.1,732.8 (down Rs.98.8 from 1960), of which Rs.907.5 million went to Commonwealth countries; imports, Rs.1,703.3 (down Rs.256.3 from 1960), producing a surplus (Rs.29.5) for the first time since 1956. Most valuable exports, 1961 (values in millions): tea, 423,339,898 pounds (Rs.1,107.4, up Rs.11.4 from 1960); rubber, 197.6 million pounds (Rs.262.5); coconut products, 1,836,655 cwt. (Rs.106.8); oil seeds, 54,987 tons (Rs. 47.8); tobacco, 395,136 pounds (Rs.0.8). Principal imports (values in millions): rice, 9,232,415 cwt. (Rs. 217.3); wheat flour, 3,408,747 cwt. (Rs.69.5); milk products, 36,168,305 pounds (Rs.56.4); petroleum products, 48,655,728 gallons (Rs.25.5); fish products, 180,912 cwt. (Rs.22.5); fuel oils, 32,631,543 gallons (Rs.18.4).

Events, 1962.—Ceylon's economic difficulties brought on in 1962 the first major crisis to be faced by the ruling Sri Lanka Freedom Party since coming to power two years earlier. The budget for 1962–63 again showed a large deficit (Rs.491 million), which the finance minister, F. R. Dias Bandaranaike, proposed to meet by imposing a sales tax, levies on private economic enterprises, higher import duties, and increased personal taxation. Further government proposals, designed to conserve Ceylon's dwindling foreign monetary reserves by a 25% cut in the subsidized rice ration, aroused nationwide opposition. Facing a divided cabinet and dissension within his own party, Mr. Bandaranaike resigned during a parliamentary debate lasting six weeks. His successor, C. P. de Silva, leader of the House of Representatives, won approval of the budget only after the rice cut and sales tax proposals had been dropped.

From Washington, on May 24, a warning was conveyed to the Ceylon government that its seizure of service stations (for use in distributing Soviet oil), and of storage and ship bunkering facilities belonging to American oil companies, might cause congressional opposition to continued economic aid to Ceylon (totaling about $71 million in the last ten years). A letter from Prime Minister Bandaranaike, delivered to U.S. Ambassador Frances E. Willis on July 14, demanded that the United States stop interfering in Ceylon's internal affairs.

Talduwe Somarama, a Buddhist monk and one of three persons found guilty of assassinating Prime Minister S. W. R. D. Bandaranaike in 1959, was hanged in Colombo on July 6 after his appeal against the death sentence failed. At the opening of a new session of Parliament on July 11 it was announced that a government commission would investigate political aspects of the crime.

Donovan Rowse,
Author and Publicist.

CHAD

Situated in north-central Africa, the Republic of Chad is a vast, sparsely populated state of the French Community. Estimated area, 495,750 square miles; population, 2,680,000 (mid-1961 est.). The population, which is more than 95% rural, consists mainly of Moslem Arabs and Bantu ethnic groups, and includes about 5,000 Europeans, mainly French. The official language is French. Fort-Lamy (1961 est. pop., 93,000) is the capital.

Government.—This former French overseas territory in French Equatorial Africa became independent on Aug. 11, 1960. Legislative power is exercised by a National Assembly of 85 members elected for five-year terms by universal suffrage. The ruling Chad Progressive Party, led by François Tombalbaye, won all of the Assembly's seats in single-list elections on March 4, 1962, after the government dissolved all opposition parties. The Assembly re-elected Tombalbaye as head of state on March 10. (See below, *Events, 1962.*) Chad is a member of the Union of the Republics of Central Africa.

Education and Religion.—School enrollment, 1959: 55,446 (6% of the school-age population), including: primary pupils, 53,973; secondary, 1,120; technical, 353. Low school attendance is caused by the small urban population, the vast distances and lack of transport, and the resistance by the Arab population to schools which do not offer instruction in Arabic or the Koran. A governmental program to provide primary-school training for most children within 15 years was begun in 1960. About 55% of the population is Christian; 45% is Moslem.

Transportation.—The landlocked country has no railroads. Roads total 18,600 miles, including about 500 miles of all-weather roads. The main waterway, the Chari River, is navigable for only 3 to 4 months each year. External trade passes through the river network of the Central African Republic, and through ports in Cameroun, Congo Republic, and Nigeria. Chad's principal airport is at Fort-Lamy.

Production.—Over 90% of the population is engaged in farming and livestock raising. Chief cash crops: cotton (about 100,000 metric tons produced in 1961) and peanuts; subsistence crops: millet, rice, sweet potatoes and yams, cassava, corn, beans, and dates. Principal products (1961): cotton fiber, 34,790 metric tons; cottonseed oil, 420,000 liters; peanut oil, 335,000 liters; dressed meat, 7,793 metric tons; fuel wood, 3 million cubic meters; bricks and tiles, 24,000 metric tons; and electric power, 8.9 million kw.-hr. Number of livestock (1960 est.): cattle, 4 million; sheep, 4.5 million. Hides and skins exported (1960): 540,850 pieces.

Foreign Trade.—Recorded exports, 1961: 5,293 million francs CFA (up 60% from 1960); imports, 6,253 million (up less than 1%; 246.85 francs CFA equal the U.S. dollar). Chief exports (in million francs CFA, 1961): cotton, 4,229; meat, 325; livestock, 297; and hides and skins, 227. Principal imports: vehicles, petroleum products, machinery, and cotton fabrics. France is the country's chief trading partner.

Events, 1962.—The Republic of Chad established a more authoritarian government by adopting one-party rule during the year. The head of state, François Tombalbaye, dissolved the African National Party (which had held 14 seats in the outgoing National Assembly) and other opposition groups in January on the grounds that they were not "constructive" and were causing confusion and anarchy. His ruling Progressive Party (which had held 71 seats in the old Assembly) was the only political group permitted to enter candidates on single "national union" ballots in the elections of March 4. The government's candidates were endorsed by about 80% of the registered electorate and were elected to all 85 seats in the Assembly. Tombalbaye formed a new 14-member cabinet after being re-elected head of state by the Assembly on March 10.

Following a meeting on March 2 with President Ahidjo in Garoua, Cameroun, Tombalbaye announced that a railroad would be built from interior Chad to connect with the port of Douala, Cameroun, in order to provide Chad with an easier outlet to world markets.

W. R. F.

CHANNEL ISLANDS. See Great Britain.
CHECKERS. See Sports, Games, and Shows.
CHEESE. See Dairy Products.

CHEMISTRY

Some of the newer and more significant developments in applied and industrial chemistry are discussed in the following article. For medical applications, see Biochemistry; Chemotherapy; and Medicine; for prizes and awards in the field, see Prizes and Awards; and for additional information, see the Index entry, *Chemistry*.

Chemical Industry.—Sales of chemicals and allied products reached a high of $29.8 billion in 1961, 7.7% above 1960, and were estimated to have moved up to a new sales record of approximately $33 billion for 1962, an increase of 10% over 1961, according to *Chemical and Engineering News*. Monthly chemical sales touched a new high of $3 billion for May 1962, before adjustment for seasonal variations. There were 846,000 employees in the industry in 1962, while total employees had averaged 830,200 in 1961.

The estimated 1962 production of the major heavy chemicals, in millions of short tons, was: sulfuric acid, 19.0; sodium hydroxide, 5.3; chlorine, 4.9; sodium carbonate, 4.8; ammonia, 5.5; nitric acid, 3.5; hydrochloric acid, 1.0; and sodium sulfate, 1.3. The production of carbon dioxide was reported at 1 million tons, while that of oxygen was estimated at 95 million cubic feet, and that of hydrogen at 69 billion cubic feet.

In organic production, solid, synthetic, surface-active agents more than compensated for the drop

in soaps. Sales of the new polypropylene plastics more than doubled, although they were still small in comparison with polyethylene. Production of the chief synthetic organic products reached 56 billion pounds in 1961, including, in billions of pounds: intermediates, 10.3; plastics (synthetic resins), 6.7; synthetic rubbers, 3.0; methanol, 2.0; surface-active agents, largely detergents, 1.7; and acetic anhydride, 1.3.

Metals.—Tin is being used to replace chromium in cast iron for engine blocks, resulting in a gain in average and uniform hardness, tensile strength, and modulus of elasticity. The amount of tin used is not over 0.08%, electrolytically refined and very pure. This small proportion of tin converts ferrite to pearlite, the microstructure of which is needed to improve the wearing properties of iron. Tin is also regarded as helping to form better graphite nodules in nodular iron. It also eliminates carbides in castings, and produces no increase in brittleness. The effect of harder engine bores is offset by traces

ARGONNE NATIONAL LABORATORY

A chemical reaction previously thought impossible was reported in 1962—combination of the gas xenon and fluorine to form xenon tetrafluoride, crystals of which are shown.

of vanadium in iron piston rings, and the combination of these bores and rings greatly increases engine life.

Addition of 10 to 60% of zirconium boride to chromium in electrodeposited coatings on rocket nozzles gives greatly increased resistance to temperatures of the order of 6000° to 6500°F. The boride is added to an ordinary chromium plating solution, and coatings up to 0.02 inch are deposited on such metals as molybdenum and tantalum. The process is easily controlled, adaptable to any size or shape, as well as to different environments, does not require machining, and permits coating of many parts at the same time. Uncoated molybdenum lasts only four seconds in a flame temperature of 6000°F.; coated with chromium alone, 18 seconds; but with the composite coating, the surface lasts for 35 minutes. Graphite is similarly protected.

The heat-resistant properties of metals have been greatly extended by uniform dispersions of fine, hard particles, both within and between grains. The first commercial product is made by introducing thorium-oxide particles in nickel so that strength is retained up to 2400°F., compared with 1800°F. for superalloys of this metal. The product has several other very desirable properties. Instead of dissolving hardening particles in the molten metal, a metal-salt solution is mixed with colloidal thorium oxide and ammonium hydroxide-carbonate. The filtered and dried product is pulverized and reduced by heating in the presence of hydrogen. Compression and sintering give a material that can be extruded or machined. A number of other elements can be upgraded in the same way. An immediate use in jet engines is expected.

Copper surfaces can be joined at 400°F. by carrying out the operation in space-simulation chambers, thereby eliminating the need for temperatures of nearly 2000°F. and the use of copper rod and flux in the welding of copper, or silver in brazing, as well as forging the joints to add strength. Under these reduced pressures, equivalent to those 500 miles above the earth, clean copper plates are welded in a few minutes. (See also IRON AND STEEL; METALLURGY; MINING.)

Inorganic Chemistry.—Forecasts of demands for propellants in space vehicles indicate that the years 1961–65, consumption of liquid hydrogen will increase 21-fold to 125 million pounds per year, while liquid oxygen will have a 6-fold increase. An increase of hydrocarbon propellant fuel from 3.2 to 27 million gallons is small in comparison with annual motor fuel production of the order of 1.6 billion barrels of 42 gallons per barrel. Inactive nitrogen and helium gases are employed as propellant pressurants and precoolants, and their production does not present the problems that confront the hydrogen and oxygen industries.

An underground storage area in the Cliffside gas field in the Texas Panhandle is to receive 62.5 billion cubic feet of helium over a period of 22 years. The helium will be produced by 5 privately owned plants by extraction from natural gas, with another 15 billion cubic feet from Bureau of Mines plants. It is estimated that all needs of helium until 1985 will be met with this supply, and that 52 billion cubic feet will be left in storage. The larger part of helium goes into government operations, and doubling its price to pay for storage may result in the substitution of argon in welding operations.

The inert or noble gases in group Zero or VIII-A of the periodic table (helium, neon, argon, krypton, xenon, and radon) have been believed incapable of chemical combination because their electron shells are filled. During 1962 a chemical reaction of xenon with platinum hexafluoride vapor, forming a yellow powder, probably xenon-platinum hexafluoride, was reported from the University of British Columbia. This led to experiments at the Argonne National Laboratory of the Atomic Energy Commission, in which a mixture of xenon and fluorine gases in a sealed nickel container was heated to 400°C. for an hour and then cooled to −78°C., crystallizing as a stable, colorless compound, xenon tetrafluoride (XeF_4). Photochemical production was also achieved by irradiating xenon and fluorine gases in silica vessels at room temperature with mercury arc light. A more volatile xenon difluoride (XeF_2), xenon oxyfluorides, and a radon fluoride compound have also been observed. Xenon tetrafluoride samples show no signs of reaction or decomposition after six weeks at room temperature in Pyrex vessels. This research knits these no longer isolated and inert elements more closely with the rest of the periodic table and provides new reactions for chemical bonding explanation.

In an emergency, a housewife with a flowerpot filled with clay, or even ordinary soil, paper towels, and commercial bleach, can filter out the larger

part of radioactive fallout accumulated in water. One ounce of clay will remove as much as 90% of strontium-90 and a greater proportion of cesium-137 from a gallon of water. The clay also provides a convenient method for disposing of collected radioactive material.

Inorganic foams of high heat resistance continue to be developed. The most recent, a silica product still in development, is applied as a slurry which can be sprayed, poured, or troweled. It contains a blowing agent which forms a rigid foam in 20 minutes, and is cured in a day. It is used in the protection of structural steel and resists temperatures up to 2000°F. Inorganic foams are produced by blowing gas into a molten mass or including chemicals which volatilize in the melt. Cold-blowing employs a slurry and a reacting chemical as the blowing agent. Hollow spheres of many kinds can be bonded by material of this or other composition. Both open and closed types are made, the former being permeable to gases, and the other impermeable. A great variety of materials may be used as foams, including metals, oxides, and carbides.

Glass and Ceramics.—Glass that can be bent and twisted without breaking, and that is five times stronger than any other glass ever made, is produced by what is known as chemical strengthening. A number of special glass compositions are available as starting materials, and at least a dozen different methods of chemical strengthening are used. Two of these methods involve the formation of transparent, polycrystalline layers within the surface of glasses. The crystalline skin cools as it expands, while the shrinking of the internal glass induces a very high compression of the skin, thus producing a material of great strength. The surface of these glasses remains a true glass or a glass ceramic. Glass rods made by this process have flexural strengths up to 100,000 pounds per square inch. Sheets of glass 0.1 inch thick have been flexed 1,000 times to an arc with a radius of 30 inches without breaking, and cups of the new glass have been dropped 100 feet onto a steel plate without damage.

A combination of ceramic foams in a honeycomb structure of superalloys makes an extremely efficient heat shield for space vehicles, capable of withstanding temperatures up to 3400°F. With proper ablating materials that are gradually removed before the underlying metals are reached, the limit of 5000°F. is expected to be attained. The ceramic foams can be processed below 1000°F. to avoid damage to metal components. A typical formula for the alumina foam contains alumina, alumina hydrate, carbon powder, aluminum powder, phosphoric acid, and water. Hydrogen and steam from the reaction produce the foam. Density of the foams may be controlled by curing techniques. The honeycomb is made of stainless steel, nickel alloys, and, in some cases, beryllium. Lightweight, fibrous insulating material is packed into the lower part of the honeycomb structure, with the foamed insulation above. (See also CERAMICS.)

Electrochemistry.—Since diffusion exchange of cations is fairly slow, strontium-90 and cesium-137 may be removed from milk by a process of electrodialysis. Alternate compartments are filled with milk, the others with a salt solution which has the same ratio of positive ions. The compartment walls are made of membranes with very small pore diameters, in order to prevent the passage of low-molecular-weight sugars and other materials of biological origin. Several hundred membranes may operate between platinum-clad, titanium electrodes. Hydrogen and oxygen are liberated at the electrodes, while a separate electrolyte is circulated past them. As much as 90% of strontium-90 is removed at a cost of about 2 cents a gallon. The radioactive strontium may be recovered as an insoluble sulfate and concentrated for disposal, while the salt solution may be used repeatedly. The hydrogen ion is adjusted by inexpensive acids, which are neutralized by sodium carbonate after the strontium has been removed.

A fuel cell is to replace an ordinary battery and a mechanical power unit to furnish electrical power on spacecraft. The fuel cell will deliver a little under 2 kw. of power. The power unit is made up of a number of ion-exchange-membrane cells, the membrane being made of plastics. Hydrogen and oxygen are supplied as gases, but are stored as liquids. Per pound of system weight, this equipment surpasses conventional batteries. A pint of water suitable for drinking is made for each kilowatt-hour produced.

Organic Chemistry.—An organometallic derivative of tin, made up of butyl groups, tin, and oxygen, with powerful antimicrobial action, is being used in water treatment and in the manufacture of marine paints and germicides. A very pure tin tetrachloride is reacted with butyl magnesium chloride, and distillation separates the desired product from other compounds. It does not settle out in antifouling paints, does not corrode steel or aluminum, and forms a clear coating. It may also carry pigments. Bubbles of air and the fungicide released under a ship's hull give the protection needed in port.

E. I. DU PONT DE NEMOURS AND CO.

Armalon fabric, coated with gold and resistant to chemical reactions and extreme heat, is used in protective clothing.

Long-chain, primary alcohols are now being made by the reaction of aluminum triethyl with ethylene under pressure. A variety of alkyls are produced, the peak of distribution being shifted by changes in conditions. The aluminum alkyls are oxidized by air. Byproducts are removed by solvents, and the aluminum alkyloxides are converted to alcohols by sulfuric acid, with aluminum sulfate as a byproduct. The processed alcohols containing from 6 to 20 even-numbered carbon atoms are marketed, either individually or as mixtures. Alcohols with an odd number of carbon atoms can be made by starting with aluminum tripropyl, which

has three carbons in each alkyl, but there is no market for this type. Aluminum alkyls made by this process are also used with ethylene and a nickel catalyst to make olefins with a double bond at one end.

Tributyl phosphate, derived from phosphoric acid and petrochemicals, is proposed as a solvent for the recovery of iron oxide and sulfuric acid from the pickle liquors of the steel industry. The usual method of disposal of the highly acidic solution is neutralization with lime. In the extraction process utilizing tributyl phosphate, calcium thiocyanate is added to the pickle liquor to form a complex containing the iron. This is then treated with a 25% solution of the phosphate in kerosine in which the iron-bearing material is soluble. The final product is the magnetic oxide of iron, which re-enters the steel plant. The solvent is recovered, the sulfuric acid is used again in the pickling operation, and gypsum is a byproduct.

Cellulose polymer molecules are made up of noncrystalline (or amorphous) regions and crystalline regions. Hot dilute hydrochloric acid hydrolyzes the amorphous portions, leaving a microcrystalline cellulose. Spray-drying yields a material that gives sharp X-ray diffraction-band lines. These crystallites have molecular weights of 30,000 to 50,000, with less than 500 parts per million of contaminants. The material has potential uses as a vehicle for antibiotics; a component of low-calorie dietetic foods; an additive for converting oils, fats, and such foods as cheese and honey to free-flowing powders; and industrial applications in pigment vehicles, coating for paper and fabrics, and raw material for other cellulose derivatives.

Petroleum.—Fluidized silica-alumina catalyst beds of catalytic crackers become contaminated with such metals as nickel, iron, vanadium, and sodium from the off-gas feedstocks. The result is that the amount of coke accumulating on the catalyst increases, as well as hydrogen and light oils in the product, at the expense of gasoline and heating oils. The contaminating metals are held on the surface in the form of complex organic derivatives that are very difficult to remove or render ineffective. Decontamination of the catalyst is based on a strong cationic-exchange resin. A portion of the catalyst is withdrawn and mixed in a water slurry with the resin, which has a greater affinity for the metals than does the catalyst. The resin and catalyst are separated on the basis of their relative densities. The resin is regenerated with acid and a demineralized water wash. The decontaminated catalyst has the same coke-producing factor as fresh catalyst, or a ratio of 1.0, as compared with 1.8 before treatment. Without interfering with full-capacity operation, the coke-producing factor of a 5,000-ton catalyst bed was reduced to a value of 1.2 in a period of 48 days.

In an average petroleum refinery, up to 10% of the hydrogen in the crude oil fed to the process is burned as fuel, amounting to as much as 700 to 800 cubic feet per barrel. Now, in a single step, hydrocarbons commonly burned are catalytically converted to hydrogen and carbon. The carbon accumulating on the catalyst is burned off before it is used again. The hydrogen recovered is largely used in the plant to produce motor fuel, but can be made available as needed for ammonia synthesis, or, with carbon monoxide, to produce methanol.

Waste products of the transportation industry —lubricants, diesel oils, hydraulic oils, and quenching oils—are being reprocessed to make a high-grade lubricating oil. It is estimated that engine drainings alone represent a waste of 12 million barrels a year, three fourths of which could be profitably recovered. The recovery process removes polymerized gums, oxidation products, metal traces, carbon deposits, and sludge. The final product of such recovery methods has been treated three times: in the original refining, in the engine, and in the recovery process. The methods used are the same as those by which the crude oil was refined. (See also PETROLEUM.)

Rubber.—The stereoisomeric rubber, *cis*-1,4-polybutadiene, will probably be used to the extent of 100,000 long tons in 1962 in passenger and truck tire treads. From 3 to 8 pounds of the new synthetic rubber are used per tire. At present the polybutadiene constitutes not more than 50% of treads, but tests are being carried on to determine the suitability of this rubber as the sole rubber in tire treads. It may also be used in the tire carcass, and some is being made into industrial conveyor belts, wire and cable insulation, and shoe soles and heels. The cost of the new rubber is slightly over 30 cents per pound, which is higher by 7 cents than styrene-butadiene material, and 3 to 4 cents higher than natural rubber.

A special grade of carbon black with small and compact particles linked in chains is making possible the compounding of such stereospecific rubbers as *cis*-1,4-polybutadiene and ethylene-propylene polymers in proportions up to 100%. Abrasion resistance of 100% polybutadiene rubber is increased so that abrasive loss drops by 40%. Instead of adding the carbon black after the rubber and compounding oil have been mixed, all three are charged together into the mixer.

Cracking in automobile tires is caused by high concentrations of ozone. Synthetic rubber which offers high resistance to this effect is being made by compounding a cyclic diolefin and isoprene with butyl rubber. Isobutylene copolymerizes with cyclopentadiene very rapidly, but isoprene permits the advantages of the two to be combined in a single elastomer. Variation in the amounts of the two diolefins employed with isobutylene controls both unsaturation and molecular weight. The new tripolymer gives excellent vulcanizates. Butyl rubber is 80 times more sensitive to ozone than the rubber made with 1% cyclopentadiene and 2% isoprene. One explanation of the antiozone properties of the rubber is that breaking of the double bond of ozone does not break the chains, as it does with isoprene.

Wooden cooling towers are now being effectively protected by a very thin coating of isoprene, the first synthetic rubber developed. The rubber is applied as a mixture, with xylene making up one third of the total. Tests extending over 16 months on a tower handling 10,000 gallons per minute showed no fungal decay. The isoprene coating protects against the decay resulting from failure of chemicals to penetrate wood completely and the spreading of flame in case of fire. (See also RUBBER.)

Plastics.—Large increases in manufacturing capacity of two important isocyanates—polymethylene polyphenylisocyanate and toluene diisocyanate —indicate probable corresponding increases in the production of urethane foams. These are made from a variety of polyesters and other polyhydroxy compounds. Both flexible and rigid foams are manufactured, but the rigid type appears to be in greater demand, largely for refrigerator insulation, panels for home construction, transportation equipment, and industrial installations.

Urethane foam may be sprayed on brick to insulate a house, eliminating stud construction. The foam completely seals so that no air can seep into the house through joints; and the rigid foam adds structural strength to the brick walls.

The blowing agents used in urethane foams are now fluorocarbons, which gasify. Their use represents a considerable saving over the old method of using an excess of isocyanate, which reacts with water to form carbon dioxide. The fluorocarbons are more than three times cheaper than isocyanates.

Elastic fibers for foundation garments consist primarily of covered synthetic-rubber thread and a bare filament composed mainly of polyurethane. Rubber is a monofilament, while the urethane product is made up of several filaments combined in a single fiber with bridging between the untwisted filaments. This polymer is made up of hard and soft segments, the soft portions being responsible for elasticity, and the hard parts serving to tie the chains together, to inhibit excessive flow under tension, and to cause the fiber to snap back readily when released. The urethane fabrics can be dry-cleaned with conventional solvents.

The highly fluorinated hydrocarbon plastic, Teflon, metallized with 24-karat gold by vacuum deposition, is used in protective clothing worn by workers subjected for very short intervals to high temperatures, and also by those working with dangerous chemicals such as rocket fuels. This metallized fabric is inert to all known chemicals and can resist a flash temperature of 3000°F., exposure to 1000°F. for one minute, and 500°F. for still longer periods. (See also PLASTICS.)

Fluidized-Bed Process.—A deep bed of finely divided solids stirred by oil vapors is the basis of the process known as fluidized-bed catalytic cracking, which accounts for a considerable part of motor fuel production. This technique has been widely adapted to many other processes, including roasting of a variety of sulfide ores; high-temperature calcination of limestone, phosphate rock, and clay; and drying of coal fines, limestone, shale, cement rock, sand, plastics, chemicals, and food constituents. Chemical reactions such as production of phthalic anhydride, dextrin from starch, and chlorination of titanium dioxide use fluidized-bed techniques. Other recent uses of this method are incineration of organic wastes, removal of fluorine from phosphate rock used in animal feeds, calcination of precipitated calcium carbonate sludges, and production of cement clinker.

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CHEMOTHERAPY

A number of therapeutic agents have appeared during 1962 which have materially aided in man's continuing fight against disease.

Synthetic Penicillins.—Two new synthetic penicillins have been added to the growing list of antibiotics effective in the treatment of Gram-positive bacterial infections. These are Prostaphlin (5-methyl-3-phenyl-4-isoxazolyl penicillin) and Rixapen (3, 4-dichloro-α-methoxybenzyl penicillin). Prostaphlin has been noted to be resistant in vitro to the inactivator of penicillin, penicillinase. It has been claimed to be more effective than other synthetic penicillins against the common bacterial infections of man. In human beings it has been effective in bacterial infections not responding to other drugs. It is reported to be efficacious when given either orally or parenterally in therapy of serious systemic, penicillin-resistant, staphylococcal infections. Rixapen, after oral administration, seems to give higher peak levels than either penicillin V or other synthetic penicillins. It is reported to give more sustained blood levels than other penicillins.

Sulfamoxole.—This compound is a new sulfonamide with the chemical name N′-(4, 5-dimethyl-2-oxazolyl)-sulfanilamide. It is claimed to show generally a greater effect against bacterial infections due to the Gram-positive organisms than against those due to the Gram-negative strains. The response was good in approximately 70 percent of more than 1,000 patients treated clinically. In approximately 150 pediatric patients treated, a good response in 77 percent was observed. On the whole the drug was well tolerated, but the usual side effects noted for many of the more common sulfonamides were described. These included crystalluria, hematuria, rashes, and nausea.

Fucidin.—A new antibiotic isolated from *Fusidium coccineum* has been described as effective in the test tube against the common Gram-positive organisms, such as staphylococci, streptococci, and diplococci, as well as against the spore-forming *Clostridium tetani* and the acid-fast *Mycobacterium tuberculosis*. It seems to be inactive against Gram-negative rods and fungi. No cross resistance to other known antibiotics has been observed with fucidin, but resistance to the antibiotic in vitro is easily induced. The antibiotic is well tolerated in mice and rats. When tested in human beings it was found to be well absorbed orally, and has been noted to accumulate in the blood. It is excreted in the feces and not in the urine. The investigators believe that not only is fucidin active in the treatment of Gram-positive bacterial infections but, in addition, results in a more rapid healing of lesions.

IDU (Stoxil).—IDU is probably the first real breakthrough in the therapy of virus diseases. Chemically IDU is 5-iodo-2′-deoxyuridine. In animal experiments it was noted that rabbit cornea infected with herpes-simplex virus and treated before infection or 12 hours after infection did not develop definite herpetic lesions. Treatment started as late as 24 hours or longer after infection still resulted in clearance of the infection. Preliminary experiments in the clinic have shown more than a suggestion that similar improvement occurs in humans suffering from herpetic keratitis and treated with IDU.

Famophos.—Parasitic infections still remain significant in the economy of the world. Famophos, which is chemically O-O-dimethyl-O,p-(dimethyl sulfamoyl)phenylphosphorothioate, has been found effective in well-tolerated doses in a number of parasitic infections of lambs.

Thiabendazole.—Chemically 2-(4′thiazolyl)benzimidazole, this drug seems to have a rather broad spectrum in parasitic diseases of animals. In lambs it has been found 93–100 percent effective in removal of haemonchus, ostertagia, trichostrongylus, cooperia and nematodirus. In horses it is effective in completely removing mature small strongyls, as well as immature large strongyls. It is also active in the removal of mature pinworms. In swine it is the first compound to have been shown to kill trichinae in the muscle of the host. In cattle it is highly effective against fourth-stage larvae of the species of trichostrongylus and cooperia.

Monopar.—The parasitic infections of humans still play an important role in world public health problems. The one major drug described during the year 1962 was Monopar or stilbazium iodide. This drug has been noted to have significant activity against infections with *Enterobius vermicularis, Ascaris lumbricoides, Trichuris trichiura,* and *Strongyloides stercoralis*. It is claimed that no reactions have been noted to the drug, including no significant changes in urinalysis or hemograms.

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CHERRIES. See FRUITS.

CHESS. See SPORTS, GAMES, AND SHOWS.

CHICAGO

Second most populous city in the United States and the center of the nation's third most populous standard metropolitan area, Chicago, Ill., covers a land area of 224.2 square miles. The population (1960) of the city is 3,550,404, of which 812,637 (22.9%) are Negroes.[1] The six counties making up the metropolitan area (Cook, Lake, Du Page, Kane, McHenry, and Will) have a population of 6,220,913.

The city is governed by a mayor (since 1955, Richard J. Daley, Democrat) and a City Council of 50 aldermen elected on nonpartisan ballots representing city wards. All terms expire in April 1963.

Statistical information for the Chicago area in 1962: Total bonded indebtedness for six major governments serving the city, $726 million; for Chicago alone, $297.5 million. Assessed valuation within Chicago, $10.45 billion. For first eight months of 1962: steel production, 12,935,000 tons; families on relief (Cook County, average), 26,684; building permits (Chicago), 13,859.

A five-year dispute between the Chicago and Northwestern Railway and the AFL-CIO Order of Railroad Telegraphers erupted in a strike in 1962. In April, President Kennedy appointed an emergency fact-finding board, thereby delaying the walkout. Negotiations broke off in August, however, and on August 30 approximately 1,000 telegraphers struck, bringing operations to a standstill. Following an appeal by the president, the stoppage ended on October 1. The critical issue in dispute, the right of the railroad to dismiss telegraphers whose jobs have been rendered unnecessary by automation, was submitted to binding arbitration. In a decision that is likely to have significance for the national economy, the arbitrator ruled on October 9 in favor of the right of management to eliminate the jobs.

Demonstrations against alleged segregation in off-campus student housing were staged in January and February by University of Chicago students, who charged that the university operated 125 segregated apartment houses. The university replied that only 12 of 55 were segregated, and that it was seeking to create a "stable interracial community" by "stages."

In February, the National Association for the Advancement of Colored People included Chicago (and suburban Maywood) in a list of 23 non-Southern communities with some form of segregated schooling. On July 31, however, U.S. District Judge Julius J. Hoffman dismissed an anti-segregation suit against the Chicago Board of Education on grounds that all administrative remedies had not been exhausted. Later, the board and the superintendent agreed to a program that will permit children in overcrowded schools (largely Negro) to transfer to undercrowded schools within four miles. Transportation was not to be furnished by the city, however.

At the April 10 primary election, six bond issues totaling $66 million, and strongly supported by the city administration, were defeated decisively. The bonds would have provided funds for urban renewal and other city improvements.

Billy Graham, the evangelist, conducted a 19-day evangelical crusade ending June 17; more than 700,000 persons attended. Earlier, theologist Karl Barth delivered three lectures at the University of Chicago, which held its first special convocation since 1949 to award Barth an honorary degree.

[1] The Negro population is growing at a much more rapid rate than the white population, and in 1962 the Population Research and Training Center of the University of Chicago estimated that 48% of the city's population would be Negro by 1990.

The Chicago Museum of National History welcomed its 50 millionth visitor on July 29. A gift of $500,000 was made to the Chicago Art Institute by its president, William M. Blair, and Mrs. Blair.

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CHILD HEALTH. See CHILDREN AND YOUTH—*Child Welfare;* PEDIATRICS; WORLD HEALTH ORGANIZATION.

CHILD LABOR. See CHILDREN AND YOUTH.

CHILD WELFARE. See CHILDREN AND YOUTH.

CHILDREN AND YOUTH

The following article reviews current social and economic developments in the field of children and youth under two headings: (1) Child Welfare; and (2) Youth and Work. For additional and related information, see the articles CRIME—*Delinquency and Crime Prevention;* EDUCATION; PEDIATRICS; SOCIAL SECURITY; SOCIAL WELFARE; UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION; WORLD HEALTH ORGANIZATION; and the Index entry, *Child Welfare.*

CHILD WELFARE

The world's child welfare needs and resources in 1962 claimed the attention of an ever-increasing number of national governments, especially those recently changed from colonial to self-governing status. These nations, mostly without substantial economic structures and with many citizens still more aware of tribal than national loyalties, were in need of help from the United Nations and from the more developed countries.

International Services.—Many measures in behalf of children were taken in 1962 by the United Nations and its specialized agencies. Proposals for a concerted attack on the age-old problems of poverty, ignorance, and disease were submitted to the UN Economic and Social Council on June 14 by Acting Secretary General U Thant. Also in June the Executive Board of the UN Children's Fund (UNICEF) affirmed a long-term policy for children in the "Decade of Development," the 1960's. Complicating factors included the rapid increase in population, breakdown of traditions and cultures, a rising tide of industrialization, and increased migration from rural to urban areas. This migration, so harmful to many children, usually ended in the slums of overcrowded cities. It has been about three times as great in Asia as in Europe and the United States, and about four times as great in Africa, and has made assistance to child and family well-being increasingly necessary.

In April 1962 the Economic and Social Council endorsed a three-year, $100 million world food program under the auspices of the United Nations and the Food and Agriculture Organization (FAO), in which that amount would be voluntarily contributed by United Nations members, to include surplus foods, services (especially shipping), and cash. (See also FOOD SUPPLY.)

Increasingly the nations in greatest need have seen the importance of placing education of their children first, even while struggling to provide the physical nurture essential to life and health. With help from the UN Relief and Works Agency for Palestine Refugees (UNRWA), at Ramallah Center in Palestine, 300 refugee girls were being trained as teachers. Several African countries have even gone so far as to plan for universal educa-

tion. In the Republic of the Congo (Léopoldville) many young women are receiving instruction in nursing and midwifery, a development begun several years ago under the maternal- and child-health programs of the World Health Organization (WHO) in India and other Asian countries.

The UNICEF midyear (1962) allocations of funds included $900,000 for projects in education and vocational training. This was part of the $16,500,000 then committed, which also included $1,200,000 for family and child welfare services, $5,873,300 for permanent health services, $5,850,700 for campaigns against mass diseases, and $2,693,000 for nutritional projects.

UNICEF and WHO, continuing their close partnership throughout 1962, could foresee an early cure for 85% of Ghana's 50,000 victims of leprosy, and had further plans for complete eradication of this disease. Mexico's dramatic victory over malaria, now practically eradicated, illustrated the tendency of nations to contribute even more than the United Nations agencies in attaining public-health objectives. In Taiwan, a total of 1 million school children were cured of trachoma through health training.

United States.—The welfare of children in terms of congressional action was advanced in 1962 more than in any one year since passage of the Social Security Act in 1935. The Public Welfare Amendments of 1962 placed a new emphasis on rehabilitation, as reflected in replacement of the term "Aid to Dependent Children" with "Aid and Services to Needy Families with Children." Child welfare services were liberalized and extended to include protection of neglected, abused, and exploited youth; services for prevention of delinquency and treatment of delinquent youth; the care of dependent or neglected children; and the day care of children of employed mothers. In the rush of adjournment, Congress failed to provide the supplemental appropriations for this legislation, but was expected to do so in 1963. The provisions for day care, not previously available, were in recognition of the need to protect children of working mothers, as urged by the National Committee for the Day Care of Children (organized in 1960) and others aware of the serious limitations in existing facilities.

Migrants and their children will benefit from a law enacted by Congress in September 1962 to help state and local health agencies establish in their behalf clinics and other health projects. Federal grants up to $3 million annually were authorized.

The 50th anniversary of the Children's Bureau of the Department of Health, Education, and Welfare was celebrated in Washington, D.C., on April 9, 1962. The founders and other advocates of the bureau, its administrators, and the evolution of its program are identified in *Five Decades of Action for Children*. This history of the bureau and an article by Katherine B. Oettinger, the bureau's chief, "A Half Century of Progress for All Children" in the March–April 1962 issue of *Children*, review the objectives of six successive White House conferences on children and youth, as well as intervening developments. The present dimensions of all child welfare programs in the United States were described statistically in a bureau publication, *Services in Public and Voluntary Child Welfare Programs*.

Refugee children from Cuba, especially unaccompanied teenagers, swarmed into Miami, Fla., during 1961 and 1962. By the summer of 1962 they numbered about 8,000 with 300 more arriving each month. Many other children fleeing to the United States with their families also required relief and rehabilitation. (See also REFUGEES AND DISPLACED PERSONS.)

Canada.—Hearings on various aspects of juvenile delinquency were the responsibility of a departmental committee appointed in January 1962 by the federal minister of justice. The committee's findings to be derived from hearings held across the country were due to be reported late in 1962 or early 1963.

Provisions to increase the number of trained social workers for child welfare and other services were announced in April 1962 by the minister of national health and welfare as part of a new Welfare Grants Program. Training grants, bursaries, scholarships, and fellowships were to be provided, along with funds for teaching and field instruction, staff training, demonstration projects, and research.

Changes in provincial programs included an amendment to the Child Welfare Act of Ontario, permitting juvenile court judges to conduct hearings to determine child neglect, without the child present, whenever it is deemed in his interest; a new Training School Act in New Brunswick, transferring the administration of training schools for delinquent children from the Department of Youth and Welfare to the Department of the Attorney General; and, in Quebec, extension of the statutory school-leaving age to the end of the school year in which a child reaches 15 years of age, instead of the former 14.

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YOUTH AND WORK

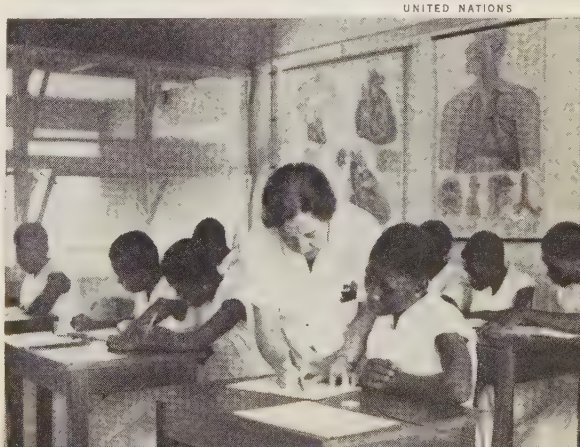
In 1962, one million young people under the age of 25 throughout the United States were out of school and out of work. Their rate of unemployment was more than double the national average. For Negro youth, the rate was four times the national figure.

Most of these idle youth were sorely undereducated and untrained at a time when the labor market increasingly called for workers with advanced skills, training, and education. The majority were from the one third of the youth of the United States who drop out of school before high school graduation; some were from the third that does complete high school; and only a few were from the third that goes on to higher education.

The decade of the 1960's was witnessing the largest influx of young job seekers in the nation's history. Coming of working age were 26 million youth born during the post-World War II jump in birth rate—40% more than in the 1950's. At the same time, the needs of industry were undergoing dramatic changes along with the advance of new technology. The sharpest decline in opportunities occurred in precisely those unskilled areas in which the bulk of untrained young people once found their first jobs. The majority of new jobs required at least a high school diploma. Yet, the U.S. Department of Labor estimated that 7,500,000 of the coming surge of young job seekers would not have completed high school.

Congolese girls are receiving instructions in midwifery and nursing from United Nations civilian workers in the Congo.

UNITED NATIONS



EMPLOYED AND UNEMPLOYED YOUTH BY AGE GROUP, 1962*
(In thousands)

Category	14–17	18–19	20–24	14–24
Employed				
Males:				
Agriculture	446	173	301	920
Nonagriculture	1,243	1,209	3,578	6,030
Total	1,689	1,382	3,879	6,950
Females:				
Agriculture	82	36	49	167
Nonagriculture	978	1,220	2,477	4,675
Total	1,060	1,256	2,526	4,842
Total males and females	2,749	2,638	6,405	11,792
Unemployed				
Males	253	218	367	838
Females	150	184	249	583
Total	403	402	616	1,421

* 1962 annual averages, projected on basis of data for first nine months. (Source: Bureau of Labor Statistics, U.S. Department of Labor.)

Members of minority groups—even if they had high-school diplomas—were the most handicapped of these youngsters. Not only did they face discrimination in being hired, they were often denied access to training programs, such as apprenticeship, which were prerequisite to becoming skilled craftsmen.

Solutions to these problems, according to the National Committee on Employment of Youth, required large increases in the number of available job opportunities for youth, as well as more and better guidance and training services to make youth more employable in the labor market. Also urgently needed was more precise forecasting on the kinds of skills and training that would be needed and the kinds of jobs that would be available to youth in future years.

The Youth Employment Opportunities Act of 1962, which would launch a youth conservation corps and provide public service employment, was reported favorably by both Senate and House committees, but failed to come up for vote. Renewed support for this legislation was expected in the next Congress. Under the federal Manpower Development and Training Program, enacted in 1962, approximately 25,000 young people, ages 16–21, are to receive job training each year, and youth of 19–21 years of age will be paid training allowances of up to $20 per week.[1]

LOUISE KAPP, *Director of Public Information, and* LAZELLE ALWAY, *Community Service, National Committee on Employment of Youth (of the National Child Labor Committee).*

CHILDREN'S BUREAU. See Index entry.

CHILDREN'S FUND, United Nations. See Index entry, *United Nations Children's Fund.*

CHILDREN'S LITERATURE

The evident dissatisfaction among critics of children's books in 1961 continued in 1962, but with more thoughtful articles. In one of the outstanding criticisms, "Seek Original Books, Not Packaged Lookalikes" (New York *Herald Tribune* special supplement, "Children's Books," Nov. 11, 1962), Mary Silva Cosgrove warned: "The time is now . . . to take stock of what is and what should be the future of literature for children. Our future backlists are being made today by those books, sometimes in a series, more often individual ones, that have a distinction of their own. . . ."

Briefly taking stock of a 1962 output marked by expanding commercialism, one finds a few children's books distinguished for their originality. It was a year of poetry—chiefly anthologies, such as *Tom Tiddler's Ground*, edited by the English poet-anthologist Walter de la Mare, and *The Singing and the Gold*, a collection of poems (in translation) from many countries, compiled by Elinor Parker. Some good books appeared in series, notably William L. Shirer's *The Sinking of the Bismarck*, a Landmark Book. And the year saw the continued publishing of paperbacks for ages 8 to 14, led by Kenneth Grahame's classic, *The Wind in the Willows*. Because of the large teen-age reading group, there will undoubtedly be more paperbacks, representing the rich backlists of many publishers.

Picture books for young children were numerous, though few of them were outstanding or original. There was one item which critics seemed to agree had merit: *The Nutshell Library*, four tiny books in a slipcase, with amusing text and pictures by Maurice Sendak. A book that pleased the graphic arts specialists was *Mama, I Wish I Was Snow—Child, You'd Be Very Cold* (a record long title), by Ruth Krauss, illustrated by Ellen Raskin. *Adam's Book of Odd Creatures*, with verse and pictures by Joseph Low, was either liked or disliked—no halfway feelings about it.

There were some pleasant surprises in book illustration. Clement Hurd astonished everyone by using an entirely new technique in a boldly handsome book about two flying fish, *Wingfin and Topple*, written by Evans G. Valens, and in the attractive *Christmas Eve*, by Edith Thacher Hurd. *Henri's Walk to Paris*, by Leonore Klein, designed by Saul Bass, was one of the most original and colorful books. Gene Zion and Margaret Bloy Graham gave children more of a story than they usually get, as well as some amusing pictures, in *The Meanest Squirrel I Ever Met*. Another interesting book, especially in design and pictorial presentation, was *The Emperor and the Drummer Boy*, by Ruth Robbins, with Nicolas Sidjakov's highly stylized illustrations.

There was much activity in the folklore division. Many elaborate folktales poured from the presses, but most were of transient interest. There were, however, good collections of folklore. Outstanding for its beauty of design and its poetic text was Natalia M. Belting's *The Sun Is a Golden Earring*, illustrated by Bernarda Bryson and presenting primitive beliefs about the heavens and the universe. *The Magic Drum*, by W. F. P. Burton, was an excellent collection of tales from central Africa. So was *The King's Drum and Other African Stories*, by Harold Courlander. On Asia, there was *The Golden Stag and Other Folk Tales from India*, selected and retold by Isabel Wyatt. *Thistle and Thyme*, by Sorche Nic Leodhas, was a most attractive book of tales from Scotland. Another folktale of note was *The Golden Seed*, by Maria Konopnicka, adapted by Catharine Fournier, with jewel-like medieval illustrations by Janina Domanska.

Fiction for the early teens was not, in general, strong, though a few books stood out. *Silence Over Dunkerque*, by John Tunis, was thought by many to be his finest book, as well as one of the best about World War II. There were a few

[1] Youth employment in the United States is regulated by three federal acts. The Fair Labor Standards Act sets the minimum age at 14 for employment outside of school hours in nonmanufacturing, at 16 for employment during school hours in interstate commerce, and at 18 for occupations declared hazardous by the secretary of labor. The Public Contracts Act sets the minimum at 16 for boys and at 18 for girls employed in firms supplying goods under federal contract. The Sugar Act sets the minimum age at 14 for employment in cultivating and harvesting sugar beets and cane. State laws vary in both standards and coverage. They govern the ages, hours, and conditions of employment and prohibit certain occupations for minors.

adaptations of adult books, including *The Lion*, by Joseph Kessel, which some found "disturbing," others "dramatic." *The Year of the Falcon*, by Jean George, has been praised by some as a discerning picture of an adolescent coming to maturity. Two fantasies widely noticed were Jane Langton's *The Diamond in the Window*, an extraordinary, occasionally confusing story set in Concord, Mass., and Madeleine L'Engle's science fiction allegory, *A Wrinkle in Time*. Another interesting allegory, on the borderline between literature for children and adults, was P. L. Travers' *The Fox at the Manger*, a well-written Christmas story.

Nonfiction for all ages was omnipresent—it is the trend of the times—with science books too numerous to list in detail. Young people may also read about almost any country, even those that may seem remote from the United States but are strategically located: for example, *Afghanistan*, by Christine Weston, and *Cambodia*, by Ruth Tooze. There were also several books about Africa published in 1962. Noteworthy additions to the Horizon Caravel series were *D-Day: the Invasion of Europe*, by Al Hine, and *Russia in the Time of the Czars*, by Henry Moscow.

There were some excellent history books, led by *The Supreme Court*, the second and timely volume of Gerald Johnson's trilogy on United States government. This book and the first volume, *The Presidency*, are considered most useful and clear in exposition. *The Congress* should follow shortly. For the younger teens, or those not willing to tackle the longer volume, there was a pictorial version of Bruce Catton's *This Hallowed Ground*.

Interesting biographies for girls included Anne Guthrie's *Madame Ambassador: the Life of Vijaya Lakshmi Pandit*, which reflects the spirit of present-day Indian women, though it is noncritical; and *Restless Spirit*, by Miriam Gurko, a discerning life of Edna St. Vincent Millay. For boys (and some girls) were *From the Eagle's Wing*, by Hildegard Hoyt Swift, a biography of John Muir; and *Robert Goddard: Space Pioneer*, by Anne Perkins Dewey.

One art book was outstanding in both content and format: *The Art of Ancient Egypt*, by Shirley Glubok. There was also a revision of a standard work, *Famous Paintings*, by Alice Elizabeth Chase. *The Golden Book of the Renaissance*, a simplified version of the Horizon book, with a revised text by Irwin Shapiro, received approval, though it was mentioned that some pictures could have been better reproduced.

(See also CANADIAN LITERATURE; PRIZES AND AWARDS.)

ALICE DALGLIESH,
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CHILE

The Republic of Chile is situated on the southwest coast of South America. It has an area of 286,396 square miles (exclusive of its Antarctic claim, and the Juan Fernández, San Félix, San Ambrose, Sala-y-Gómez, and Easter islands) and a population of 7,827,000. Principal cities (1961 pop. est.): Santiago, the capital, 2,001,000; Valparaíso, 269,000; and Concepción, 174,000. Spanish is the official language.

Government.—Under the constitution adopted in 1925, Chile is a unitary state with a government based on a separation of powers. The Congress consists of a Chamber of Deputies (147 members elected for 4-year terms) and a Senate (45 members elected for 8-year terms). After the March 1961 elections, party membership in the Senate (with that in the Chamber of Deputies shown in parentheses) was: Radicals, 13 (40); Liberals, 9 (26); Socialists, 7 (13); Communists, 5 (15); Conservatives, 4 (18); Christian Democrats, 4 (23); National Democrats, 0 (12); and independents, 3 (0). The president (Jorge Alessandri Rodríguez, inaugurated Nov. 3, 1958) is elected for a 6-year term by popular vote and may not succeed himself. The 14-minister cabinet (a coalition of Liberals, Conservatives, and Radicals since August 1961) must respond to questioning on the floor of Congress. The highest judicial organ is the 13-member Supreme Court.

Education and Religion.—The predominant religion is Roman Catholicism, but freedom of worship is constitutionally guaranteed. Public elementary education is free (ages 7–15); private schools function without restriction. Primary schooling is compulsory. Public elementary pupils in 1961 numbered 891,143. Only 3 out of every 100 pupils finish high school. The public University of Chile (12,323 students in 1960) is one of 8 institutions of higher learning.

Finance.—The budget for 1962 was revised upward: revenue, 928,800,000 escudos; expenditures, 1,316,800 escudos (deficit to be covered by 75 million escudos in government bonds, 55 million escudos from local bank credits, 112 million escudos in previously committed foreign credits, a 26 million escudo credit from the West German government and an Alliance for Progress loan of 120 million escudos). Official rate of exchange (November 1962): 1.41 escudos equal U.S.$1; free rate, 2.44. In 1962, Chile owed $120 million in payments to the United States and expected a total of $260 million from the United States in aid. The ordinary budget for 1963 called for expenditures of 925,364,000 escudos and $54.3 million in foreign currencies; the capital budget, 26,163,000 escudos and $44.1 million. The largest source of revenue is customs duties (60.7%), followed by transactions and excise taxes (19.7%), and income tax (11.4%). In 1961 customs receipts totaled 176 million escudos.

Foreign exchange contributed by the United States-owned copper companies (1961): $179.8, including $74 million in taxes. Long-term United States aid commitments as of mid-1962: $219.2 million (Export-Import Bank, $46.4 million; Agency for International Development, $142.7 million; Social Progress Trust Fund, $18.7 million; Food for Peace, $10.4 million; Peace Corps, $1 million).

Transportation and Communication.—All-weather roads total some 26,000 miles, 1,750 of which are paved (including 364 miles paved in 1961). The rail system totals 5,434 miles (all but 1,500 miles publicly owned), exclusive of international lines such as La Paz (Bolivia)-Arica, the trans-Andean route to Mendoza, and the lines to Argentina and Bolivia out of Antofagasta. Eleven international airlines serve Santiago; the major domestic airline is LAN-Chile. Civil aviation traffic for 1961 totaled 398.3 million passenger-kilometers (down 4% from 1960) and 9.5 million ton-kilometers (down 12% from 1960). Telephones in 1961 numbered 193,175 (56% of the total in Santiago).

Economic Indicators.—Per capita national income in 1960: 510 escudos (1957, 538). Unemployment: over 100,000 (8% of working force). Average annual wage received by 1,246,000 workers in 1961: 289.24 escudos. Price indexes (1958 = 100): wholesale (March 1962), 193; consumer (June 1962 for Santiago only), 183.

Manufactures and Minerals.—Manufacturing production (1953 = 100) registered 135 by April 1962 (1961 average, 128). Chief industrial products (metric tons. 1961): coal, 1,692,000 (up 25% from 1960); crude petroleum, 1,207,200 (up 28%); iron ore (approximately 60% metal content), 6,312,000 (up 33%); copper, 501,600 (up 1%); cement, 883,200 (up 6%); pig iron, 285,600 (up 7%); crude steel, 362,400 (down 16%); nitrates, 1,114,000. Other production data for 1961: liquefied gas, 72,000 cubic meters; cotton fabrics, 72.24 million meters (up 7% from 1960); electric power, 4,776 million kw.-hr. (up 8%).

Agriculture.—Crop production for the 1960–61 season (official est. in 100-kilogram quintals): wheat, 11,232,100; potatoes, 8,173,000; sugar beets, 2,391,300; oats, 1,239,300; onions, 1,234,800; barley, 1,032,200; corn, 1,438,800; rice, 1,093,200; beans, 850,200. Meat production, 1962: 245,720 tons; milk, 824,000 tons; butter, 7,500 tons; edible oils, 26,000 tons; wool, 10,400 tons (est.).

Foreign Trade.—Total exports, 1961: $506 million (1960, $488 million); imports, $591 million (1960, $500 million). A member of the Latin American Free Trade Association, Chile ended 1961 with a balance of $67.9 million in her favor. Imports from the United States in 1961: $226.7 million; exports to the United States, $183.8 million. In 1961, 519,000 metric tons of copper were exported. Other principal exports: nitrates, iron ore, fresh fruit, wool, wine, wood products, molybdenum, and steel.

Events, 1962.—The government was forced to abandon unqualified support for the currency in January because of high imports (especially of luxuries), increased travel abroad, and delays in the arrival of expected foreign loans and investments. On October 15 the escudo was devalued 34% in the controlled market, to approximately U.S.$0.72. In the uncontrolled (brokers') market, the escudo sank rapidly to U.S.$0.45.

EASTFOTO

Militiamen march in Peking on October 1, the 13th anniversary of the founding of the People's Republic of China.

Long-term credits from the United States and international institutions were slow to materialize, forcing expensive short-term borrowing; of the $65 million received from the United States from July 1960 to January 1962, $48 million were required to service existing debt. Wage increases added to inflationary pressure; confidence in the administration's fiscal policies ebbed to the point of systematic liquidation of ready assets by individuals in order to convert escudos into hard currencies (especially dollars). Numerous import, export, and price controls were instituted or altered during 1962 in a generally unsuccessful effort to stem inflation and the withdrawal of capital. As of July, total foreign exchange reserves had deteriorated to $51.3 million. In February the minimum monthly salary for Santiago was raised 5% by law (50% of the previous year's cost-of-living rise) to 80.91 escudos.

In August the fifth Chile–United States agricultural surplus loan ($19.6 million) was signed, making available wheat worth $10.9 million, and raw cotton, $3.5 million, among other commodities. Several Inter-American Bank loans were being put to work (small-farmers' credit, municipal water works, workers' housing, irrigation, the fishing industry, and the splitting up of government farms into individual holdings); $27.1 million had been approved by the beginning of 1962.

A United States economic mission, headed by Alliance for Progress administrator Teodoro Moscoso, flew to Santiago in March in response to Chilean impatience with delays in approval of promised United States funds. A joint communiqué (March 8) announced a United States commitment of $120 million in aid during 1962 and up to $350 million as the United States contribution to the total of $1,035 million in foreign exchange required for the financing of the first five years of Chile's ten-year plan. Nonetheless, at the close of the year, dissatisfaction over "red tape" and United States insistence on prior reforms was running high, as was criticism of internal squabbling and corruption.

President Alessandri discussed Chilean participation in the Alliance for Progress program with President Kennedy, during the former's one-week visit to the United States in mid-December.

In June the Organization of American States Committee of Experts pointed out the inadequacies of proposed tax and land reforms. Opposition in Congress to even this weak legislation led President Alessandri to urge changes in the constitution. The long-awaited agrarian reform bill again passed both houses of the Congress in November, after being sent back in October by the president with a number of changes.

Bolivia ruptured diplomatic relations with Chile in April. Chile was completing a dam to divert 49.7% of the waters of the Lauca River, which rises in Chile's parched Tarapacá Province but flows into Bolivia. When negotiations failed, Chile proceeded to begin diversion and Bolivia took her complaint to the Council of the Organization of American States, which, however, agreed unanimously that Chile's actions did not constitute an "act of aggression." Chile offered to submit the question to the International Court of Justice at The Hague.

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CHINA, Nationalist. See TAIWAN.

CHINA

The most populous and third largest in area of the countries of the world, the People's Republic of China[1] is a Communist-ruled state on the eastern mainland of Asia. Estimated area: 3,691,502 square miles. The population of 716 million (1961 est.) is increasing by about 2% annually—one of the highest rates among the larger nations. The urban population constituted about 14% of the total in 1956. Han Chinese comprise about 94% of the population. Minority groups include the Chuang in the southeast (about 6.5 million); the Hui in the northwest (3.5 million); and Uigur, Yi, Tibetan, Miao, Manchu, Mongolian, and Korean groups. The capital is Peking or Peiping (1958 est. pop., 5,420,000). Other principal cities (with 1957 est. populations): Shanghai, the main seaport (6,900,000); Tientsin (3,220,000); Mukden (2,411,000); Wuhan (2,146,000); Chungking (2,121,000); and Canton (1,840,000).

Government.—Although a constitution adopted in 1954 proclaimed China "a people's democratic state led by the working class," the so-called People's Republic of China is in fact a dictatorship controlled by the leaders of the Chinese Communist Party. Supreme state power is vested by the constitution in the National People's Congress of 1,200 members elected indirectly every four years, but the Congress serves mainly to ratify decisions taken by the Communist Party leadership. An 83-member Standing Committee is the permanent body of the Congress and in practice exercises its authority. Congress elects the chairman of the republic (Liu Shao-ch'i), who is the chief executive officer and titular head of the state. The executive body and highest administrative organ of government is the State Council or cabinet, headed by a premier (Chou En-lai) and comprising 11 deputy premiers, 30 ministers, and a secretary general. A Supreme People's Court and an Office of Supreme People's Procurator General exercise judicial and control functions, respectively. Under the central government at Peking are the 21 provinces, 2 special municipalities (Peking and Shanghai), and 5 autonomous regions (Tibet, Inner Mongolia, Sinkiang-Uigur, Ningsia-Hui, and Kwangsi Chuang).

The Communist Party controls the key posts in the government, armed forces, trade unions, industrial and trade enterprises, communes, and other groups. Mao Tse-

[1] Data given in this article, unless otherwise specified, pertain to the Chinese mainland, or Communist China. For information on Nationalist China, see TAIWAN.

tung, a leader of the Chinese Communist movement since the 1920's and one of the outstanding figures of world communism, is chairman of the top-level Politburo. This 22-member ruling body is elected by the Communist Party Central Committee, which in 1960 consisted of 95 members and 82 alternates. There is also a National Party Congress, which meets annually, and a National Party Conference, which is an extension of the Central Committee and deals with party matters between meetings of the congress. The membership of the Chinese Communist Party was estimated at about 17 million in mid-1961.

Religion.—Although Confucianism, Taoism, and Buddhism have been the principal faiths, antireligious Communist doctrine and the Peking regime's emphasis on group before family life, emancipation of women, and other reforms have weakened the social and cultural matrix of traditional religious attitudes and practices. Religious minorities include some 10 million Muslims in the northwest, nearly 3 million Roman Catholics, and about 700,000 Protestants. The Communist government has severely curtailed the Christian churches in China and has imprisoned or otherwise persecuted Roman Catholic and Protestant missionaries as "agents of imperialism."

Education.—School enrollment in 1958–59 totaled 97.2 million, including 86.4 million primary pupils, 8.5 million secondary students, 1.5 million technical students, and 810,000 students in China's 815 institutions of higher learning (1959–60). The Communist regime claims that three fourths of the population is literate (as compared with less than 20% in 1949) as the result of its vast campaign to increase school enrollment and raise the literacy rate. Some 65 million peasants reportedly attended literacy classes in 1960, and over 13 million workers were enrolled in factory schools. A teacher shortage has hampered educational expansion, and the quality of instruction is often poor. As facilities for graduate study and research are still inadequate, many students study abroad, particularly in the Soviet Union. In line with the country's industrialization efforts, high priority is given to engineering and technical training, and the number of engineers and technicians was reportedly increased from 164,000 in 1952 to 496,000 in 1957. Students are required to perform manual labor while attending school in order to avoid what Peking regards as a dangerous separation between intellectuals and workers. Communist indoctrination proceeds on all levels of instruction.

Finance.—Governmental revenue, 1960: 70.0 billion yuan (54.1 billion in 1959); expenditure, 70.0 billion (52.7 billion); 2.46 yuan equal the U.S. dollar at the official rate. Receipts from state enterprises provided 45.3 billion yuan of total 1960 revenues. Principal expenditures, 1960: economic construction, 42.9 billion yuan; social services, cultural affairs, and education, 8.6 billion; and defense, 5.8 billion. Estimated foreign exchange reserves: $300 million as of Jan. 1, 1961.

Transportation and Communications.—Transport networks (miles, 1960): railways, 24,583; roads, 248,000 (1958); inland waterways, 93,200. A new east-west railroad linking Lanchow with Alma-Ata, USSR (about 1,740 miles) was nearing completion in 1962. Merchant marine (gross registered tons, 1961 est.): 473,000. China's airline, the Civil Aviation Administration of China (CAAC), in 1960 operated scheduled routes aggregating about 23,000 miles to 72 towns and cities, including 8 outside mainland China. Radio receivers: 7,000,000 (1959); television sets, 20,000 (1961).

Industry.—Communist China's failure to issue comprehensive economic statistics for the years 1960 and 1961 indicated that production during both years was severely curtailed because of administrative mismanagement, apathy on the part of workers, and natural catastrophes. The Communist regime announced in October 1961 that the rate of industrial development had been readjusted, but revised industrial goals for 1961 were not made public and new production quotas for 1962 were not set. The government admitted that capital construction of heavy industry had to be reduced drastically in order to concentrate on improving agricultural production. It was announced that a policy of economic "consolidation" would take place in 1961 and 1962 in preparation for the "future expansion of the national economy."

Industrial production reportedly was increased by 18% annually during the first five-year plan (1953–57). The rate of growth during the second five-year plan (1958–1962) was not revealed, but it undoubtedly fell far short of the earlier rate. Chief industrial products and production figures for 1960 (the latest year for which data are available): steel, 18.45 million metric tons; pig iron, 27.5 million metric tons; cotton yarn, 9.0 million bales (400 pounds each); cotton cloth, 7.6 billion meters; chemical fertilizer, 1.98 million metric tons; cement, 12.27 million metric tons (1959); timber, 41.2 million cubic meters (1959); machine tools, 90,000 units; freight cars, 32,000; locomotives, 800; and electricity, 55.5 billion kw.-hr.

China's resources include large deposits of coal, petroleum, iron ore, and other important minerals, although some of these are of low-grade

EASTFOTO

Mao Tse-tung (center), chairman of the Chinese Communist Party Politburo, and Liu Shao-ch'i (at the left), chairman of the People's Republic of China, meet with other delegates to the National People's Congress in Peking in March.

COMMUNIST CHINESE LEADERS

Mao Tse-tung was born in Shao Shan, Hunan Province, China, on Nov. 19 (?), 1893. He attended schools in his native village and in Hsiang, joined Sun Yat-sen's Revolutionary Army in 1911, and in 1912 resumed his studies, at the Hunan Normal School. He was graduated in 1918 and attended classes at the University of Peking. He was one of the founders of the Chinese Communist Party in Shanghai (1921). After the dissolution of the Kuomintang-Communist alliance in 1927, Mao was named commissar of the Fourth Red Army (1928). He became chairman of the first All-China Congress of Soviets in 1931, the year the group organized the Chinese Soviet Republic. After the Communist victory and the founding of the People's Republic in 1949, Mao served as chairman of the Central Government Council until his resignation on April 27, 1959. He retained the chairmanship of the Communist Party Politburo, the most powerful position in China.

Chou En-lai was born in Hwaiyin, Kiangsu Province, China, in 1898, into a well-educated mandarin family. He was educated in China and Japan, and became associated with left-wing causes while still a student at Nankai University in Tientsin; in 1919 he was arrested for leading an anti-government demonstration. He joined the Chinese Communist Party, founded in 1921 by Mao Tse-tung and others, and worked in Europe in 1920–24, organizing youth groups. Returning to China, he joined Chiang Kai-shek in the Kuomintang-Communist alliance, and, after Chiang's break with the Communists, founded the nucleus of the Red Chinese Army in 1927. Chou rose progressively higher in the Communist ranks during the long civil war with the Nationalist forces, which culminated in a Communist victory and establishment of the People's Republic in 1949. He then became premier and foreign minister of the Communist state, but resigned from the latter post in 1958.

quality. Chief minerals (metric tons, 1960): coal, 450 million; petroleum, 5.5 million; salt, 14.3 million; lead, 70,000; zinc, 60,000; tin concentrates, 21,000. China also produces molybdenum concentrate, mercury, bauxite, magnesite, pyrite gypsum, and phosphate.

Agriculture.—China's so-called "great leap forward" in agriculture was dealt a devastating blow in 1960 and 1961 by severe droughts and floods, as well as by bad planning and management, and the inefficiency of the commune system. The Communist regime admitted that natural calamities had "seriously affected" agricultural production on 148 million acres of land, or over half of the country's cultivated area. Production of grains and other crops in 1960–61 apparently declined so drastically below 1959 levels and planned goals that the government did not issue official statistics on crop output.

As a result of agricultural failures, strict rationing was introduced throughout China in August 1960, and in 1961 the Communist regime invested larger capital outlays in agriculture, transferred millions of industrial workers to farms, decentralized the operations of the country's 24,000 rural communes, and began to develop uncultivated areas in the north and west. Despite these changes, however, the country's crop harvest in 1961 was reportedly little better than in the previous year.

China's agricultural production reportedly increased in value by 25% during the first five-year plan (1953–57), and was valued at 67 billion yuan in 1958. Chief crops (metric tons, 1960 est.): food grains (including rice and potatoes), 170 million; sugarcane, 13.9 million (1959); soybeans, 10.2 million; cottonseed, 4.8 million (1959); cotton fiber, 2.4 million (1959); peanuts, 2.4 million; rapeseed, 900,000; sesame seed, 350,000; tea, 159,000. Livestock (million head, 1959): cattle, 65; pigs, 180; sheep and goats, 114.

Agriculture is based on the operations of production brigades, small units within the communes similar to the collective farms that existed before the massive drive toward forming communes began in late 1958. The brigades own farm implements, machinery, and animals, and are given definite plots of land to cultivate. After the commune system was decentralized in 1961, peasants were again permitted to cultivate private plots of land, raise their own livestock and poultry, and receive payments for work done. The communes exercise a vague supervisory role. (See also below, *The Year 1962 in Communist China.*)

Foreign Trade.—The traditional pattern of Communist China's trade has been to export foodstuffs and to import raw materials and industrial products, but as the result of agricultural failures this pattern was altered radically in 1960 to provide for substantial imports of grains and fewer purchases of industrial goods. About 70% of China's trade in recent years has been with the Soviet Union and other Communist countries. Chinese exports to the Soviet Union in 1961 were valued at an estimated $540 million (down 35% from 1960); imports totaled about $360 million (down 60%). A new Soviet-Chinese trade agreement of April 20, 1962, provided for greater Chinese imports of raw materials and machinery in exchange for exports of nonferrous metal ores and textiles.

Communist China's trade with the non-Communist world in 1961 consisted largely of grain imports, totaling about $350 million, and exports of agricultural products, totaling $100 million (down 20% from 1960). It was announced on March 28, 1962, that China had purchased $75 million worth of wheat from Canada—the largest of six Canadian grain sales to China since 1960. Official trade data for Communist China in 1960 and 1961 were not revealed; total exports in 1959 were valued at about $2.1 billion, and imports, $2.25 billion.

W. R. F.

The Year 1962 in Communist China

The most important developments in the year 1962 were Communist China's border war with India (see below, *Sino-Indian Border War*) and the country's continuing economic crisis.

Economic Developments. *Agricultural Crisis.*—Communist China's economic reverses, which began in 1960, continued into 1962 with no sign of speedy recovery. Agricultural production dropped so sharply that food shortages remained unmitigated throughout the country. Under a severe food-rationing system, malnutrition was common in both urban and rural areas. The decrease in agricultural output had serious effects on both light and heavy industry. Although the Peking regime had stopped issuing statistics to avoid embarrassments, there is no doubt that its economic growth took a big leap backward after ten years of advance.

Communist China's agricultural failures are partly attributable to natural disasters. It was reported that drought seriously damaged China's summer grain crop over an area extending from the northeast to the southwest. Floods also caused vast destruction in the south, especially in the Pearl River Delta. In some areas frost and insect pests joined in causing heavy damage to grain as well as cotton crops.

New Program.—Various measures had been taken by the Chinese Communists to cope with the agricultural crisis. Peasants were urged to plant as many subsidiary agricultural products as possible. In April 1962 the National People's Congress adopted a "ten-task" program, shifting emphasis to agricultural production. Peking had at last decided that past overemphasis on industrial development must be rectified. The new program called for an increase in agricultural production; a retrenchment of capital reconstruction; the rational arrangement of the production of light and heavy industry so that the output of daily necessities would be increased; a shift of urban workers and functionaries to rural productive work; and improvement in the market supply to insure that the supply of commodities would meet demands. In short, the new policy aimed at "an all-round balance between the branches of the national economy in the order of agriculture, light industry, and heavy industry."

In pursuance of this policy Peking on June 6 ordered that capital construction plans be reviewed so as to return unused land to farmers. Within two months of the announcement of the new program more than 20 million people were moved from cities to rural areas to help increase agricultural production.

Overpopulation.—The serious food situation finally forced the Chinese Communists to reverse their policy toward birth control. The problem of overpopulation was raised in 1957 by some liberal economists, but the suggestion of family planning brought strong criticism from some Communist leaders whose orthodox Marxist views rejected any possibility of overpopulation under communism. After three years of agricultural disasters, however, Peking decided to reinstate a discredited policy, hoping that it would help solve the food problem. A campaign for birth control was therefore launched in 1962, somewhat hesitantly at the beginning, but it was pushed with more vigor in

the fall of the year. Newspapers and magazines not only discouraged early marriages, but recommended family planning and gave detailed instructions in the use of contraceptives.

An Optimistic Note.—In an editorial on October 1, *Jenmin Jih Pao,* organ of the Chinese Communist Party, declared that the "most difficult time was over" as China's economy was "getting better day by day." It added that the summer harvest had shown some increase over that of 1961. But although the newspaper asserted that economic difficulties were "only temporary," there was no reiteration of the prediction that China would become an industrial giant within a short time. In fact, Peking began to emphasize that "socialist industrialization" could only be a "gradual process."

Political Developments. *Massive Exodus.*—Continued economic difficulties had serious effects on the morale of the people in Communist China. The prevalent mood of the people was described by some observers as one of "apathy, dejection, despondency, and despair." Of a more violent nature were the rice robberies frequently reported in the cities, including Shanghai and Canton. But the most astounding reaction of the Chinese people to their economic woes was their massive exodus to Hong Kong, the British colony south of Canton. In May 1962, when the influx became the heaviest, about 15,000 Chinese evaded the British border patrols and made their way into the colony. An estimated 60,000 refugees entered Hong Kong in the first five months of 1962, and about the same number crossing the border were returned to China by the Hong Kong police in the first three weeks of May.

Speculation was rife as to the motive of the Chinese Communists in permitting the massive exodus. The sudden relaxation of Communist vigilance along the 14-mile frontier in May was considered unusual. Was it the aim of Peking to embarrass the Hong Kong government and the free world—the former being forced to send back the refugees while the latter looked on helplessly? A more reasonable explanation seems to be that the Chinese Communists themselves were caught unprepared by the sudden massive migration. It appeared that at first they were inclined to let the people go to Hong Kong in order to help relieve the acute food shortage in the nearby areas. As the migration became a stampede, the Communists were for some time undecided as to what to do. Finally they seemed to realize that the surge of refugees from China, if not stopped, would signify to the world the discontent of the people and the failure of the Communist regime. Communist China informed Britain on May 28 that she had taken note of the situation and that she believed the exodus of refugees would end quickly. Apparently the Chinese border guards had taken action, for the flow of refugees fell abruptly to a trickle on May 25.

National People's Congress.—Amidst widespread discontent and rising criticism of the government for failing to solve the economic problem, the National People's Congress, which had not met the preceding year, convened in March 1962. The session of the Congress was shrouded in secrecy, but it was known that China's economic crisis had set off bitter policy debates in its meetings.

After a three-week closed session, the Congress finally approved a "ten-task" program presented by Premier Chou En-lai for the adjustment of the national economy. In emphasizing agriculture at the expense of industry, the new program reversed the policy of China's two five-year plans.

UPI

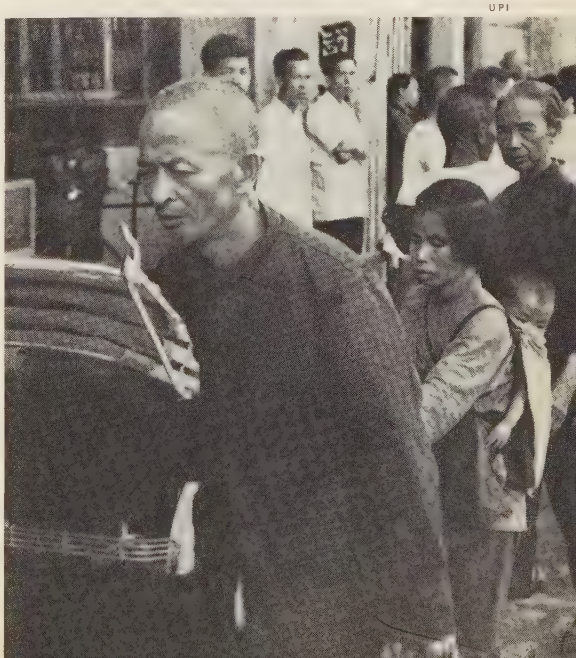
Citizens of Canton, victims of Communist China's persistent food shortage, look for scraps of food in garbage heap.

There was no report of any intention to launch a third five-year plan, although 1962 was the last year of the second five-year plan.

Communist Leadership.—Criticism of the Communist leadership was noted at meetings of the Central Committee of the Chinese Communist Party on September 24–27. It was reported that a "moderate" faction of the party challenged the top leadership by attacking its economic policies. This group had opposed the extremist features of the "big leap forward" economic campaign of 1958, and now advocated more gradual economic expansion. While Mao Tse-tung and his close lieutenants were believed to have regained control of the party, they had to admit the "incompetence of some leading cadres" in reorganizing the Secretariat of the Central Committee. Two mili-

Refugees from Communist China arrive in the Portuguese colony of Macao, October 17. Other refugees fled to Hong Kong.

UPI



tary leaders, Huang Ko-cheng and Tan Cheng, were dismissed from the Secretariat, and three new members—Lu Ting-yi, the party's propaganda chief, Kang Sheng, an alternate member of the Politburo, and Lo Jui-ching, former secret police chief who had succeeded Huang as the army's chief of staff—were elected.

Foreign Relations. *Soviet Union.*—The ideological conflict between Communist China and the Soviet Union, which began in 1958, was intensified at the beginning of 1962 when each side launched slashing attacks on the other, although the criticisms were often couched in abstruse terms and invariably stopped short of referring to the opponent by name. The Russians condemned "people who call themselves Marxist-Leninist" and who yet oppose the "Leninist principle of peaceful coexistence." The Chinese Communists warned that "revisionists" and "reactionaries" had launched anti-Chinese campaigns, "only to meet ignominious bankruptcy time and again."

On January 20, at a time when Moscow branded Albania as an "enemy" country, Premier Chou En-lai declared that Communist China pledged its "everlasting and unbreakable friendship as well as material cooperation" to Albania. Simultaneously, Peking announced that five new economic and technical agreements had been signed with the Albanian government.

In March, when Communist China was preparing for the convocation of the National People's Congress, there were indications that Peking was tuning down its controversy with Moscow. In an address before the Congress on April 16, Chou En-lai proclaimed "unswerving friendship" with the Soviet Union, and called on the Communist world to "unite all forces that can be united" against the United States.

A Soviet economic delegation visited Peking and on April 20 signed a trade agreement with Communist China for 1962. Under the treaty the Soviet Union undertook to supply China with nonferrous metals, petroleum products, industrial chemicals, trucks, scientific instruments, and machinery. In return, Peking agreed to ship to Russia nonferrous metal ores, wool, silk fabrics, handicraft products, and mercury.

These developments, however, must not be interpreted as having healed the rift between Peking and Moscow. Neither side had retreated from the ideological line that gave rise to their disputes. Rather, it was their intention to confine their quarrels to "ideological struggles." In a speech on September 30, Chou En-lai declared that the continued attempts of the "imperialists" and "modern revisionists" to isolate China were futile. He added that the Chinese people "will never submit to any pressure, much less bargain away principles."

United States.—As their ideological conflict with Moscow sharpened, the Chinese Communists hardened their policy of hostility toward the United States. The major newspapers in Peking repeatedly charged that the United States was "actively preparing for an overall nuclear war." In spite of an acute food shortage, Peking announced that it would not accept any food offer from the United States.

In June 1962, Communist China concentrated a large force of troops and jet planes along the Fukien coast, opposite the Nationalist-held offshore islands of Quemoy and Matsu. Peking declared that the move was necessary because Nationalist China was "planning an invasion with United States support and encouragement." To head off a possible crisis over the Taiwan Straits, the United States informed the Chinese ambassador at Warsaw that it would not support any attempt by Nationalist China to land forces on the mainland.

On September 9, Communist China shot down a Chinese Nationalist U-2 aircraft on a reconnaissance mission over eastern China. Peking immediately charged that the flight of the American-made plane was part of the "United States U-2 espionage program against Socialist countries." The United States rejected the protest, pointing out that the ill-fated aircraft was one of the two U-2's obtained by Nationalist China from Lockheed Aircraft Corporation in a "direct sale" in 1960.

Asia.—Japanese trade with Communist China was officially estimated at $80 million in 1962, or an increase of approximately $37 million from the preceding year. In August, Japanese Premier Hayato Ikeda agreed to reorganize the Japan-China Export-Import Association, and indicated that the Japanese government would participate in the task of expanding Japanese trade with Peking. A delegation headed by Kenzo Matsumura, a senior adviser of Japan's ruling Liberal-Democratic Party, went to Peking in September. It was reported that Premier Chou En-lai had agreed to a "gradual and cumulative resumption" of economic and political relations between the two countries. The resultant five-year trade agreement, announced on November 9, provided for a private barter exchange amounting to $104.8 million annually for the period 1963–67.

Communist China took an active role in international politics in Southeast Asia. It maintained an extensive military advisory program in North Vietnam, and was one of the fourteen nations which signed the Declaration and Protocol on the Neutrality of Laos on July 23, 1962. China and Pakistan announced on December 26 their "complete agreement in principle" on China's boundary with Pakistan-controlled Kashmir. On June 3, Communist China announced the expiration of the trade treaty between Tibet and India.

Sino-Indian Border War.—When fighting broke out on the Tibetan border in early October, the Indian Army was ordered to drive the Chinese Communist forces out of the disputed North-East Frontier Agency area. A massive attack was launched by the Chinese on October 20, and the Indians were rapidly pushed back. By November 19 the Chinese forces had thrust deep into northeastern India, outflanking Indian positions at the strategic See La pass and threatening the Assam plains. Simultaneously, Communist Chinese troops captured the outposts of the Chushul airport in the Ladakh area.

Peking on November 21 proclaimed a cease-fire and declared that beginning December 1 the Chinese troops would be withdrawn to positions 12½ miles behind the line of actual control that existed as of Nov. 7, 1959. It called for a similar withdrawal by India and for peaceful negotiations to settle the border dispute. In a reply on December 1, Indian Prime Minister Nehru complained that the line of control in the Ladakh area, as defined by Peking, was along the line established by the Chinese forces after the attacks of October 1962. He proposed instead the restoration of the "status quo" prior to Sept. 8, 1962, as the "necessary atmosphere" for negotiations.

(See also FAR EAST; INDIA.)

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CHOCOLATE. See COCOA; CONFECTIONERY.

CHOU EN-LAI. See biographical sketch under CHINA.

CHRISTIAN SCIENCE

A new radio series and expanded activities for East Asia were featured in the 1962 work of The Mother Church, The First Church of Christ, Scientist, in Boston, Mass.

The Bible Speaks to You, the new weekly radio series, was inaugurated in April 1962 over more than 800 stations in the United States and Canada and over Radio Luxembourg. Spanish and German versions were later broadcast in Buenos Aires and Berlin. It replaces the previous radio-television series, *How Christian Science Heals*.

The Board of Lectureship reported increasing response to Christian Science lectures in Formosa and Japan. Japanese and Indonesian editions of *The Herald of Christian Science* were initiated in 1962, bringing to 11 the number of languages in which the magazine is published. Also translated into Indonesian was *Unity of Good*, the first publication in that language of the writings of Mary Baker Eddy, the discoverer and founder of Christian Science.

Other new translations of Mrs. Eddy's works included the first Russian edition of *Science and Health with Key to the Scriptures*, and a Greek translation of the *Manual* of The Mother Church. Also appearing in 1962 for the first time was the Italian edition of the *Christian Science Quarterly*, which contains the weekly Bible lessons studied by Christian Scientists all over the world.

A significant increase was reported in the circulation among schools and colleges of *The Christian Science Monitor*, the church's international daily newspaper. In July, the *Monitor* for the second time won the Ayer Cup for newspaper typography.

New officers named in 1962 included Bruce G. McCauley of Honolulu, Hawaii, manager of The Christian Science Publishing Society, and Ralph E. Wagers of Chicago, Ill., president of The Mother Church.

DeWitt John,
Manager of Committees on Publication,
The First Church of Christ, Scientist, Boston.

CHRISTMAS ISLAND. See Australia.

CHROMITE. See Mineral Production.

CHRONOLOGY, 1962. A list of the important dates of 1962, and a Chronological Index of the more important events of the year, may be found at the front of the volume.

CHURCH MEMBERSHIP, U.S.

There were 116,109,929 members of 258 religious bodies in the United States (including Alaska and Hawaii) in 1961, according to the *Yearbook of American Churches for 1963*. This membership represents an increase of 1,660,712 members, or 1.4%, over 1960. Local churches (parishes and congregations) numbered 319,670 in 1961.

Statistics for 84 religious bodies with membership of 50,000 or more (representing about 99% of all members) are shown in the following table.

U.S. CHURCH MEMBERSHIP, 1961*
(Churches of 50,000 or more members)

Religious body	Members
Protestant bodies	
Adventists, Seventh-day	329,152
Apostolic Overcoming Holy Church of God	75,000[1]
Assemblies of God	514,317
Baptist Association, American	650,800
Baptist Association, North American	330,265[2]
Baptist Association of America, Conservative	300,000
Baptist Churches, General Association of Regular	143,782
Baptist Convention, American	1,521,052[3]
Baptist Convention of the USA, National Primitive	85,983
Baptist Convention, Southern	9,978,488

U.S. CHURCH MEMBERSHIP, 1961*, Cont'd
(Churches of 50,000 or more members)

Religious body	Members
Baptist Convention, USA, Inc., National	5,000,000[4]
Baptist Convention of America, National	2,668,799[1]
Baptist Evangelical Life and Soul Saving Assembly of USA, National	57,674[5]
Baptists, Free Will	193,664
Baptists, General	58,943
Baptist General Conference	75,613
Baptist General Conference, North American	51,611
Baptists, Primitive	72,000[6]
Baptists, United	63,641[7]
Baptist Church, United Free Will	100,000[4]
Brethren, Church of the	200,788
Christian and Missionary Alliance	60,252
Church of Christ, Scientist	268,915[8]
Church of God	71,606
Church of God (Anderson, Ind.)	142,823
Church of God (Cleveland, Tenn.)	179,651
Church of God in Christ	411,466
Church of Jesus Christ of Latter-day Saints	1,595,390
Church of Jesus Christ of Latter-day Saints, Reorganized	157,873
Church of the Nazarene	315,647
Churches of Christ	2,250,000
Congregational Christian Churches	1,436,884
Disciples of Christ, International Convention	1,797,466
Evangelical Covenant Church of America	61,108
Evangelical and Reformed Church	817,951
Evangelical United Brethren Church	747,932
Federated Churches	88,411[8]
Friends, Five Years Meeting of	71,552
Independent Fundamental Churches of America	90,040[3]
International Church of the Foursquare Gospel	84,741
Jehovah's Witnesses	273,131
Lutheran Church, American	2,295,188[9]
Lutheran Church, Augustana Evangelical	619,040
Lutheran Church in America, United	2,390,075
Lutheran Church, Missouri Synod	2,464,436
Lutheran Free Church	90,253
Lutheran Synod, Wisconsin Evangelical	348,184
Mennonite Church	74,321
Methodist Church	10,046,293
Methodist Episcopal Church, African	1,166,301[5]
Methodist Episcopal Church, Christian	444,493
Methodist Episcopal Zion Church, African	770,000[2]
Methodist Church of North America, Free	55,520
Moravian Church in America	56,195
Pentecostal Church of God of America	109,900
Pentecostal Church, United, Inc.	175,000[3]
Pentecostal Holiness Church, Inc.	55,502
Presbyterian Church, Cumberland	83,642
Presbyterian Church in the U.S.	917,449
Presbyterian Church in the USA, United	3,242,479
Protestant Episcopal Church	3,269,325[3]
Reformed Church, Christian	250,934
Reformed Church in America	230,210
Salvation Army	257,832
Spiritualists, Int. General Assembly of	164,072[1]
Triumph the Church and Kingdom of God in Christ	65,763
Unitarian Universalist Association	147,031[10]
Total Protestants	64,434,966[11]
Non-Protestant Bodies	
American Carpatho-Russian Orthodox Greek Catholic	100,000
Armenian Church	127,000
Buddhist Churches of America	60,000
Bulgarian Eastern Orthodox Church	86,000[3]
Catholic Church of America, Polish National	282,411[3]
Catholic, Roman	42,876,665
Greek Archdiocese of North and South America	1,200,000[3]
Jewish Congregations	5,365,000
North American Catholic Church	65,235
North American Old Roman Catholic Church	84,565
Romanian Orthodox Episcopate of America	50,000
Russian Orthodox Greek Catholic Church of America	850,000
Russian Orthodox Church Outside Russia	55,000[7]
Serbian Eastern Orthodox Church	130,000
Syrian Antiochian Orthodox Church	110,000[3]
Syrian Orthodox Church of Antioch	50,000
Ukrainian Orthodox Church of USA	86,700
Total non-Protestants	51,674,963[11]
Total Protestants and non-Protestants	116,109,929[11]

* Mainly for the calendar year 1961 or a fiscal year ending in 1961; figures include Alaska and Hawaii.
[1] 1956. [2] 1959. [3] 1960. [4] 1958. [5] 1951. [6] 1950. [7] 1955. [8] Data not reported; figure shown from *Census of Religious Bodies, 1936* (U.S. Bureau of the Census). [9] Includes membership of the Evangelical Lutheran Church and the United Evangelical Lutheran Church, which merged with the American Lutheran Church in 1961. [10] Includes membership of the Unitarian Churches and the Universalist Church of America, which merged in 1961. [11] Includes church bodies with less than 50,000 members not listed above.

Total church membership set a new record in 1961, and represented 63.4% of the population. Roman Catholic membership showed a gain of 1.9% in 1961; Protestants (reporting) gained 1.2%.

CHURCH OF JESUS CHRIST OF LATTER-DAY SAINTS

Convert baptisms numbering 88,807, together with children blessed and children baptized in stakes and missions, brought church membership to 1,823,661 as of Jan. 1, 1962, organized into 3,143 wards and independent branches in 345 stakes, and 1,820 branches in 64 full-time missions.

In 1962 more than 11,000 full-time and 6,500 local missionaries were serving throughout the world. New missions were created in Great Britain, Germany, South America, and Korea. New stake organizations were effected in various parts of the United States, Canada, Mexico, Samoa, Germany, Switzerland, England, and Scotland.

George Q. Morris, a member of the Quorum of the Twelve Apostles, passed away on April 23, 1962. Theodore M. Burton, assistant to the Twelve, was appointed president of the European Mission, with headquarters in Frankfurt, Germany, succeeding Alvin R. Dyer. At the October General Conference, Nathan Eldon Tanner was sustained as a member of the Council of the Twelve Apostles, filling the vacancy caused by Morris' death. Bernard P. Brockbank was sustained as an assistant to the Council of the Twelve.

On May 26, 1962, a site was dedicated and ground-breaking services were held for the erection of the Oakland, Calif., Temple, the 15th such edifice to be erected in this dispensation.

An All-Church Coordinating or Correlation Council, with three coordinating committees (one for children, one for youths, and one for adults) was established. The Council and these committees will correlate and coordinate the instructional and activity programs of all priesthood quorums and auxiliaries, including missionary instruction and activities for the entire church.

Brigham Young University enlarged its facilities by the completion and dedication of the new library and administration building.

The Salt Lake Tabernacle Choir won a special citation for the movie presentation *With Music Ring* at the Edinburgh Film Festival in Scotland, and the Peabody Award for public service in television for a coast-to-coast broadcast on New Year's Eve, 1961, of *Let Freedom Ring;* and participated in the initial intercontinental Telstar satellite broadcast from Mt. Rushmore, S.Dak.

To increase its facilities for helping the needy, the Welfare Program doubled the capacity of its Central Bishop's storehouse and expanded the Deseret Industries program.

JOSEPH ANDERSON,
Secretary to the First Presidency.

CHURCHES OF CHRIST

Using the New Testament as their only guide in religious faith and practice, the Churches of Christ numbered 2 million members and 22,000 congregations in 1962. Once largely confined to the southern United States, the churches have spread to large urban centers in the North. In 1962, 12 congregations were started in the Chicago area and six in Detroit. In New England, 10 were started in 1961–62; and on Long Island, three were started in 1960–62. In New York City, the first church erected by the Manhattan Church of Christ was planned to be built on Madison Avenue.

Enrollments in the church's schools increased to 17,239 in 1962, and three Bible chairs were established, in Kansas, New Mexico, and California. The church's growth is reflected in the rebuilding of the Children's Home, near Pomona, Calif., at a cost of $200,000, and the expansion of the Shults Lewis Children's Home at Valparaiso, Ind. *Action,* a new publication, appeared in Los Angeles, and others are planned.

In 1962 the full-time ranks of foreign missionaries were increased by 25 to a total of 211. Greece, Yugoslavia, Ecuador, the Dominican Republic, Vietnam, and Peru were entered. In Nigeria, where the Churches of Christ have 5,000 congregations, 40,000 members, and 15 schools, preparations were made to offer secondary education. Three radio programs were being broadcast to West Africa. Plans were made to start Hong Kong College in 1963.

ELZA HUFFARD,
President, Northeastern Institute for Christian Education.

CIGARETTES AND CIGARS. See TOBACCO.
CITRUS FRUIT. See FRUITS.

CITY PLANNING

As the problems associated with the vast urban expansion of the 1960's became both more complex and more difficult to cope with, interest in urban affairs continued to mount in the United States. President Kennedy cited urban development as among the nation's most severe and unattended areas of domestic concern, and recommended that a new cabinet-level Department of Urban Affairs be created to deal with the related issues. Although Congress did not approve the legislation in 1962, the president's proposal symbolized official America's sharpened attention to what has been called the "metropolitanization of the nation."

Recent Growth in City Planning.—In local, state, and federal governments, in civic groups of diverse sorts, and in the universities and colleges, a vast array of specialized talents was being mobilized in 1962 in the growing effort to supply demanded social services, to replace obsolete structures, and to guide the location and the character of new buildings and new public facilities. The array of problems resulting from rising suburban populations—water and air pollution, traffic delays, needed new schools, and the rising costs of the goods and services purchased by municipalities and by private families—continued to swell the wave of citizen participation in suburban community affairs. At the same time, continuing poverty of central city families, the accelerating physical obsolescence at the metropolitan centers, and the accelerated aging of buildings in the large, middle-territory, "gray areas," were calling forth improved programs for dealing with them.

This recent growth in city planning activity was reflected in the size of the professional society's membership rolls. The American Institute of Planners was founded in 1917, but by 1942 its total membership stood at only 197. In 1952, it had risen to 1,033; and by mid-1962, membership in the institute was nearly 3,100. Accounting for nearly three fourths of those eligible for election to membership, these city planners were paralleled by much larger cadres of specialists in engineering, architecture, finance, and a growing array of social sciences, all of whom were joining in a collaborative enterprise. By the end of 1962, over 20 universities had established research centers devoted to studies of cities and regions. (See also HOUSING.)

The Advent of Simulation Models.—City planning has traditionally been an activity seeking to "design the city" by deciding in advance of acting. In many professional fields in which workers seek

to design a product or a future condition, empirical experiments can be conducted to test the consequences of a given act. Thus, in designing an auto or a radio, alternative designs can be built, tested, and, if necessary, modified. Or, if the costs of building full-scale models of the final product are too high, as with a flood-control works, a miniature three-dimensional physical model can be built simulating the full-scale version.

It is not possible to test out alternative designs for a city in either of these ways, however. The costs of experimentation would be prohibitive, and the results of the actions would not become apparent for many years. It would then be too late to undo undesired consequences. Instead, a more abstract mode of simulation is necessary for city analysis. Urban simulation models, as they were emerging in 1962, are merely statements that describe or, at best, explain, relations among components of the city. Typically expressed in the language of mathematics, such a statement, if valid, permits one to vary one component and to deduce the consequent effect on another. Of course, many factors influence each component of a city's plan, and a comprehensive simulation model of a metropolitan area would be very complex. But recent improvements in the theory of urban growth are permitting just this kind of simulation model to be developed and applied in city planning practice.

The Penn-Jersey Transportation Study, devoted to preparing a plan for the area extending from Trenton to Camden-Philadelphia, had by the end of 1962 made the major advances in developing and using such a model. Other simulation models were emerging for different purposes, the first for community renewal programs.

Community Renewal Programs.—Initially authorized in the Housing Act of 1959, the Community Renewal Program (CRP) first became a major force in 1962. By the end of the year, about 100 municipalities had received federal grants covering two thirds of renewal costs.

Conceived as a means for dealing comprehensively with city building activities, the CRP was at once an attack on the project-by-project approach to urban renewal and an effort to coordinate and to integrate all activities of all city agencies concerned with physical development.

A variety of approaches emerged across the nation in this novel federal-local planning enterprise; the efforts of Pittsburgh, Pa., San Francisco, Calif., and Detroit, Mich., were notable, however. Each was independently seeking to draw upon recent theoretical and methodological developments and to build a model that would simulate the city's growth processes. By introducing alternative hypothetical governmental actions at simulated points in future time, the influences on market processes were to be predicted, thus making possible more sensitive public programs directed toward specific goals. (See also HOUSING.)

Other Events.—The Chicago Area Transportation Study (CATS) submitted its final report, in which a highly innovative method was employed to identify the least-cost highway plan. In Washington, D.C., the National Capital Transportation Agency reported to Congress, proposing an 80-mile rail-rapid-transit system, including an extensive subway under central Washington. In the San Francisco Bay area, after 13 years of study and planning, a proposal to build an all-new, extensive, $1 billion rail-rapid-transit system was accepted by the voters. Construction is to start in 1964, and service is to begin in 1968 on this, one of the largest public works projects in the nation's history. (See also URBAN TRANSIT.)

ELLINWOOD IN TUCSON (ARIZ.) STAR

"SHOT FROM UNDER HIM?"

Urban renewal projects around the country were moving toward completion. Downtown Baltimore's Charles Center, among the largest in the nation and a pace-setter in large-scale urban design, was in full construction on a site in the heart of the central district. The Boston CRP studies independently incorporated a major effort to improve the visual qualities of Boston. Throughout the United States, a new emphasis on the visual design of cities was emerging.

(For further references, see the Index entry, *City Planning.*)

MELVIN M. WEBBER,
Associate Professor of City Planning, University of California, Berkeley.

CIVIL AVIATION. See AERONAUTICS.

CIVIL DEFENSE

Responsibility for national civil defense in the United States was transferred from the Office of Civil and Defense Mobilization, a small independent agency, to the Department of Defense on Aug. 1, 1961, by a presidential executive order. The program is supervised within the department by the Office of Civil Defense (OCD) and is directed by Assistant Secretary of Defense for Civil Defense Steuart Pittman, who was appointed on Sept. 19, 1961.

In December 1961, the Defense Department announced a program to establish 235 million shelter spaces—70 million to be identified in existing buildings, 100 million to be built through a shelter-incentive program, 5 million to be incorporated in federal buildings, and 60 million to be provided entirely by private means.

Defense Secretary Robert McNamara on Feb. 9, 1962, sent the proposed shelter-incentive legislation to Congress. The OCD was to be given $460 million for payments to schools, hospitals, and other nonprofit welfare institutions building public fallout shelters with a capacity of 50 or more persons. Up to $25 per shelter space was to be authorized (the average cost per shelter space is about $40). On February 16, President Kennedy delegated specific responsibilities to federal agencies for rehabilitation after nuclear attack.

On August 1 the House of Representatives approved a bill that trimmed the OCD's budget from

the proposed $695 million to $75 million and eliminated the shelter-incentive plan altogether. Two days later, President Kennedy made a personal appeal to congressional leaders to restore $235 million for the program of marking shelters in existing buildings. In the bill that was finally passed and signed by the president on October 4, $113 million was appropriated for all federal civil defense programs—$75 million for the operation and maintenance of existing programs and $38 million for the shelter-marking program.

Shelter analysis procedures had been taught to about 2,700 architects and engineers in the winter of 1961–62. By late October 1962, the survey conducted by them had identified shelter space for 100 million persons in existing structures throughout the United States. The radiation hazard would be 100 times less inside these structures than outside them.

Public apathy was blamed for Congress' failure to implement the civil defense program further. Public interest in home shelters, which had begun with the Berlin crisis in 1961, had decreased considerably by the spring of 1962. Moreover, the value of shelters was still doubted by many, despite assurances by the president and the secretary of defense that they could save millions of lives in the event of a nuclear attack.

Plans for the first shelters to be incorporated in federal buildings were announced on June 1. The Defense and Agriculture departments jointly planned 12 shelters, to protect 1,750 persons, in Forest Service buildings to be built in eight states.

The Cuban crisis in October gave a strong impetus to civil defense. Fear of nuclear attack prompted an examination of available shelter space which determined that relatively few shelters were stocked with food and water. On October 27, a three-month accelerated program to expedite all civil defense efforts was announced by Assistant Secretary Pittman at a conference with members of the Civil Defense Committee of the Governors' Conference. At the same time, President Kennedy called for the support of all governors in carrying out the program.

(*The foregoing article is based in part on information from the Office of Civil Defense.*)

CIVIL ENGINEERING. See BRIDGES; CANALS; DAMS; HIGHWAYS; RAILROADS; TUNNELS.

CIVIL LIBERTIES

An almost revolutionary increase in emphasis on civil rights has taken place in the United States during the past fifteen years. To some degree this is the result of a natural maturation process in which the nation became aware of the many inequalities and discriminations within its society. But the emphasis was also produced by the world situation in which the United States found itself the leader and the most powerful force in the cold war. As a way of life, democracy has been on trial and, in the process, new blood has been transfused into civil liberties.

Dominating this postwar period is the rightful claim of the Negro citizen to equal opportunity without discrimination. Although much remains to be done, progress has been made in integrated education, the right to vote, and equality in housing and transportation. Before World War II, little was heard of various procedural rights based on due process. Since then the courts have increasingly guaranteed the right against self-incrimination and have protected an accused against illegally obtained evidence. The right of free speech has also become more absolute in recent years, in spite of certain contractions during the so-called "McCarthy period." Released-time for religious instruction and aid to parochial schools have been challenged in the name of separation of church and state.

The guarantee of no one civil liberty dominated the year 1962. Rather, the focus was on three: the separation of church and state, equal representation for all voters in a state legislature, and the right of a qualified Negro to attend an all-white university.

Of these three issues, the most contention resulted from a U.S. Supreme Court decision, *Engel v. Vitale,* invalidating an officially prescribed prayer in the schools of New York. On the recommendation of the New York Board of Regents, the Board of Education of New Hyde Park had directed that the recommended "nondenominational" prayer be repeated aloud by each class at the beginning of the school day. Objection was raised by the parents of ten pupils on the ground that the prayer was contrary to their beliefs and a violation of the "establishment clause" of the 1st Amendment to the Constitution, which provides that Congress and the states shall "make no law respecting an establishment of religion." Much of the public debate that followed this decision evidenced a lack of understanding of the facts involved and, therefore, of the court's holding. Only an official prayer was banned—at least for the time being. How far the court would go at the request of minority groups to interfere with other traditional practices in public schools was not indicated. May an Old Testament verse be recited each morning? May a moment for meditation be set aside? Is the meaning of the clause clear and absolute, or does it leave room for a balance between a majority tradition and a minority right? (See also EDUCATION.)

A question allied to the prayer decision but with more political ramifications is whether the federal government, in the light of the establishment clause, may include church-related schools in a general aid-to-education bill. As in 1961, Congress failed to provide the billions of dollars advocated by the Kennedy administration. Many forces contributed, but among them was the division of opinion on the constitutionality of direct or indirect aid to parochial schools.

The second important issue of 1962—equality of voting rights and of representation—was also the result of a Supreme Court decision, *Baker v. Carr.* In spite of state constitutional requirements that representatives in the state legislatures be apportioned according to the population, as determined at each census, it has long been true that such reapportionment often has not taken place. So-called "rotten boroughs" have existed in many sections of the country. With the urbanization of society, the city dweller has often been underrepresented, as compared with his country cousin. Until 1962, the Supreme Court had avoided the problem on the ground that it was primarily political.

In the *Baker* case, certain qualified voters in Tennessee claimed that the 1901 apportionment law, still in force, deprived them of equal protection of the laws. Although the Supreme Court decided only that the issue was justiciable and referred the case back to the lower court which had held to the contrary, the political consequences have already been felt. In the November 1962 elections, legislatures were chosen by five states which had been redistricted since the Supreme Court decision. In eight states, reapportionment

propositions were on the ballot; and in other states the lower courts marked time until legislatures could act. Tennessee's first attempt at redistricting was held inadequate. Alabama accepted a proposal of the federal court. Georgia was forced to abandon its county court system. (See also Reapportionment and Redistricting.)

Compared with the prayer decision and that on reapportionment, the right of a qualified Negro to be admitted to a state university presented nothing novel. Since the Supreme Court's segregation decisions of 1954 and 1955, it has been clear that the right existed, and the years since then have witnessed a very gradual integration of races in the public schools except in parts of the deep South. What differentiated 1962 from other years since 1955, however, was the forced admission of a Negro, James Meredith, to the University of Mississippi with the aid of federal troops. (See also Education; Mississippi.)

As in earlier years of the decade, other civil liberties were protected in a variety of ways. The courts have been most punctilious in guaranteeing the right against self-incrimination, in condemning loyalty oaths which are vague, and in upsetting criminal convictions based on illegally obtained confessions or trials without benefit of counsel. Legislatures in many states have also contributed where the federal or state constitutions are not applicable. This was particularly true in 1962 in the sphere of private employment, where discriminatory practices came under legislative or administrative prohibition.

(See also Law and the Index entry, *Civil Liberties.*)

Ralph F. Bischoff,
Associate Dean,
New York University School of Law.

CLEVELAND

A major industrial center and a Lake Erie port, Cleveland, Ohio, is the largest city in the state and the eighth most populous in the nation (1960 census, 876,050; 1961 est., 869,715). It is the seat of Cuyahoga County, eighth among United States counties in 1960, with 1,647,895 residents (1961 est., 1,679,879). Cleveland covers 75.66 square miles; the county, 460 square miles.

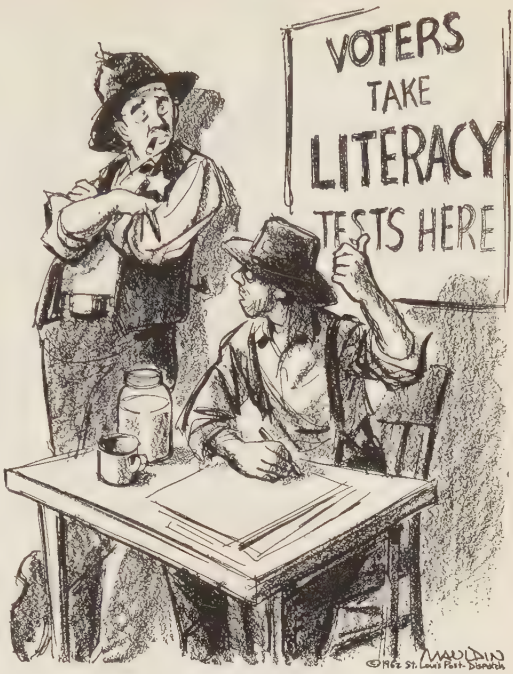
The Cleveland City Council appropriated $56,233,222 on March 26 for 1962 operations. Net tax-supported debt, Jan. 1, 1962: $129,270,771. The 1961 city real estate tax for all purposes (yielding 1962 revenue): $40.

Public school enrollment in the city was 145,000 in 1962; in the entire county, 300,000. Roman Catholic parochial schools in the county enrolled 103,000 pupils, and other parochial and private school, about 5,000.

In 1962, considerable interest was centered on politics, which locally was enlivened unexpectedly on July 14 when Mayor Anthony J. Celebrezze (first elected in 1953) was appointed secretary of health, education, and welfare by President Kennedy. Celebrezze's departure for Washington necessitated a primary election on October 2 and a run-off on November 6 to determine his successor through 1963.

When Celebrezze resigned on July 27, the city law director, Ralph S. Locher, automatically became mayor pro tem. An independent Democrat, Locher defeated two other candidates in the primary, and on November 6 won easily over the Republican candidate, Willard W. Brown (a businessman not previously in politics), with 74% of the 241,000 votes cast.

Cleveland voters also approved these proposals: renewal of the city's 12.55-mill operating levy; renewal of the schools' 11.1-mill operating levy with increases of 1.5 mills in 1963 and 2.5 mills in 1964; $55 million for school construction; and $4 million for sewers. Half fares on buses for elderly persons were authorized.



MAULDIN IN THE ST. LOUIS POST DISPATCH

"By th' Way, What's That Big Word?"

Cuyahoga County approved these bond issues: $10 million for roads, $1 million for a juvenile detention home, and $1.3 million for a child-receiving home.

Numerous old downtown buildings were razed in 1962 in the first phase of the Erieview urban renewal project. The start of new office construction, however, was delayed by a property owner's lawsuit.

More links in the Inner Belt Freeway connections were completed, and construction was under way on parts of the Outer Belt. The latter ultimately will connect with the Inner Belt and with federal interstate Routes 90 and 71.

The University-Euclid renewal project near University Circle received a $16 million federal aid authorization. At the Circle, three science buildings were completed and dedicated in October: Olin materials-testing laboratory at Case Institute of Technology; Millis science center on the

James Meredith, a Negro seeking admission to previously all-white University of Mississippi, is turned away by Lt. Gov. Paul B. Johnson, Jr. (wearing hat) on September 26.

WIDE WORLD

Adelbert College campus, Western Reserve University; and Wearn medical laboratory of University Hospitals. Their total cost exceeded $13 million.

Economic improvement continued strong in 1962. The Chamber of Commerce's industrial employment index stood at 90.8 in August (1947–49 = 100), compared with 86.2 through the first eight months of 1961. Estimated steel tonnage for Cleveland-Lorain mills was 3,712,164 for January–August, up 602,753 from the corresponding 1961 period. Total nonagricultural employment in the Cleveland metropolitan statistical area (Cuyahoga and Lake counties) was 692,700 in September 1962, compared with 682,100 a year earlier.

Residents of suburban Shaker Heights had a median family income of $13,933—highest in the nation among cities of 25,000 or more, according to the Census Bureau's *County and City Data Book.*

JOHN F. HUTH, JR.,
Editorial Writer, "The Plain Dealer."

CLIMATE. See METEOROLOGY AND CLIMATOLOGY.

CLOTHING INDUSTRY

Women's clothing in 1962 continued to favor the shaped look. Among bright spots of the year's selling picture were fur-trimmed garments, simulated fur coats, wool dresses, and mohair or shetland sweaters. (See also FASHIONS.)

Coats, suits and blouses were the only major apparel items to increase in volume of shipments in 1961. Unit-price dresses, dozen-price dresses, and skirts declined. In the first half of 1962, however, only skirt shipments declined.

Preliminary net value of shipments in the women's, misses', and juniors' outerwear fields, exclusive of knit outerwear, amounted to $3,080 million in 1961, compared with $3,092 million in 1960, a minute loss. The net value for the first six months of 1962 was $1,524 million, compared with $1,463 million in 1961, an increase of 4%.

Net value of shipments in 1961, in millions of dollars, was as follows (1960 figures in parentheses): unit-price dresses, $1,310 ($1,333); dozen-price dresses, $351 ($353); coats and suits, $711 ($705); blouses, $379 ($366); skirts, $329 ($335); men's suits, tailored coats, and tailored jackets, $1,084 ($1,129); and men's separate dress and sport trousers, $527 ($522).

The output in millions of units in 1961 (1960 figures in parentheses) was: unit-price dresses, 158.7 (153.2); dozen-price dresses, 95.6 (97.5); coats and suits, 34.2 (33.1); blouses, 192.9 (185.5); skirts, 101.2 (102.6); men's suits, 19.1 (21.4); men's overcoats, topcoats, suburban coats, and carcoats, 4.5 (5.3); and men's dress and sport trousers, 89.6 (99.1).

Net value of shipments in the first half of 1962, in millions of dollars, was as follows (figures for January–June 1961 in parentheses): unit-price dresses, $697 ($682); dozen-price dresses, $194 ($188); coats and suits, $299 ($262); blouses, $203 ($186); and skirts, $131 ($145).

Production in the first half of 1962, in millions of units, was as follows (figures for January–June 1961 in parentheses): unit-price dresses, 88.9 (87.8); dozen-price dresses, 51.1 (51.1); coats and suits, 16.5 (15.2); blouses, 112.0 (103.6); skirts, 50.4 (53.4); men's suits, 10.8 (9.5); men's separate dress and sport trousers, 53.7 (44.2); and men's overcoats and topcoats, 2.0 (1.9).

New York City ranks first among the principal United States markets in manufacturers' sales of women's and misses' unit-price dresses and coats and suits, girls' and children's wear (about 70% of the total in each of these categories) and men's tailored suits and coats (34%).

Los Angeles, Boston, Philadelphia, Chicago, and St. Louis, in that order, account for slightly over 18% of the unit-dress output. Los Angeles, Chicago, Kansas City, Baltimore, and Philadelphia, in that order, account for somewhat over 20% of women's and misses' coat and suit sales by manufacturers. Philadelphia, Los Angeles, Boston, and Chicago, in that order, account for slightly over 14% of girls' and children's wear. Philadelphia, Chicago, Baltimore, Cleveland, and Rochester account for a little more than 40% of men's suit and coat production.

Total value of shipments of girls' and children's outerwear decreased to $822.8 million in 1961 from $831.5 million in 1960.

Canada.—The value of products shipped from factories of men's, women's and children's clothing, exclusive of knitting mills, was $603.6 million in 1960, compared with $594.8 million in 1959. The breakdown of these figures (1959 data in parentheses) was as follows: women's clothing, $268.5 ($261.6); men's clothing, $261.3 ($262.2); and children's clothing, $73.8 ($71.0).

SAMUEL FEINBERG,
Columnist, "Women's Wear Daily."

COAL

In 1961, world output of coal (including bituminous, lignite, and anthracite) declined to 2,880,338,000 short tons, from 2,906,471,000 tons in 1960, according to the U.S. Bureau of Mines. This was due chiefly to decreases in the United States and Asia. The United States, however, contributed 15% of world coal output. (See MINERAL PRODUCTION for output of major producing countries.)

United States.—Domestic production of anthracite, bituminous, and lignite coal in 1961, in thousands of short tons, is shown in Table 1.

Table 1—U.S. PRODUCTION OF COAL
(In thousands of short tons)

Year	Anthracite	Bituminous and lignite	Total	Change (per cent)
1955	26,205	464,634	490,839	+16.6
1956	28,900	500,875	529,775	+10.8
1957	25,338	492,704	518,042	−2.2
1958	21,171	410,446	431,617	−16.7
1959	20,649	412,028	432,677	+0.2
1960	18,817	415,512	434,329	+0.3
1961	17,446	402,977	420,423	−3.2

(Source: U.S. Bureau of Mines.)

Of the total world coal output, the United States produced 20% of the bituminous, less than 1% of the lignite, and 9% of the anthracite. United States bituminous output dropped 3%,

Table 2—U.S. PRODUCTION OF COAL, BY STATES
(In millions of short tons)

State	1958	1959	1960	1961
Alabama	11.2	11.9	13.0	12.9
Colorado	3.0	3.3	3.6	3.7
Illinois	43.9	45.5	46.0	45.2
Indiana	15.0	14.8	15.5	15.1
Kentucky	66.3	62.8	66.8	63.0
Ohio	32.0	35.1	34.0	32.2
Pennsylvania:				
Anthracite	21.2	20.6	18.8	17.4
Bituminous	67.8	65.3	65.4	62.7
Tennessee	6.8	5.9	5.9	5.9
Utah	5.3	4.5	5.0	5.2
Virginia	26.8	29.8	27.8	30.3
West Virginia	119.5	119.7	118.9	113.1
Wyoming	1.6	2.0	2.0	2.5
Other	11.2	11.5	11.6	11.2
Total	431.6	432.7	434.3	420.4

(Source: U.S. Bureau of Mines.)

and anthracite 7%, from that of 1960. Consumption of bituminous coal and lignite declined nearly 2%, chiefly in bunkers, coke ovens, cement mills, and retail deliveries. Consumption of anthracite declined 10%, due to continuing losses to competitive fuels for use in space heating. Exports of bituminous coal decreased 4%, and exports of anthracite coal increased 7%, according to the Bureau of the Census. Employment in bituminous mining declined 11%, and in anthracite mining, 17%.

Bituminous coal and lignite were mined in 26 states, and anthracite in one state, Pennsylvania. Table 2 shows that 13 states supplied all but 11.2 million tons of the total 420.4 million tons in 1961.

Canada.—Bituminous coal production declined from 8,840,000 short tons in 1960 to 8,189,000 tons in 1961, and lignite increased from 2,170,000 tons in 1960 to 2,209,000 tons in 1961.

Germany.—West Germany's production of bituminous and anthracite increased from 157,911,00 short tons in 1960 to 158,309,000 tons in 1961. East Germany's output declined from 2,999,000 short tons in 1960 to 2,950,000 tons in 1961. Lignite production in West Germany rose from 105,974,000 tons in 1960 to 107,140,000 tons in 1961, and that of East Germany rose from 248,461,000 tons in 1960 to 260,586,000 tons in 1961.

United Kingdom.—Production of bituminous and anthracite coal declined from 216,838,000 short tons in 1960 to 213,321,000 tons in 1961.

USSR.—Output of bituminous and anthracite coal increased from 413,292,000 short tons in 1960 to 415,483,000 tons in 1961. Lignite declined from 152,406,000 short tons in 1960 to 142,727,000 tons in 1961.

(See also MINING.)

F. E. HARRIS, *Former Publications Editor, "Mineral Trade Notes"; and* BERENICE B. MITCHELL, *Commodity Industrial Analyst, Division of Foreign Activities, U.S. Bureau of Mines.*

COAST AND GEODETIC SURVEY, U.S.

Oceanographic, cartographic, physical sciences, and research activities of this bureau of the U.S. Department of Commerce were enlarged in 1962.

Oceanography.—The ships *Pioneer, Surveyor,* and *Pathfinder* made progress in oceanographic work in the Pacific area. Oceanographic stations were observed in the Gulf of Mexico by the *Hydrographer,* and oceanographic and marine magnetic observations were conducted by the *Explorer* on track lines between the Virginia capes and Puerto Rico; geological-echo-profiling instrumentation was tested successfully aboard these ships. Two new survey ships, the *Peirce* and the *Whiting,* were launched by the end of 1962. Construction was started on a 303-foot oceanographic ship, which will be the largest in the United States designed specifically for oceanographic surveys, and on a 220-foot survey ship.

Hydrographic Surveys.—Five ships conducted surveys along the Atlantic coast, to revise nautical charts affected by the severe storm of March 1962, and over extensive areas along the Pacific and Gulf coasts and in Alaska. A circulatory survey of Charleston Harbor was conducted by the ship *Marmer* to obtain data for a tidal current chart of the area.

Geodetic Surveys.—Aided by new precision distance-measuring techniques, space satellites, and ballistic cameras, the bureau established about 2,500 new geographic positions in 1962, and determined elevations for about 8,000 new bench marks in the United States. Instrumentation for diverse measurements of the solid earth and its waters was being improved.

Photogrammetric Surveys.—Notable advancements were made in 1962 in photogrammetric techniques, including a new method of compiling coastal topographic and alongshore information directly onto nautical chart drawings from tide-controlled infrared and color photography. The first known topographic mapping of the deep-sea bottom was accomplished by a specially arranged stereoscopic camera using 35-mm. color film.

Cartographic Activities.—Three new series of small-craft charts were published, and Intracoastal Waterway Chart No. 857 of the Tampa, Fla., area was issued in a new format to facilitate use in small-craft navigation. En route high-altitude aeronautical charts were reconstructed to harmonize with low- and intermediate-altitude charts. Nautical and aeronautical chart distribution in 1962 totaled about 54 million copies.

Geomagnetism and Seismology.—Magnetic data were gathered at observatories and repeat stations throughout the United States, and work continued in support of the Antarctic research program. Facilities and assistance were provided for testing and calibrating magnetic instrumentation for rocket and satellite vehicles. Data are being accumulated at the World Data Center in Washington from stations in more than 30 countries in the worldwide network of standard seismograph stations.

H. ARNOLD KARO,
Rear Admiral, USC&GS;
Director, U.S. Coast and Geodetic Survey.

COAST GUARD, U.S.

Maritime safety and law enforcement, the traditional peacetime duties of the Coast Guard, continued in 1962 to be the focus of operations. A start was made toward replacing 165-foot cutters with 210-foot vessels. Funds available to the service rose from $349,749,356 in 1961 to $365,739,512 in 1962. Military personnel totaled 31,511 in 1962, compared with 31,520 in 1961, while authorized civilian employees in 1962 numbered 4,894.

Law-enforcement activities in 1962 included: vessels boarded and papers examined, 171,150; reports of violations of the Motorboat Act, 53,706; reports of violations of port security, 1,244; permits to load or discharge explosives, 756; waterfront workers screened for security, 25,776.

Assistance rendered during 1962 was as follows: assistance calls answered, 35,848; value of property involved (including cargo), $1,553,333,800; mileage disabled vessels towed, 13,593; lives saved or persons rescued from peril, 2,597.

Marine casualties reported and investigated during the year totaled 4,200, in which 166 persons lost their lives. The Coast Guard completed 4,218 inspections of merchant vessels with a gross tonnage of 8,532,734, made dry-dock examinations of 5,731 vessels with a total tonnage of 13,413,450, conducted 25,107 miscellaneous inspections, and reviewed plans for 35,915 vessels.

As of June 30, 1962, there were 40,989 aids to navigation maintained by the Coast Guard in the United States and other areas. These included 68 loran stations, 191 radiobeacons, 6,639 daybeacons, 10,659 lights (including lightships), 567 fog signals (except sound buoys), and 22,835 lighted and and unlighted buoys. Four ocean stations were maintained in the North Atlantic and two in the Pacific throughout the year. They provided search and rescue, communications, and air navigation facilities and meteorological services along heavily traveled ocean routes.

Ice conditions in 1962 were relatively light, and the Coast Guard continued its oceanographic work and aerial reconnaissance.

The Coast Guard's larger vessels included 181 cutters and buoy tenders of various types; fixed- and rotary-wing aircraft in operation totaled 134.

Coast Guard Reserve strength was 4,467 officers and 26,881 enlisted personnel. The Coast Guard Auxiliary, a nonmilitary volunteer organization was active in approximately 761 communities to promote safety and efficiency in the operation of small boats. Its 21,675 members gave instruction to 117,000 persons, examined 130,000 motorboats, patrolled 1,585 regattas, responded to 5,061 assistance calls, and saved 274 lives.

During 1962 the Atlantic Merchant Vessel Reporting System (AMVER), started in 1958, facilitated the Coast Guard's search and rescue work.

EDWIN J. ROLAND,
Admiral, USCG, Commandant.

COBALT. See MINERAL PRODUCTION.

COCOA

World production of cocoa beans for the 1962–63 season was estimated by the Foreign Agricultural Service of the U.S. Department of Agriculture in October 1962 at 2,818,020,000 pounds, the largest crop on record. The figure is 10% higher than the 1961–62 production, and 7% above the previous record crop of 1960–61. The accompanying table shows production by continents and principal producing countries.

WORLD COCOA BEAN PRODUCTION
(In thousands of pounds)

Continent or country	Average 1955–60	1960–61	1961–62	1962–63[1]
North America	172,420	182,950	182,600	197,970
Dominican Republic	73,920	77,000	77,000	88,000
South America	519,198	493,500	489,050	514,500
Brazil	375,192	330,700	330,700	350,000
Ecuador	70,740	92,000	85,000	85,000
Africa	1,228,380	1,913,630	1,839,690	2,052,950
Cameroun[2]	133,968	157,630	170,000	183,000
Ghana	569,664	968,220	918,000	1,030,000
Ivory Coast	135,248	206,740	181,920	190,000
Nigeria[3]	279,360	432,000	426,630	500,000
Asia and Oceania	33,012	44,800	48,500	52,600
World total	1,953,010	2,634,880	2,559,840	2,818,020

[1] Estimated. [2] Includes former British Southern Cameroons beginning with 1961–62. [3] Includes former British Southern Cameroons before 1961–62. (Source: U.S. Department of Agriculture, Foreign Agricultural Service.)

Production in Ghana, the world's largest producer, was estimated to be 112 million pounds higher than in 1961–62, and was expected to surpass 1 billion pounds for the first time. Brazil, the second largest producer in the world, was expected to produce slightly more than in 1961–62.

COFFEE

Total world production of green coffee for the marketing year 1962–63 was estimated (as of October 1962) by the Foreign Agricultural Service of the U.S. Department of Agriculture at 65,932,000 bags (of 132.3 pounds each). This production would be a drop of about 8% from the 1961–62 output of 71,215,000 bags, but would still exceed world requirements by about 6 million bags.

Exportable production for the 1962–63 marketing season was estimated at 52,684,000 bags, more than 5 million below 1961–62 but 20 million above the 1950–55 average of 32,588,000 bags.

The decline in production was totally due to a sharp decrease in Brazil where a crop of only 27 million bags was expected, compared with 35 million the year before. Brazil's production for export was estimated at 20 million bags, compared with 28 million a year earlier. Colombia, the world's second largest producer of coffee, anticipated production of 7,800,000 bags, the same as in the preceding year.

Africa, ranking second only to South America, expected a 1962–63 crop of 14,600,000 bags, of which 14,043,000 would be exportable. This would be a record output for Africa and about 18% above 1961–62.

PRODUCTION OF GREEN COFFEE IN PRINCIPAL COUNTRIES
(1,000 bags)

Country	Average 1950–51—1954–55	1961–62	1962–63 (October estimate)
Brazil	18,964	35,000	27,000
Colombia	6,330	7,800	7,800
Angola	1,019	2,800	3,100
Ivory Coast	1,210	1,650	2,800
Republic of the Congo	613	900	950
Mexico	1,373	2,350	2,500
El Salvador	1,216	1,800	1,600
Guatemala	1,129	1,650	1,850
Uganda	754	1,900	2,150
Indonesia	985	1,500	1,500
World	41,048	71,215	65,932

Per capita consumption of coffee by United States civilians was estimated by the Economic Research Service of the U.S. Department of Agriculture at 16.0 pounds in 1962, compared with 15.7 in 1961. The 1947–49 average consumption was 18.2 pounds, and the 1935–39 average, 14 pounds.

C. J. ENZLER,
Information Specialist, Office of Information, U.S. Department of Agriculture.

COINAGE. See TREASURY DEPARTMENT, U.S.

COKE

World output of coke in 1961 totaled an estimated 305,961,000 short tons, a slight decrease from 308,209,000 tons in 1960. (See MINERAL PRODUCTION for output of major producing countries.)

In 1961, coke output in the United States declined to 51,711,187 short tons, 10% less than in 1960. This total comprised 50,830,409 tons of oven coke and 880,778 of beehive coke. Additionally, 3,390,689 tons of coke breeze were produced in 1961, compared with 3,743,115 tons in 1960.

The decline in coke output was due to the general recession in industrial activity. Coke was produced in 20 states in 1961; 15 states east of the Mississippi produced more than 90% of the total. Consumption of coke decreased 9% from 1960. Lessened demand, especially in the residential-heating and gas-manufacturing fields, because of competition with fuel oil and natural gas, was the principal reason for the decline. In the first nine months of 1962, coke output in the United States was 40,008,912 short tons, compared with 36,699,700 tons in 1961.

COLLEGES AND UNIVERSITIES

A selected list of accredited colleges and universities in the United States, Guam, Puerto Rico, and Canada appears on the following pages. Statistics, unless otherwise indicated, are for the fall semester of the 1961–62 academic year. All information concerning these institutions has been supplied by the head or registrar of each. (See also EDUCATION; and for a more complete list of institutions of higher education in the United States, consult the *Education Directory*, Part 3, "Higher Education," published annually by the Office of Education, Department of Health, Education, and Welfare, Washington, D.C.)

MAJOR COLLEGES AND UNIVERSITIES, U.S. AND CANADA, 1961–62

Faculty and student enrollment figures are for the fall semester of the 1961–62 academic year unless otherwise specified. Faculty data show combined full-time and part-time members of the teaching faculty only. The "graduate" students column includes professional students. The "total students enrolled" column shows the combined total of full-time and part-time students in all categories. The following letter symbols are used in this listing:

AdC—Advent Christian
AG—Assemblies of God
AMA—American Missionary Association
AME—African Methodist Episcopal
AMEZ—African Methodist Episcopal Zion
Bapt—Baptist
C—Coeducational or Coordinate
CBr—Church of the Brethren
CC—Church of Christ
CG—Church of God
CMA—Christian and Missionary Alliance
Co—County
Cong—Congregational
DC—Disciples of Christ
EC—Evangelical Covenant
EUB—Evangelical United Brethren
Fed—Federal
Fr—Friends
Inter—Interdenominational
Jew—Jewish
LDS—Latter-day Saints
Luth—Lutheran
M—Men only
MCA—Missionary Church Association
ME—Methodist Episcopal
Men—Mennonite
Meth—Methodist
Mor—Moravian
Mun—Municipal
Naz—Nazarene
PE—Protestant Episcopal
Pres—Presbyterian
Pri—Private
Pri-Co—Private-County
Prov—Provincial
RC—Roman Catholic
Ref—Reformed
RLDS—Reorganized Latter-day Saints
SDA—Seventh Day Adventist
St—State
St-Mun—State-Municipal
St-Pri—State-Private
Ter—Territorial
UB—United Brethren
UCC—United Church of Christ
UCCa—United Church of Canada
W—Women only
YMCA—Young Men's Christian Association

[1] Statistics for fall 1960. [2] Division of Columbia University. [3] Division of University of Utah. [4] Division of Rutgers. [5] Division of University of Hartford. [6] Hobart (for men) and William Smith (for women) colleges, incorporated as the Colleges of the Seneca, are coordinated; combined faculty and enrollment data are shown. [7] Division of the University of Idaho. [8] Division of the University of Maryland. [9] Included in the State University of New York, but not listed here are: agricultural and technical institutes at Alfred, Canton, Cobleskill, Delhi, Farmingdale, and Morrisville; community colleges at Auburn, Bayside, Binghamton, Bronx, Brooklyn, Corning, Hudson Falls, Jamestown, Middletown, Mineola, Poughkeepsie, Selden, Staten Island, Suffern, Troy, and Valhalla; and technical institutes at Buffalo, New York City, and Utica, New York. [10] Division of the University of North Carolina. [11] Data for Eugene campus only. [12] Other campuses at Allentown, Altoona, Erie, Abington, DuBois, Hazleton, McKeesport, New Kensington, Pottsville, Scranton, Wilkes-Barre, Wyomissing, and York. [13] Faculty from Harvard University. [14] Division of Virginia Polytechnic Institute. [15] Division of College of William and Mary. [16] Division of Utah State University. [17] Division of University of Texas.

Institution and location	Control or affiliation	Year founded	Chief executive	Teaching faculty	Full-time students: Undergraduate	Full-time students: Graduate	Total students enrolled	
Abilene Christian College, Abilene, Texas	CC	1906	D. H. Morris	145	2,215	26	2,627	C
Acadia University, Wolfville, N.S.	Bapt	1838	W. Kirkconnell	84	974	58	1,184	C
Adams State College, Alamosa, Colo.	St	1921	F. J. Plachy	80	1,242	46	1,416	C
Adelphi College, Garden City & Sayville, N.Y.	Pri	1896	P. D. Eddy	450	2,727	167	6,212	C
Adrian College, Adrian, Mich.	Meth	1845	J. H. Dawson	63	858	...	969	C
Agnes Scott College, Decatur, Ga.	Pri	1889	W. M. Alston	77	647	...	647	W
Air University, Inst. of Tech., Wright-Patterson AFB, Ohio	Fed	1919	C. E. Combs	58	85	200	285	M
Akron, University of, Akron, Ohio	Mun	1870	N. P. Auburn	233	2,961	12	6,376	C
Alabama, University of, University, Ala.	St	1831	F. A. Rose	896	7,255	1,309	9,763	C
Alabama A. & M. College, Normal, Ala.	St	1875	J. F. Drake	75	...	...	1,265	C
Alabama College, Montevallo, Ala.	St	1896	H. M. Phillips, Sr.	82	1,332	...	1,394	C
Alameda County State College, Hayward, Calif.	St	1957	F. F. Harcleroad	79	293	82	1,445	C
Alaska, University of, College, Alaska (incl. community colleges at Anchorage, Juneau, Ketchikan, and Palmer)	St	1922	W. R. Wood	100	752	32	2,990	C
Albany State College, Albany, Ga.	St	1903	W. H. Dennis, Jr.	59	913	...	916	C
Alberta, Univ. of, Edmonton and Calgary, Alberta	Prov	1906	W. H. Johns	686	7,917	643	10,391	C
Albertus Magnus College, New Haven, Conn.	RC	1925	Sr. M. Louise	44	405	...	421	W
Albion College, Albion, Mich.	Meth	1835	L. W. Norris	96	1,372	1	1,429	C
Albright College, Reading, Pa.	EUB	1856	H. V. Masters	69	869	...	1,147	C
Alcorn A. & M. College, Lorman, Miss.	St	1871	J. D. Boyd	64	1,175	...	1,221	C
Alderson-Broaddus College, Philippi, W.Va.	Bapt	1871	R. E. Shearer	44	518	...	585	C
Alfred University, Alfred, N.Y.	Pri	1836	M. E. Drake	124	1,244	78	1,538	C
Allegheny College, Meadville, Pa.	Pri	1815	L. L. Pelletier	101	1,257	1	1,313	C
Allen University, Columbia, S.C.	AME	1870	H. Wright	42	622	...	623	C
Alma College, Alma, Mich.	Pres	1886	R. D. Swanson	57	866	...	883	C
Alverno College, Milwaukee, Wis.	RC	1936	Sr. M. Augustine	91	835	...	1,378	W
American Conservatory of Music, Chicago, Ill.	Pri	1886	J. R. Hattstaedt	111	148	21	1,415	C
American International College, Springfield, Mass.	Pri	1885	J. F. Hines	78	1,198	78	2,069	C
American University, The, Washington, D.C.	Meth	1893	H. Anderson	496	2,254	337	8,274[1]	C
Amherst College, Amherst, Mass.	Pri	1821	C. H. Plimpton	136	1,028	2	1,034	M
Anderson College, Anderson, Ind.	CG	1917	R. H. Reardon	72	852	34	1,148	C
Andover Newton Theological School, Newton Centre, Mass.	Inter	1887	H. Gezork	44	210	40	345	C
Andrews Univ. & Emmanuel Mission. Coll., Berrien Springs, Mich.	SDA	1874	F. Rittenhouse	100	924	137	1,392	C
Anna Maria College, for Women, Paxton, Mass.	RC	1946	Sr. I. Marie	41	411	...	451	W
Annhurst College, South Woodstock, Conn.	RC	1941	Moth. C. Helen	32	206	...	246	W
Antioch College, Yellow Springs, Ohio	Pri	1852	J. P. Dixon, Jr.	106	1,555	...	1,555	C
Appalachian State Teachers College, Boone, N.C.	St	1903	W. H. Plemmons	157	2,570	77	3,091	C
Aquinas College, Grand Rapids, Mich.	RC	1886	A. F. Bukowski	81	963	...	1,215	C
Arizona, University of, Tucson, Ariz.	St	1885	R. A. Harvill	1,012	9,926	1,096	14,994	C
Arizona State College, Flagstaff, Ariz.	St	1899	J. L. Walkup	140	2,159	21	2,868	C
Arizona State University, Tempe, Ariz.	St	1885	G. H. Durham	822	7,600	583	13,474	C
Arkansas, University of, Fayetteville, Ark.	St	1871	D. W. Mullins	546	5,663	834	7,388	C
Arkansas A. & M. College, Monticello, Ark.	St	1909	J. W. Mears	54	1,003	...	1,011	C
Arkansas A., M. & N. College, Pine Bluff, Ark.	St	1873	L. A. Davis, Sr.	92	1,942	...	1,965	C
Arkansas Polytechnic College, Russellville, Ark.	St	1909	J. W. Hull	68	1,307	...	1,434	C
Arkansas State College, Jonesboro & Beebe, Ark.	St	1909	C. R. Reng	140	2,809	...	3,685	C
Arkansas State Teachers College, Conway, Ark.	St	1907	S .D. Snow	81	1,721	...	2,155	C
Arlington State College, Arlington, Texas	St	1895	J. R. Woolf	266	5,136	...	7,444[1]	C
Art Center School, The, Los Angeles, Calif.	Pri	1930	E. A. Adams	88	694	3	1,135	C
Art Institute of Chicago, Sch. of the, Chicago, Ill.	Pri	1879	N. Boothby	68	795	36	2,205	C
Asbury College, Wilmore, Ky.	Pri	1890	Z. T. Johnson	54	928	...	930	C
Ashland College, Ashland, Ohio	CBr	1878	G. L. Clayton	75	757	...	1,237	C
Assumption College, Worcester, Mass.	RC	1904	A. Desautels	40	270	6	654	M
Assumption University, Windsor, Ont.	RC	1857	E. C. LeBel	120	1,359	65	2,809	C
Athenaeum of Ohio (incl. Mt. St. Mary's & St. Gregory's seminaries), Cincinnati, Ohio	RC	1831	J. J. Schneider	43	315	186	501	M
Athens College, Athens, Ala.	Meth	1822	V. B. McCain, Jr.	35	333	...	573	C
Atlanta University, Atlanta, Ga.	Pri	1865	R. E. Clement	67	...	295	678	C
Atlantic Christian College, Wilson, N.C.	DC	1902	A. Wenger	65	982	...	1,198	C
Atlantic Union College, South Lancaster, Mass.	SDA	1882	R. L. Reynolds	35	450	...	540	C

Institution and location	Control or affiliation	Year founded	Chief executive	Teaching faculty	Full-time students: Undergraduate	Full-time students: Graduate	Total students enrolled	
Auburn University, Auburn, Ala.	St	1856	R. B. Draughon	687	8,348	392	9,270	C
Augsburg College & Theological Seminary, Minneapolis, Minn.	Luth	1869	B. Christensen	103	1,059	30	1,375	C
Augustana College, Rock Island, Ill.	Luth	1860	C. W. Sorensen	112	1,119	...	1,516	C
Augustana College, Sioux Falls, S.Dak.	Luth	1860	L. M. Stavig	87	1,350	...	1,677	C
Aurora College, Aurora, Ill.	AdC	1893	J. E. Crimi	57	416	...	1,061	C
Austin College, Sherman, Texas	Pres	1849	J. D. Moseley	79	714	...	939	C
Austin Peay State College, Clarksville, Tenn.	St	1929	H. Harvill	82	1,179	7	1,978	C
Babson Institute, Babson Park, Mass.	Pri	1919	H. Kriebel	36	655	72	791	M
Baker University, Baldwin, Kans.	Meth	1858	W. Scarborough	48	626	...	661	C
Baldwin-Wallace College, Berea, Ohio	Meth	1845	A. B. Bonds, Jr.	135	1,627	...	2,387	C
Ball State Teachers College, Muncie, Ind.	St	1918	J. R. Emens	304	5,992	88	8,211	C
Baltimore College of Commerce, Baltimore, Md.	YMCA	1909	J. S. Rook	76	78	...	811	C
Bank Street College of Education, New York, N.Y.	Pri	1916	J. H. Niemeyer	40	...	47	431	C
Barat College of the Sacred Heart, Lake Forest, Ill.	RC	1858	Moth. M. Burke	43	405	...	450	W
Bard College, Annandale-on-Hudson, N.Y.	Pri	1860	R. Kline	49	388	...	397	C
Barnard College,[2] New York, N.Y.	Pri	1889	R. Park	195	1,475	...	1,475	W
Barrington College, Barrington, R.I.	Pri	1900	H. W. Ferrin	45	411	...	712	C
Barry College, Miami, Fla.	RC	1940	Sr. M. Alice	51	510	1	799	W
Bates College, Lewiston, Me.	Pri	1864	C. F. Phillips	56	880	...	883	C
Baylor University, Waco, Texas	Bapt	1845	A. McCall	320	4,048	81	5,186	C
Beaver College, Glenside, Pa.	Pres	1853	E. D. Gates	61	694	...	723	W
Belhaven College, Jackson, Miss.	Pres	1883	H. Cleland	31	259	...	277	C
Bellarmine College, Louisville, Ky.	RC	1950	A. F. Horrigan	83	852	...	2,043	M
Belmont Abbey College, Belmont, N.C.	RC	1876	J. Oetgen	50	480	...	542	C
Belmont College, Nashville, Tenn.	Bapt	1951	H. C. Gabhart	44	430	...	535	C
Beloit College, Beloit, Wis.	Pri	1846	M. Upton	100	1,009	...	1,065	C
Bemidji State College, Bemidji, Minn.	St	1919	C. R. Sattgast	90	1,584	5	1,917	C
Benedict College, Columbia, S.C.	Bapt	1870	J. A. Bacoats	50	774	...	774	C
Bennett College, Greensboro, N.C.	Meth	1873	W. B. Player	53	592	...	592	W
Bennington College, Bennington, Vt.	Pri	1932	W. C. Fels	50	362	2	369	W
Berea College, Berea, Ky.	Pri	1855	F. S. Hutchins	118	1,316	...	1,338	C
Berry College, Mount Berry, Ga.	Pri	1902	J. R. Bertrand	54	724	...	735	C
Bethany Bible College, Santa Cruz, Calif.	AG	1919	C. Burnett	13	294	...	309	C
Bethany College, Lindsborg, Kans.	Luth	1881	L. D. Lund	41	436	...	624	C
Bethany College, Bethany, W.Va.	Pri	1840	P. E. Gresham	52	727	...	775	C
Bethany Nazarene College, Bethany, Okla.	Naz	1899	R. H. Cantrell	47	780	...	930	C
Bethel College, North Newton, Kans.	Men	1887	V. Neufeld	40	425	...	474	C
Bethel College, McKenzie, Tenn.	Pres	1842	R. N. Baker	29	414	...	528	C
Bethel College & Seminary, St. Paul, Minn.	Bapt	1871	C. H. Lundquist	61	650	98	799	C
Bethune-Cookman College, Daytona Beach, Fla.	Meth	1904	R. V. Moore, Sr.	37	633	...	680	C
Birmingham-Southern College, Birmingham, Ala.	Meth	1856	H. K. Stanford	75	1,002	8	1,108	C
Bishop College, Dallas, Texas	Bapt	1880	M. K. Curry, Jr.	39	558	...	654	C
Bishop's University, Lennoxville, Quebec	Pri	1843	O. Glass	34	438	31	471	C
Black Hills Teachers College, Spearfish, S.Dak.	St	1883	R. E. Jonas	58	726	...	1,009	C
Blackburn College, Carlinville, Ill.	Pres	1857	R. P. Ludlum	30	384	...	400	C
Bloomfield College, Bloomfield, N.J.	Pres	1868	T. A. Rath	53	541	4	724	C
Bloomsburg State College, Bloomsburg, Pa.	St	1839	H. A. Andruss, Sr.	125	1,932	...	2,003	C
Blue Mountain College, Blue Mountain, Miss.	Bapt	1873	W. T. Tyler	29	293	...	307	W
Bluefield State College, Bluefield, W.Va.	St	1895	L. B. Allen	40	447	...	580	C
Bluffton College, Bluffton, Ohio	Men	1900	L. Ramseyer	37	426	...	451	C
Boston College, Chestnut Hill (incl. Weston College, Weston, & Shadowbrook, Lenox), Mass.	RC	1863	M. P. Walsh	633	5,365	877	8,561	C
Boston University, Boston, Mass.	Meth	1839	H. C. Case	1,902	9,004	1,840	19,648	C
Bowdoin College, Brunswick, Me.	Pri	1794	J. S. Coles	72	823	10	836	M
Bowling Green College of Commerce, Bowling Green, Ky.	Pri	1922	J. H. Young	31	517	...	575	C
Bowling Green State University, Bowling Green, Ohio	St	1910	R. Harshman	358	...	...	7,657	C
Bradley University, Peoria, Ill.	Pri	1897	T. Van Arsdale, Jr.	271	3,665	93	4,498	C
Brandeis University, Waltham, Mass.	Pri	1948	A. L. Sachar	225	1,307	346	1,676	C
Brenau College, Gainesville, Ga.	Pri	1878	J. Crudup	32	443	...	458	W
Brescia College, Owensboro, Ky.	RC	1925	Sr. J. Lechner	53	464	...	902	C
Briar Cliff College, Sioux City, Iowa	RC	1930	Sr. M. Matilda	50	367	...	526	W
Bridgeport, University of, Bridgeport, Conn.	Pri	1927	J. H. Halsey	276	2,877	22	6,113	C
Bridgewater College, Bridgewater, Va.	CBr	1880	W. D. Bowman	48	619	...	640	C
Brigham Young University, Provo, Utah	LDS	1875	E. L. Wilkinson	1,231	10,017	415	12,347	C
British Columbia, University of, Vancouver, B.C.	Prov	1908	N. MacKenzie	701	11,926	729	18,903	C
Brooklyn, Polytechnic Institute of, Brooklyn, N.Y.	Pri	1854	E. Weber	403	1,468	331	5,389	C
Brooklyn College, Brooklyn, N.Y.	Mun	1930	H. D. Gideonse	1,369	9,436	37	26,522	C
Brooklyn Law School, Brooklyn, N.Y.	Pri	1901	J. Prince	24	541	26	1,030	C
Brown University, Providence, R.I. (incl. Pembroke College)	Pri	1764	B. Keeney	362	...	...	5,149	M
Bryn Mawr College, Bryn Mawr, Pa.	Pri	1880	K. E. McBride	162	716	156	1,024	W
Bucknell University, Lewisburg, Pa.	Pri	1846	M. M. Odgers	181	2,305	24	2,420	C
Buena Vista College, Storm Lake, Iowa	Pres	1891	W. Q. Halverson	47	607	...	832	C
Buffalo, University of, Buffalo, N.Y.	Pri	1846	C. C. Furnas	1,773	6,248	1,102	14,360	C
Butler University, Indianapolis, Ind.	Pri	1855	M. O. Ross	250	...	...	4,721	C
Caldwell College for Women, Caldwell, N.J.	RC	1939	Sr. M. Marguerite	43	650	...	650	W
California, University of, Berkeley, Los Angeles, San Francisco, Santa Barbara, Davis, Riverside, and San Diego, Calif.	St	1868	C. Kerr	5,347	35,544	16,802	92,668	C
California College of Arts and Crafts, Oakland, Calif.	Pri	1907	H. X. Ford	47	374	21	790	C
California College of Medicine, Los Angeles, Calif.	Pri	1914	W. B. Henley	362	347	...	347	C
California Institute of Technology, Pasadena, Calif.	Pri	1891	L. DuBridge	249	689	569	1,304	M
California State College, California, Pa.	St	1852	M. Duda	130	2,667	...	2,919	C
California State Polytechnic Coll., San Luis Obispo & Pomona, Calif.	St	1901	J. A. McPhee	525	6,932	51	7,850	C
California Western University, San Diego, Calif.	Meth	1952	W. C. Rust	120	1,268	76	2,071	C
Calvary Bible College, Kansas City, Mo.	Pri	1961	R. J. Andrus	16	184	...	243	C
Calvin College, Grand Rapids, Mich.	Ref	1876	W. Spoelhof	118	2,287	...	2,412	C
Campbellsville College, Campbellsville, Ky.	Bapt	1927	J. M. Carter	46	551	...	704	C
Canisius College, Buffalo, N.Y.	RC	1870	J. J. McGinley	126	1,317	...	2,547	M
Capital University, Columbus, Ohio	Luth	1850	H. L. Yochum	105	1,317	...	1,483	C
Carbon College,[3] Price, Utah	St	1938	J. Tucker	40	430	...	565	C
Cardinal Stritch College, Milwaukee, Wis.	RC	1937	Sr. M. Aquin	38	189	1	518	W
Carleton College, Northfield, Minn.	Pri	1866	L. M. Gould	105	1,250	...	1,256	C
Carleton University, Ottawa, Ont.	Pri	1942	A. D. Dunton	197	1,552	33	3,576	C
Carnegie Inst. of Technology, Pittsburgh, Pa. (incl. Margaret Morrison Carnegie College)	Pri	1900	J. C. Warner	722	2,829	679	5,312	C

Institution and location	Control or affiliation	Year founded	Chief executive	Teaching faculty	Full-time students: Undergraduate	Full-time students: Graduate	Total students enrolled	
Carroll College, Helena, Mont.	RC	1909	R. Hunthausen	46	742	...	783	C
Carroll College, Waukesha, Wis.	Pres	1846	R. D. Steele	61	837	...	906	C
Carson-Newman College, Jefferson City, Tenn.	Bapt	1851	D. H. Fite	78	1,303	...	1,363	C
Carthage College, Carthage, Ill.	Luth	1847	H. H. Lentz	46	494	...	582	C
Case Institute of Technology, Cleveland, Ohio	Pri	1880	T. K. Glennan	282	1,545	185	2,403	C
Castleton Teachers College, Castleton, Vt.	St	1787	R. J. Dundas	33	461	...	505	C
Catawba College, Salisbury, N.C.	UCC	1851	A. R. Keppel	55	826	...	940	C
Catholic University of America, The, Washington, D.C.	RC	1887	W. J. McDonald	447	2,025	1,160	4,650	C
Cedar Crest College, Allentown, Pa.	UCC	1867	D. H. Moore	40	452	...	468	W
Centenary College of Louisiana, Shreveport, La.	Meth	1825	J. J. Mickle	110	824	...	1,552	C
Central Bible Institute, Springfield, Mo.	AG	1922	J. R. Ashcroft	29	437	11	483	C
Central College, Pella, Iowa	Ref	1853	A. D. Lubbers	38	523	...	546	C
Central Connecticut State College, New Britain, Conn.	St	1849	H. D. Welte	250	2,110	28	3,883	C
Central Methodist College, Fayette, Mo.	Meth	1854	R. Woodward	53	812	...	818	C
Central Michigan University, Mt. Pleasant, Mich.	St	1892	J. W. Foust	276	4,865	91	7,088	C
Central Missouri State College, Warrensburg, Mo.	St	1871	W. C. Lovinger	225	...	...	4,721	C
Central State College, Wilberforce, Ohio	St	1887	C. H. Wesley	82	1,801	...	2,034	C
Central State College, Edmond, Okla.	St	1890	G. Godfrey	179	4,200	422	4,622	C
Central Washington State College, Ellensburg, Wash.	St	1891	J. E. Brooks	149	2,168	58	2,266	C
Centre College of Kentucky, Danville, Ky.	Pres	1819	T. A. Spragens	42	492	...	505	C
Chaminade College of Honolulu, Honolulu, Hawaii	RC	1955	R. MacKey	33	305	...	372	C
Chapman College, Orange, Calif.	DC	1861	J. L. Davis	78	401	15	915	C
Charleston, College of, Charleston, S.C.	Pri	1770	G. D. Grice	26	402	...	425	C
Chatham College, Pittsburgh, Pa.	Pri	1869	E. D. Eddy, Jr.	57	511	...	519	W
Chattanooga, University of, Chattanooga, Tenn.	Pri	1886	L. A. Martin	130	1,370	9	2,514	C
Chestnut Hill College, Philadelphia, Pa.	RC	1871	Sr. C. Frances	64	602	...	644	W
Cheyney State College, Cheyney, Pa.	St	1837	J. H. Duckrey	50	878	...	901	C
Chicago, University of, Chicago, Ill.	Pri	1890	G. W. Beadle	1,522	2,163	3,742	8,831	C
Chicago College of Osteopathy, Chicago, Ill.	Pri	1906	R. MacBain	65	246	...	246	C
Chicago Teachers College, South, Chicago, Ill.	St-Mun	1869	R. M. Cook	132	1,727	...	5,101	C
Chico State College, Chico, Calif.	St	1889	G. Kendall	217	2,777	112	4,044	C
Chouinard Art Institute, Los Angeles, Calif.	Pri	1921	M. A. Wilder	70	318	...	797	C
Christian Brothers College, Memphis, Tenn.	RC	1854	Bro. L. Thomas	48	715	...	793	M
Christian Theological Seminary, Indianapolis, Ind.	DC	1924	B. A. Norris	19	...	228	236	C
Cincinnati College-Conservatory of Music, Cincinnati, Ohio	Pri	1867	M. W. Shank	105	393	36	1,639	C
Cincinnati, University of, Cincinnati, Ohio	Mun	1819	W. C. Langsam	1,477	8,330	997	18,692	C
Citadel, The, Charleston, S.C.	St	1842	M. W. Clark	125	1,986	...	1,986	M
City College, The, New York, N.Y.	Mun	1847	B. Gallagher	1,683	10,880	140	32,059	C
Claflin University, Orangeburg, S.C.	Meth	1869	H. V. Manning	34	441	...	459	C
Claremont Men's College, Claremont, Calif.	Pri	1946	G. Benson	56	473	...	477	M
Claremont University College, Claremont, Calif.	Pri	1925	R. Bernard	113	...	225	725	C
Clarion State College, Clarion, Pa.	St	1867	J. Gemmell	90	1,750	...	1,814	C
Clark College, Atlanta, Ga.	Meth	1869	J. P. Brawley	59	795	...	799	C
Clark University, Worcester, Mass.	Pri	1887	H. B. Jefferson	176	876	129	2,022	C
Clarke College, Dubuque, Iowa	RC	1843	Sr. M. Benedict	84	766	...	937	W
Clarkson College of Technology, Potsdam, N.Y.	Pri	1896	L. W. Herron	108	1,536	30	1,570	M
Clemson College, Clemson, S.C.	St	1889	R. C. Edwards	467	3,877	100	4,104	C
Cleveland-Marshall Law School, Cleveland, Ohio	Pri	1897	W. Stapleton	26	...	402	428	C
Coe College, Cedar Rapids, Iowa	Pres	1851	J. E. McCabe	79	819	...	1,209	C
Coker College, Hartsville, S.C.	Pri	1908	F. Keyes	30	330	...	351	W
Colby College, Waterville, Me.	Pri	1813	R. Strider	102	1,207	...	1,219	M
Colgate University, Hamilton, N.Y.	Pri	1819	E. N. Case	137	1,408	2	1,457	M
Colorado, University of, Boulder, Colo.	St	1876	Q. Newton	932	9,394	835	11,651	C
Colorado College, Colorado Springs, Colo.	Pri	1874	L. T. Benezet	107	641	12	1,325	C
Colorado School of Mines, Golden, Colo.	St	1874	J. Vanderwilt	122	943	92	1,046	C
Colorado State College, Greeley, Colo.	St	1890	W. R. Ross	236	...	...	4,357	C
Colorado State University, Fort Collins, Colo.	St	1870	W. E. Morgan	450	5,855	245	6,529	C
Columbia Bible College, Columbia, S.C.	Pri	1923	G. A. Fleece	27	393	62	469	C
Columbia College, Columbia, S.C.	Meth	1854	R. W. Spears	58	626	...	915	W
Columbia Union College, Takoma Park, Md.	SDA	1904	C. B. Hirsch	67	608	...	816	C
Columbia University, New York, N.Y. (incl. Barnard and Columbia University Teachers colleges, qq.v., Columbia College, and N.Y. School of Social Work)	Pri	1754	G. Kirk	3,809	6,292	5,624	23,659	C
Columbia University Teachers College,[2] New York, N.Y.	Pri	1888	H. L. Caswell	358	155	1,154	5,396	C
Concord College, Athens, W.Va.	St	1875	J. F. Marsh, Jr.	8	1,375	...	1,647	C
Concordia College, Moorhead, Minn.	Luth	1891	J. L. Knutson	106	1,653	...	1,680	C
Concordia Teachers College, River Forest, Ill.	Luth	1864	M. L. Koehneke	95	1,028	1	1,061	C
Concordia Teachers College, Seward, Nebr.	Luth	1894	T. Langevin	57	782	...	817	C
Connecticut, University of, Storrs, Conn.	St	1881	A. Jorgensen	1,192	8,310	1,262	12,910	C
Connecticut College, New London, Conn.	Pri	1911	R. Park	127	1,116	...	1,225	W
Converse College, Spartanburg, S.C.	Pri	1889	R. T. Coleman, Jr.	72	598	4	649	W
Cooper Union, New York, N.Y.	Pri	1859	R. F. Humphreys	142	557	...	1,235	C
Cornell College, Mount Vernon, Iowa	Meth	1853	A. Christ-Janer	73	792	...	799	M
Cornell University, Ithaca, N.Y.	St-Pri	1865	D. W. Malott	1,465	8,851	2,917	11,768	C
Creighton University, Omaha, Nebr.	RC	1878	H. W. Linn	490	1,720	760	3,168	C
Culver-Stockton College, Canton, Mo.	DC	1853	F. Helsabeck	48	624	...	751	C
Dakota Wesleyan University, Mitchell, S.Dak.	Meth	1885	J. J. Early	34	606	...	709	C
Dalhousie University, Halifax, N.S.	Pri	1818	A. E. Kerr	364	1,515	684	2,259	C
Dana College, Blair, Nebr.	Luth	1884	C. C. Madsen	33	518	...	640	C
Danbury State College, Danbury, Conn.	St	1903	R. A. Haas	72	754	...	1,503	C
Dartmouth College, Hanover, N.H.	Pri	1769	J. S. Dickey	266	2,979	200	3,304	C
David Lipscomb College, Nashville, Tenn.	Pri	1891	A. C. Pullias	75	...	...	1,426	C
Davidson College, Davidson, N.C.	Pres	1836	D. G. Martin	75	957	...	977	M
Davis and Elkins College, Elkins, W.Va.	Pres	1904	D. K. Allen	42	583	...	603	C
Dayton, University of, Dayton, Ohio	RC	1850	R. A. Roesch	436	4,398	...	7,122	C
Defiance College, Defiance, Ohio	UCC	1850	K. McCann	55	633	...	750	C
Delaware, University of, Newark, Del.	St	1833	J. A. Perkins	428	3,160	291	6,479	C
Delaware State College, Dover, Del.	St	1891	L. I. Mishoe	47	475	...	501	C
Delta State College, Cleveland, Miss.	St	1924	J. M. Ewing	60	1,151	...	1,232	C
Denison University, Granville, Ohio	Bapt	1831	A. B. Knapp	134	1,545	...	1,583	C
Denver, University of, Denver, Colo.	Pri	1864	C. M. Alter	366	3,088	530	5,515	C
DePaul University, Chicago, Ill.	RC	1898	C. J. O'Malley	325	2,931	736	8,265	C
DePauw University, Greencastle, Ind.	Meth	1837	R. J. Humbert	181	2,227	13	2,280	C
Detroit, University of, Detroit, Mich.	RC	1877	L. V. Britt	747	5,141	644	10,957	C
Detroit College of Law, Detroit, Mich.	Pri	1891	C. H. King	25	...	138	466	C

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Dickinson College, Carlisle, Pa.	Meth	1773	H. L. Rubendall	120	1,045	...	1,092	C
Dickinson State Teachers College, Dickinson, N.Dak.	St	1918	O. DeLong	40	812	...	1,102	C
Dillard University, New Orleans, La.	Meth	1869	A. W. Dent	62	880	...	892	C
District of Columbia Teachers College, Washington, D.C.	Mun	1851	P. O. Carr	56	589	...	1,252	C
Doane College, Crete, Nebr.	UCC	1872	D. M. Typer	35	289	...	324	C
Dominican College of San Rafael, San Rafael, Calif.	RC	1890	Sr. M. Patrick	64	420	25	698	W
Douglass College,[4] New Brunswick, N.J.	St	1918	R. M. Adams	187	2,018	...	2,052	W
Drake University, Des Moines, Iowa	Pri	1881	H. G. Harmon	260	3,072	204	7,015	C
Drew University, Madison, N.J.	Meth	1867	R. F. Oxnam	85	572	166	955	C
Drexel Institute of Technology, Philadelphia, Pa.	Pri	1891	J. Creese	607	3,696	107	8,154	C
Drury College, Springfield, Mo.	Pri	1873	J. F. Findlay	106	934	...	1,967	C
Dubuque, University of, Dubuque, Iowa	Pres	1852	G. Couchman	45	560	...	613	C
Duchesne College, Omaha, Nebr.	RC	1881	Moth. D. Clark	35	279	...	316	W
Duke University, Durham, N.C. (incl. Trinity & Woman's colleges)	Meth	1838	D. Hart	814	3,593	2,079	6,059	C
Dunbarton College of Holy Cross, Washington, D.C.	RC	1935	Sr. M. Dolores	40	433	...	507	W
Duquesne University, Pittsburgh, Pa.	RC	1878	H. McAnulty	296	3,165	287	5,851	C
Dyke College, Cleveland, Ohio	Pri	1848	J. R. Gales	32	640	...	1,060	C
D'Youville College, Buffalo, N.Y.	RC	1908	Sr. Catherine	75	712	...	1,324	W
Earlham College, Richmond, Ind.	Fr	1847	L. R. Bolling	95	931	11	1,044	C
East Carolina College, Greenville, N.C.	St	1907	L. W. Jenkins	352	4,767	84	6,973	C
East Central State College, Ada, Okla.	St	1909	C. F. Spencer	65	1,477	6	1,904	C
East Stroudsburg State College, East Stroudsburg, Pa.	St	1893	L. Koehler	102	1,587	...	1,606	C
East Tennessee State College, Johnson City, Tenn.	St	1911	B. E. Dossett	256	3,813	44	5,016	C
East Texas Baptist College, Marshall, Texas	Bapt	1914	H. C. Bennett	36	274	...	490	C
East Texas State College, Commerce, Texas	St	1889	J. G. Gee	164	2,690	87	3,760	C
Eastern Baptist College, St. Davids, Pa.	Bapt	1952	T. McDormand	32	345	...	360	C
Eastern College, Baltimore, Md.	Pri	1928	A. R. Ensor	52	245	223	675	C
Eastern Illinois University, Charleston, Ill.	St	1895	Q. Doudna	221	3,130	43	3,578	C
Eastern Kentucky State College, Richmond, Ky.	St	1906	R. R. Martin	161	3,213	30	4,596	C
Eastern Mennonite College, Harrisonburg, Va.	Men	1917	J. R. Mumaw	58	502	10	564	C
Eastern Michigan University, Ypsilanti, Mich.	St	1849	E. B. Elliott	375	3,905	931	7,094	C
Eastern Montana College of Education, Billings, Mont.	St	1925	H. L. Steele	79	...	...	1,651	C
Eastern Nazarene College, Wollaston Park, Mass.	Naz	1918	E. S. Mann	51	652	5	834	C
Eastern New Mexico University, Portales, N.Mex.	St	1934	D. C. Moyer	106	1,389	48	1,680	C
Eastern Oregon College, La Grande, Oreg.	St	1929	F. B. Bennett	50	977	8	1,070	C
Eastern Washington State College, Cheney, Wash.	St	1890	D. Patterson	123	2,213	39	3,045	C
Edgewood College of the Sacred Heart, Madison, Wis.	RC	1927	Sr. M. Nona	42	...	...	510	W
Edinboro State College, Edinboro, Pa.	St	1857	T. R. Miller	87	1,725	...	1,909	C
Edward Waters College, Jacksonville, Fla.	Meth	1866	W. B. Stewart	45	582	...	743	C
Electronic Technical Institute, Inglewood & San Diego, Calif.	Pri	1946	H. S. Ashe	28	194	...	273	C
Elizabeth City State Teachers College, Elizabeth City, N.C.	St	1891	W. N. Ridley	50	827	...	827	C
Elizabethtown College, Elizabethtown, Pa.	CBr	1899	R. McAuley	70	800	...	1,228	C
Elmhurst College, Elmhurst, Ill.	Pri	1871	R. C. Stanger	95	831	...	1,509	C
Elmira College, Elmira, N.Y.	Pri	1855	J. R. Murray	106	810	...	1,601	W
Elon College, Elon College, N.C.	Cong	1889	J. E. Danieley	67	834	...	1,301	C
Emerson College, Boston, Mass.	Pri	1880	S. J. McKinley	76	577	15	739	C
Emmanuel College, Boston, Mass.	RC	1919	Sr. A. Bartholomew	106	1,046	...	1,064	W
Emory and Henry College, Emory, Va.	Meth	1836	E. G. Hunt, Jr.	47	753	...	771	C
Emory University, Atlanta and Oxford, Ga.	Meth	1836	...	586	2,537	1,827	4,664	C
Emporia, College of, Emporia, Kans.	Pres	1882	J. Laughlin	40	612	...	629	C
Erskine College, Due West, S.C.	Pres	1836	J. M. Lesesne	46	589	...	664	C
Evansville College, Evansville, Ind.	Meth	1854	M. W. Hyde	154	1,751	...	3,223	C
Fairfield University, Fairfield, Conn.	RC	1942	J. Fitzgerald	97	1,341	21	2,024	M
Fairleigh Dickinson Univ., Rutherford, Teaneck, & Madison, N.J.	Pri	1942	P. Sammartino	878	4,797	180	15,685	C
Fairmont State College, Fairmont, W.Va.	St	1867	E. K. Feaster	65	1,300	...	1,427	C
Farmington State Teachers College, Farmington, Me.	St	1864	E. H. Scott	28	534	...	534	C
Fayetteville State Teachers College, Fayetteville, N.C.	St	1867	R. Jones	48	863	...	943	C
Fenn College, Cleveland, Ohio	Pri	1923	G. B. Earnest	280	1,801	...	6,916	C
Ferris Institute, Big Rapids, Mich.	St	1884	V. F. Spathelf	171	3,647	...	3,673	C
Finch College, New York, N.Y.	Pri	1900	R. DeMarco	52	300	...	300	W
Fisk University, Nashville, Tenn.	Cong	1865	S. J. Wright	62	864	20	909	C
Florence State College, Florence, Ala.	St	1873	E. B. Norton	107	1,998	28	2,081	C
Florida, University of, Gainesville, Fla.	St	1853	J. W. Reitz	1,365	11,665	1,023	16,020	C
Florida A. & M. University, Tallahassee, Fla.	St	1887	G. W. Gore, Jr.	250	2,515	20	3,130	C
Florida Normal & Industrial Mem. College, St. Augustine, Fla.	Bapt	1879	R. Puryear	27	318	...	328	M
Florida Southern College, Lakeland, Fla.	Meth	1885	C. T. Thrift, Jr.	120	1,777	...	2,448	C
Florida State University, Tallahassee, Fla.	St	1857	G. Blackwell	639	5,883	1,002	19,670	C
Fontbonne College, St. Louis, Mo.	RC	1923	Sr. M. A. Noble	65	540	...	784	W
Fordham University, Bronx, N.Y.	RC	1841	L. McGinley	678	4,310	1,428	9,864	C
Fort Hays Kansas State College, Hays, Kans.	St	1902	M. Cunningham	184	2,664	93	3,280	C
Fort Valley State College, Fort Valley, Ga.	St	1895	C. V. Troup	88	937	42	987	C
Fort Wayne Bible College, Fort Wayne, Ind.	MCA	1904	J. F. Gerig	30	301	...	379	C
Franklin and Marshall College, Lancaster, Pa.	UCC	1787	F. D. Bolman, Jr.	104	1,334	...	1,875	M
Franklin College, Franklin, Ind.	Bapt	1834	H. Richardson	43	666	...	682	C
Franklin University, Columbus, Ohio	YMCA	1902	J. F. Frasch	60	93	...	931	C
Fresno State College, Fresno, Calif.	St	1911	A. E. Joyal	358	4,373	175	7,698	C
Friends University, Wichita, Kans.	Fr	1898	L. E. Roberts	49	461	4	703	C
Fuller Theological Seminary, Pasadena, Calif.	Inter	1947	H. J. Ockenga	18	...	254	280	C
Furman University, Greenville, S.C.	Bapt	1826	J. L. Plyler	99	1,338	...	1,542	C
Gallaudet College, Washington, D.C.	Pri	1864	L. Elstad	67	291	26	327	C
Gannon College, Erie, Pa.	RC	1944	W. J. Nash	96	1,340	...	1,700	C
Garrett Theological Seminary, Evanston, Ill.	Meth	1855	D. E. Loder	39	...	432	455	C
General Beadle St. Tchrs. Coll., Madison, S. Dak.	St	1881	V. A. Lowry	25	402	...	480	C
Geneva College, Beaver Falls, Pa.	Pres	1848	E. C. Clarke	11	989	...	1,661	C
George Peabody College for Teachers, Nashville, Tenn.	Pri	1785	F. C. Robb	156	1,047	331	1,914	C
George Pepperdine College, Los Angeles, Calif.	Pri	1937	M. N. Young	119	786	37	1,374	C
George Washington University, Washington, D.C.	Pri	1821	T. H. Carroll	1,208	2,498	1,003	13,848	C
George Williams College, Chicago, Ill.	Pri	1890	R. Hamlin	31	301	42	369	C
Georgetown College, Georgetown, Ky.	Bapt	1829	R. L. Mills	70	1,053	2	1,271	C
Georgetown University, Washington, D.C.	RC	1789	E. B. Bunn	1,178	3,256	1,719	6,269	C
Georgia, Medical College of, Augusta, Ga.	St	1828	H. B. O'Rear	275	77	381	469	C
Georgia, University of, Athens, Ga.	St	1785	O. Aderhold	692	7,774	873	12,033	C
Georgia, Woman's College of, Milledgeville, Ga.	St	1889	R. E. Lee	63	794	...	833	W

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Georgia Institute of Technology, Atlanta, Ga. (incl. The Southern Technical Institute, Chamblee)	St	1885	E. D. Harrison	516	5,315	230	7,309	C
Georgia Southern College, Statesboro, Ga.	St	1908	Z. Henderson	74	1,627	...	1,764	C
Georgia State College, Atlanta, Ga.	St	1914	N. Langdale, Jr.	179	1,456	75	3,450	C
Georgian Court College, Lakewood, N.J.	RC	1908	Moth. M. Anna	45	361	...	466	W
Gettysburg College, Gettysburg, Pa.	Luth	1832	C. A. Hanson	130	1,732	...	1,766	C
Glassboro State College, Glassboro, N.J.	St	1923	T. Robinson	115	1,772	...	3,312	C
Glenville State College, Glenville, W. Va.	St	1872	H. B. Heflin	39	742	...	854	C
Golden Gate College, San Francisco, Calif.	Pri	1901	R. T. Sharpe	81	184	341	1,646	C
Gonzaga University, Spokane, Wash.	RC	1887	J. P. Leary	148	1,602	14	1,850	C
Good Counsel College, White Plains, N.Y.	RC	1923	Moth. M. Dolores	39	480	...	518	W
Gordon Coll. & Gordon Divinity School, Beverly Farms, Mass.	Pri	1889	J. Forrester	46	384	125	590	C
Gorham State Teachers College, Gorham, Me.	St	1878	K. Brooks	59	734	...	831	C
Goshen College, Goshen, Ind.	Men	1894	P. Mininger	95	878	36	1,110	C
Goucher College, Baltimore, Md.	Pri	1885	O. Kraushaar	80	736	18	761	W
Grace Bible Institute, Omaha, Nebr.	Pri	1943	W. Harder	21	336	...	369	C
Graceland College, Lamoni, Iowa	RLDS	1895	H. H. Grice	53	814	6	865	C
Grambling College, Grambling, La.	St	1901	R. W. E. Jones	151	2,758	...	2,758	C
Great Falls, College of, Great Falls, Mont.	RC	1932	Sr. Rita	49	464	...	760	C
Greensboro College, Greensboro, N.C.	Meth	1838	H. H. Hutson	40	572	...	590	C
Greenville College, Greenville, Ill.	Meth	1892	H. J. Long	37	613	...	669	C
Grinnell College, Grinnell, Iowa	Pri	1846	H. R. Bowen	101	1,136	...	1,148	C
Grove City College, Grove City, Pa.	Pres	1884	J. S. Harker	83	1,686	...	1,693	C
Guilford College, Guilford College and Greensboro, N.C.	Fr	1889	C. A. Milner	103	832	...	1,786	C
Gustavus Adolphus College, St. Peter, Minn.	Luth	1862	E. M. Carlson	100	1,222	...	1,237	C
Hahnemann Medical College, Philadelphia, Pa.	Pri	1848	C. S. Cameron	396	...	380	402	C
Hamilton College, Clinton, N.Y.	Pri	1812	R. W. McEwen	72	791	...	791	M
Hamline University, St. Paul, Minn.	Meth	1854	P. H. Giddens	82	1,060	...	1,110	C
Hampden-Sydney College, Hampden-Sydney, Va.	Pres	1776	T. E. Gilmer	30	467	...	470	M
Hampton Institute, Hampton, Va.	Pri	1868	J. Holland	133	1,373	4	1,587	C
Hanover College, Hanover, Ind.	Pres	1827	J. E. Horner	53	797	...	812	C
Hardin-Simmons University, Abilene, Texas	Bapt	1891	...	10	1,263	13	1,727	C
Harding College, Searcy, Ark.	Pri	1924	G. S. Benson	71	1,081	1	1,125	C
Harris Teachers College, St. Louis, Mo.	Mun	1857	G. E. Clark	95	1,264	...	1,875	C
Hartt College of Music,[5] Hartford, Conn.	Pri	1927	M. Paranov	87	224	4	353	C
Hartwick College, Oneonta, N.Y.	Luth	1928	F. M. Binder	54	817	...	842	C
Harvard University, Cambridge, Mass.	Pri	1636	N. M. Pusey	4,782	4,722	6,679	11,401	M
Hastings College, Hastings, Nebr.	Pres	1882	T. Maxson	57	670	...	749	C
Haverford College, Haverford, Pa.	Fr	1833	H. Borton	62	451	...	456	M
Hawaii, Church College of, Laie, Hawaii	LDS	1955	R. Wootton	52	812	...	923	C
Hawaii, University of, Honolulu, Hawaii	St	1907	L. H. Snyder	800	6,461	780	10,773	C
Hebrew Union Coll.—Jewish Inst. of Religion, Cincinnati, Ohio, New York, N.Y., & Los Angeles, Calif.	Jew	1875	N. Glueck	119	...	311	813	M
Heidelberg College, Tiffin, Ohio	UCC	1850	W. T. Wickham	75	956	...	1,006	C
Henderson State Teachers College, Arkadelphia, Ark.	St	1929	D. McBrien	90	1,488	...	1,786	C
Hendrix College, Conway, Ark.	Meth	1884	M. T. Steel	43	604	...	609	C
High Point College, High Point, N.C.	Meth	1924	W. M. Patton, Jr.	63	1,053	...	1,272	C
Hillsdale College, Hillsdale, Mich.	Bapt	1844	J. D. Phillips	50	774	...	859	C
Hillyer College,[5] Hartford, Conn.	Pri	1879	A. S. Wilson	393	...	...	5,162	C
Hiram College, Hiram, Ohio	Pri	1850	P. F. Sharp	58	749	...	769	C
Hobart and William Smith Colleges,[6] Geneva, N.Y.	Pri	1822	L. M. Hirshson	89	1,162	...	1,262	C
Hofstra College, Hempstead, N.Y.	Pri	1935	J. C. Adams	411	3,617	130	8,740	C
Hollins College, Hollins College, Va.	Pri	1842	J. A. Logan, Jr.	69	677	12	706	W
Holy Cross, College of the, Worcester, Mass.	RC	1843	R. J. Swords	142	1,748	8	1,763	M
Holy Family College, Manitowoc, Wis.	RC	1935	Sr. M. Brideen	32	172	...	376	W
Holy Names, College of the, Oakland, Calif.	RC	1868	Sr. J. Marie	108	634	39	1,174	W
Holy Names College, Spokane, Wash.	RC	1907	Sr. M. Raphael	37	207	...	327	W
Hood College, Frederick, Md.	Pri	1893	R. Elliott	64	650	...	703	W
Hope College, Holland, Mich.	Ref	1851	I. J. Lubbers	106	1,489	...	1,553	C
Houghton College, Houghton, N.Y.	Meth	1883	S. W. Paine	53	880	...	908	C
Houston, University of, Houston, Texas	St	1934	P. G. Hoffman	592	5,251	144	12,187	C
Howard College, Birmingham, Ala.	Bapt	1842	L. Wright	136	1,360	...	2,205	C
Howard Payne College, Brownwood, Texas	Bapt	1889	G. D. Newman	70	835	6	1,203	C
Howard University, Washington, D.C.	Pri	1867	J. M. Nabrit, Jr.	753	3,151	1,116	5,795	C
Humboldt State College, Arcata, Calif.	St	1913	C. H. Siemens	176	1,578	53	2,461	C
Hunter College, New York, N.Y.	Mun	1870	J. Meng	1,102	7,038	153	20,629	C
Huntingdon College, Montgomery, Ala.	Meth	1854	H. Searcy	54	729	...	815	C
Huntington College, Huntington, Ind.	UB	1897	E. Becker	29	339	15	440	C
Huron College, Huron, S.Dak.	Pres	1883	D. E. Kerr	37	437	...	605	C
Husson College, Bangor, Me.	Pri	1898	C. Husson, Sr.	33	...	...	717	C
Huston-Tillotson College, Austin, Texas	Meth	1952	J. J. Seabrook	34	421	...	476	C
Idaho, College of, Caldwell, Idaho	Pres	1891	T. Shearer	70	635	...	832	C
Idaho, University of, Moscow, Idaho (incl. Lewis-Clark Normal School, Lewiston, q.v.)	St	1889	D. R. Theophilus	321	4,019	336	5,328	C
Idaho State College, Pocatello, Idaho	St	1901	D. E. Walker	210	2,597	30	2,971	C
Illinois, University of, Urbana and Chicago, Ill.	St	1867	D. D. Henry	5,312	23,304	3,336	33,828	C
Illinois College, Jacksonville, Ill.	Pri	1829	L. V. Caine	37	451	...	510	C
Illinois Institute of Technology, Chicago, Ill.	Pri	1892	J. Rettaliata	472	1,993	315	6,980	C
Illinois State Normal University, Normal, Ill.	St	1857	R. G. Bone	396	4,490	81	5,702	C
Illinois Wesleyan University, Bloomington, Ill.	Meth	1850	L. M. Bertholf	93	1,167	2	1,234	C
Immaculata College, Immaculata, Pa.	RC	1920	St. Mary of Lourdes	72	711	...	954	M
Immaculate Heart College, Los Angeles, Calif.	RC	1916	Sr. M. Humiliata	100	640	...	1,640	W
Incarnate Word College, San Antonio, Texas	RC	1881	S. T. Greenburg	82	657	4	1,071	W
Indiana Central College, Indianapolis, Ind.	EUB	1902	I. L. Esch	111	818	...	1,796	C
Indiana State College, Terre Haute, Ind.	St	1870	R. Holmstedt	269	3,891	41	5,803	C
Indiana State College, Indiana, Pa.	St	1871	W. E. Pratt	176	3,502	...	4,088	C
Indiana University, Bloomington and Indianapolis, Ind.	St	1820	H. B. Wells	2,540	13,739	6,214	28,975	C
Inter American University, San German, P.R.	Pres	1912	R. C. Bauer	258	2,267	...	4,004	C
Iona College, New Rochelle, N.Y.	RC	1940	Bro. R. B. Power	115	1,905	...	2,256	M
Iowa, State College of, Cedar Falls, Iowa	St	1876	J. W. Maucker	287	3,409	118	4,070	C
Iowa, State University of, Iowa City, Iowa	St	1847	V. M. Hancher	1,044	8,302	3,399	11,701	C
Iowa State University, Ames, Iowa	St	1858	J. H. Hilton	636	8,828	1,460	10,413	C
Iowa Wesleyan College, Mount Pleasant, Iowa	Meth	1842	P. W. Pixler	49	646	...	819	C
Ithaca College, Ithaca, N.Y.	Pri	1892	H. Dillingham	139	1,491	12	1,920	C

Institution and location	Control or affiliation	Year founded	Chief executive	Teaching faculty	Full-time students: Undergraduate	Full-time students: Graduate	Total students enrolled	
Jackson State College, Jackson, Miss.	St	1877	J. L. Reddix	89	1,438	...	1,678	C
Jacksonville State Coll., Jacksonville, Ala.	St	1883	H. Cole	146	2,200	2	2,578	C
Jacksonville University, Jacksonville, Fla.	Pri	1934	F. A. Johnson	84	870	...	1,733	C
Jamestown College, Jamestown, N.Dak.	Pres	1883	J. A. Fisher	43	409	...	426	C
Jarvis Christian College, Hawkins, Texas	DC	1912	C. Blackburn	43	396	...	406	C
Jefferson Medical College, Philadelphia, Pa.	Pri	1825	W. A. Sodeman	789	665	40	705	C
Jersey City State College, Jersey City, N.J.	St	1927	M. B. Gilligan	125	1,662	...	2,278	C
Jewish Theol. Seminary of America, New York, N.Y. & Philadelphia, Pa.	Jew	1886	L. Finkelstein	81	...	155	776	C
John Carroll University, Cleveland, Ohio	RC	1886	H. E. Dunn	270	2,187	86	4,118	M
John Marshall Law School, Chicago, Ill.	Pri	1899	N. W. Lee	80	190	...	666	C
Johns Hopkins University, Baltimore, Md. (incl. School of Advanced International Studies, Washington, D.C. and Bologna, Italy)	Pri	1876	M. Eisenhower	1,456	1,441	1,362	8,757	C
Johnson C. Smith University, Charlotte, N.C.	Pres	1867	R. P. Perry	56	875	28	947	C
Judson College, Marion, Ala.	Bapt	1838	C. Anderson	36	292	...	361	W
Juilliard School of Music, New York, N.Y.	Pri	1905	P. Mennin	120	583	69	901	C
Juniata College, Huntingdon, Pa.	CBr	1876	C. N. Ellis	56	796	...	826	C
Kalamazoo College, Kalamazoo, Mich.	Bapt	1833	W. K. Hicks	57	748	...	753	C
Kansas, University of, Lawrence & Kansas City, Kans.	St	1865	W. C. Wescoe	852	7,731	1,250	13,309	C
Kansas City, University of, Kansas City, Mo.	Pri	1929	C. F. Scofield	445	1,640	85	3,409	C
Kansas City Coll. of Osteopathy & Surgery, Kansas City, Mo.	Pri	1916	J. M. Peach	77	...	375	375	C
Kansas State College, Pittsburg, Kans.	St	1903	L. H. Axe	226	2,819	89	3,357	C
Kansas State Teachers College, Emporia, Kans.	St	1863	J. E. King	234	3,730	139	4,890	C
Kansas State University, Manhattan, Kans.	St	1863	J. A. McCain	488	6,194	635	7,607	C
Kansas Wesleyan University, Salina, Kans.	Meth	1886	D. A. Zook	38	482	...	512	C
Keene Teachers College, Keene, N.H.	St	1909	L. P. Young	61	830	59	1,138	C
Kent State University, Kent, Ohio	St	1910	G. A. Bowman	466	8,883	251	13,277	C
Kentucky, University of, Lexington, Ky.	St	1865	F. G. Dickey	859	7,299	497	9,903	C
Kentucky State College, Frankfort, Ky.	St	1886	R. B. Atwood	49	654	...	708	C
Kentucky Wesleyan College, Owensboro, Ky.	Meth	1858	H. P. Hamilton	45	502	...	714	C
Kenyon College, Gambier, Ohio	PE	1824	F. E. Lund	64	563	57	621	M
Keuka College, Keuka Park, N.Y.	Bapt	1890	W. Litterick	50	521	...	532	W
King College, Bristol, Tenn.	Pres	1867	R. Liston	27	251	...	282	C
King's College, Wilkes-Barre, Pa.	RC	1946	G. P. Benaglia	66	966	...	1,077	M
Kirksville Coll. of Osteopathy & Surgery, Kirksville, Mo.	Pri	1892	M. Thompson	68	...	345	345	C
Knox College, Galesburg, Ill.	Pri	1837	S. G. Umbeck	81	1,066	...	1,082	C
Knoxville College, Knoxville, Tenn.	Pres	1875	J. A. Colston	49	643	...	677	C
Kutztown State College, Kutztown, Pa.	St	1866	I. deFrancesco	95	1,615	...	1,879	C
Ladycliff College, Highland Falls, N.Y.	RC	1933	Sr. M. J. Thomas	35	332	...	446	W
Lafayette College, Easton, Pa.	Pres	1826	K. R. Bergethon	140	1,521	...	1,526	M
La Grange College, La Grange, Ga.	Meth	1831	W. Henry, Jr.	36	406	...	436	C
Lake Erie College, Painesville, Ohio	Pri	1856	P. Weaver	60	527	...	803	W
Lake Forest College, Lake Forest, Ill.	Pri	1857	W. G. Cole	88	892	...	1,156	C
Lakeland College, Sheboygan, Wis.	UCC	1862	J. B. Morland	32	465	...	471	C
Lamar State Coll. of Technol., Beaumont, Texas	St	1923	F. L. McDonald	269	4,556	22	6,440	C
Lambuth College, Jackson, Tenn.	Meth	1843	L. L. Gobbel	34	583	...	628	C
Lander College, Greenwood, S.C.	Pri	1872	B. M. Grier	32	417	...	428	C
Lane College, Jackson, Tenn.	ME	1882	C. Kirkendoll	32	517	...	517	C
Langston University, Langston, Okla.	St	1897	W. H. Hale	48	645	...	670	C
La Salle College, Philadelphia, Pa.	RC	1863	Bro. D. Bernian	200	2,672	...	4,739	M
La Sierra College, Arlington, Calif.	SDA	1922	F. A. Meier	77	747	...	1,024	C
Laval University, Quebec, P.Q.	RC	1852	L. Vachon	2,234	5,261	5,577	16,324	C
La Verne College, La Verne, Calif.	CBr	1891	H. D. Fasnacht	35	406	...	561	C
Lawrence College, Appleton, Wis.	Pri	1847	D. M. Knight	101	1,042	...	1,076	C
Lebanon Valley College, Annville, Pa.	EUB	1866	F. K. Miller	74	683	...	1,203	C
Lehigh University, Bethlehem, Pa.	Pri	1865	H. A. Neville	350	2,625	120	3,580	M
Le Moyne College, Syracuse, N.Y.	RC	1946	N. J. Sullivan	71	1,267	...	1,355	C
LeMoyne College, Memphis, Tenn.	AMA	1870	H. F. Price	28	419	...	555	C
Lenoir Rhyne College, Hickory, N.C.	Luth	1891	V. R. Cromer	64	980	...	990	C
Lesley College, Cambridge, Mass.	Pri	1909	D. A. Orton	30	389	3	500	C
Lewis and Clark College, Portland, Oreg.	Pres	1867	J. R. Howard	104	1,101	1	1,116	C
Lewis-Clark Normal School,[7] Lewiston, Idaho	St	1893	D. Theophilus	13	295	...	319	C
Limestone College, Gaffney, S.C.	Pri	1845	A. J. Eastwood	30	450	...	460	W
Lincoln Christian College, Lincoln, Ill.	Pri	1944	E. C. Hargrove	26	322	19	401	C
Lincoln Memorial University, Harrogate, Tenn.	Pri	1897	R. C. Provine	33	405	...	456	C
Lincoln University, Jefferson City, Mo.	St	1866	E. E. Dawson	88	1,268	34	1,612	C
Lincoln University, Lincoln University, Pa.	St-Pri	1854	M. Wachman	42	405	...	414	M
Lindenwood College, St. Charles, Mo.	Pres	1827	F. L. McCluer	60	615	...	636	W
Linfield College, McMinnville, Oreg.	Bapt	1849	H. L. Dillin	63	919	17	978	C
Little Rock University, Little Rock, Ark.	Pri	1927	C. V. Stabler	92	800	...	1,540	C
Livingston State College, Livingston, Ala.	St	1840	D. P. Culp	43	698	...	741	C
Livingstone College, Salisbury, N.C.	AMEZ	1879	S. E. Duncan	44	641	...	641	C
Lock Haven State College, Lock Haven, Pa.	St	1870	R. T. Parsons	70	1,255	...	1,262	C
Loma Linda University, Loma Linda, Calif.	SDA	1905	G. Anderson	309	275	693	1,047	C
Long Beach State College, Long Beach, Calif.	St	1949	C. McIntosh, Jr.	550	5,911	233	11,316	C
Long Island Univ., Brooklyn, N.Y. (incl., Brooklyn Coll. of Pharmacy; C. W. Post, Mitchel, & Hauppauge colleges, Long Island, N.Y.)	Pri	1926	J. H. G. Pell	604	5,384	83	9,548	C
Longwood College, Farmville, Va.	St	1884	F. Lankford, Jr.	69	1,127	...	1,173	W
Loras College, Dubuque, Iowa	RC	1839	D. V. Foley	90	1,350	...	1,374	M
Loretto Heights College, Loretto, Colo.	RC	1891	Sr. F. M. Walsh	73	772	...	858	W
Los Angeles State Coll. of Applied Arts and Sciences, Los Angeles, Calif.	St	1947	H. McDonald	745	6,088	626	16,592	C
Louisiana College, Pineville, La.	Bapt	1906	G. E. Guinn	50	771	...	1,114	C
Louisiana Polytechnic Institute, Ruston, La.	St	1894	R. L. Ropp	266	3,605	92	3,947	C
Louisiana State Univ. and A. & M. Coll., Baton Rouge, Alexandria, & New Orleans, La.	St	1860	J. A. Hunter	1,216	11,068	1,573	16,298	C
Louisville, University of, Louisville, Ky.	Mun	1798	P. G. Davidson	875	2,457	837	7,028	C
Lowell Technological Institute, Lowell, Mass.	St	1895	M. J. Lydon	233	1,199	50	3,515	C
Loyola College, Baltimore, Md.	RC	1852	V. F. Beatty	104	848	4	2,055	M
Loyola College, Montreal, P.Q.	RC	1896	P. G. Malone	104	1,087	...	2,367	M
Loyola University, Chicago, Ill. (incl. West Baden College, West Baden, Ind.)	RC	1870	J. Maguire	1,026	3,895	1,443	10,371	C
Loyola University, New Orleans, La.	RC	1912	A. C. Smith	243	1,317	397	3,160	C

Institution and location	Control or affiliation	Year founded	Chief executive	Teaching faculty	Full-time students: Undergraduate	Full-time students: Graduate	Total students enrolled
Loyola University of Los Angeles, Los Angeles, Calif.	RC	1911	C. Casassa	131	1,161	187	1,912 M
Luther College, Decorah, Iowa	Luth	1861	J. Ylvisaker	86	1,298	...	1,331 C
Luther Theological Seminary, St. Paul, Minn.	Luth	1876	A. N. Rogness	25	491	4	529 M
Lutheran Theological Seminary, Philadelphia, Pa.	Luth	1864	H. H. Bagger	21	...	163	265 M
Lycoming College, Williamsport, Pa.	Meth	1812	D. F. Wertz	87	1,019	...	1,112 C
Lynchburg College, Lynchburg, Va.	DC	1903	O. W. Wake	60	864	...	1,070 C
Macalester College, St. Paul, Minn.	Pres	1874	H. M. Rice	142	1,477	...	1,554 C
McCormick Theol. Seminary, Chicago, Ill.	Pres	1829	A. R. McKay	28	...	241	270 C
McGill University, Montreal, P.Q.	Pri	1821	F. C. James	1,409	6,658	2,224	9,532 C
McMaster University, Hamilton, Ont.	Bapt	1887	H. G. Thode	337	1,777	223	9,826 C
MacMurray College, Jacksonville, Ill.	Meth	1846	G. Michalson	63	876	6	957 C
McMurry College, Abilene, Texas	Meth	1923	G. R. Bennett	65	931	4	1,349 C
McNeese State College, Lake Charles, La.	St	1939	W. N. Cusic	165	2,192	6	2,946 C
McPherson College, McPherson, Kans.	CBr	1887	D. Bittinger	41	521	...	607 C
Madison College, Harrisonburg, Va.	St	1908	G. T. Miller	123	1,521	1	1,686 W
Madonna College, Livonia, Mich.	RC	1947	Sr. M. Raynelda	26	222	...	406 W
Maine, University of, Orono and Portland, Me.	St	1865	L. H. Elliott	376	4,459	86	6,658 C
Manchester College, North Manchester, Ind.	CBr	1889	A. B. Helman	65	1,166	4	1,280 C
Manhattan College, New York, N.Y.	RC	1853	Bro. A. Philip	213	3,054	...	3,583 M
Manhattan School of Music, New York, N.Y.	Pri	1917	J. Brownlee	132	419	90	625 C
Manhattanville College of the Sacred Heart, Purchase, N.Y.	RC	1841	E. M. O'Byrne	8	773	17	836 W
Manitoba, University of, Winnipeg, Man.	Prov	1877	H. Saunderson	600	6,614	266	8,853 C
Mankato State Coll., Mankato, Minn.	St	1867	C. L. Crawford	310	4,718	48	6,533 C
Mansfield State College, Mansfield, Pa.	St	1857	L. Rathgeber	85	1,146	...	1,180 C
Marian College, Indianapolis, Ind.	RC	1937	F. J. Reine	55	660	...	748 C
Marian College, Fond du Lac, Wis.	RC	1936	Sr. M. Fidelis	34	223	...	400 W
Marietta College, Marietta, Ohio	Pri	1835	W. B. Irvine	81	1,363	...	1,700 C
Marillac College, Normandy, Mo.	RC	1955	Sr. Bertrande	45	247	...	347 W
Marquette University, Milwaukee, Wis.	RC	1881	Wm. F. Kelley	1,195	5,820	1,348	11,952 C
Marshall University, Huntington, W.Va.	St	1837	S. H. Smith	225	3,341	32	4,459 C
Mary Baldwin College, Staunton, Va.	Pres	1842	S. Spencer, Jr.	34	452	...	452 W
Mary Hardin-Baylor College, Belton & Ft. Hood, Texas	Bapt	1845	A. Tyson	55	497	...	858 C
Mary Manse College, Toledo, Ohio	RC	1922	Sr. J. B. Macelwane	8	593	...	1,283 W
Mary Washington College of the Univ. of Va., Fredericksburg, Va.	St	1908	G. Simpson	123	1,734	...	1,741 W
Marycrest College, Davenport, Iowa	RC	1939	Sr. S. M. Henderson	47	563	...	818 W
Marygrove College, Detroit, Mich.	RC	1910	Sr. M. Emil	91	1,034	...	1,099 W
Maryknoll Seminary, Glen Ellyn, Ill.	RC	1949	G. M. Buckley	27	384	...	384 M
Maryland, University of, College Park and Baltimore, Md. (incl. Maryland State College, Princess Anne, q.v.)	St	1807	W. H. Elkins	2,399	13,145	...	25,136 C
Maryland State College,[8] Princess Anne, Md.	St	1886	J. T. Williams	47	523	...	546 C
Maryland State Teachers College, Bowie, Md.	St	1867	W. E. Henry	30	360	...	360 C
Maryland State Teachers College, Frostburg, Md.	St	1898	R. Hardesty	60	1,260	...	1,274 C
Maryland State Teachers College, Salisbury, Md.	St	1925	W. Devilbiss	24	481	...	538 C
Maryland State Teachers College, Towson, Md.	St	1866	E. Hawkins	127	1,708	...	1,747 C
Marylhurst College, Marylhurst, Oreg.	RC	1930	Sr. M. Barbara	62	474	...	673 W
Marymount College, Salina, Kans.	RC	1922	Sr. E. Knaup	51	311	...	423 W
Marymount College, Tarrytown, N.Y.	RC	1907	Moth. M. Brendan	78	706	...	718 W
Marymount Manhattan College, New York, N.Y.	RC	1936	Moth. R. McKay	55	554	...	554 W
Maryville College, Maryville, Tenn.	Pres	1819	J. Copeland	70	722	...	732 C
Maryville College of the Sacred Heart, St. Louis, Mo.	RC	1872	Moth. M. Blish	31	280	...	288 W
Marywood College, Scranton, Pa.	RC	1915	Sr. M. St. Mary	98	1,182	11	1,388 W
Massachusetts, Univ. of, Amherst, Mass. (incl. Stockbridge School of Agriculture)	St	1863	J. W. Lederle	475	5,684	845	7,021 C
Massachusetts College of Art, Boston, Mass.	St	1873	R. L. Bertolli	37	497	...	497 C
Massachusetts College of Pharmacy, Boston, Mass.	Pri	1823	H. C. Newton	53	536	22	563 C
Massachusetts Inst. of Tech., Cambridge, Mass.	Pri	1861	J. Stratton	1,259	...	...	6,454 C
Massachusetts State College, Bridgewater, Mass.	St	1840	A. Rondileau	135	1,355	...	3,528 C
Massachusetts State College, Fitchburg, Mass.	St	1894	R. Weston	83	846	...	1,522 C
Massachusetts State College, Framingham, Mass.	St	1839	D. J. McCarthy	70	801	...	1,327 W
Massachusetts State Coll., Lowell, Mass.	St	1894	D. H. O'Leary	55	586	...	586 C
Massachusetts State College, North Adams, Mass.	St	1894	E. L. Freel	25	401	...	698 C
Massachusetts State College, Salem, Mass.	St	1854	F. A. Meier	140	1,350	...	2,890 C
Massachusetts State College, Westfield, Mass.	St	1839	L. Savignano	67	506	...	1,021 C
Massachusetts State College, Worcester, Mass.	St	1871	E. Sullivan	60	1,106	...	1,534 C
Meharry Medical College, Nashville, Tenn.	Pri	1876	H. D. West, Sr.	196	21	366	387 C
Memorial University, St. John's, Newfoundland	Prov	1925	R. Gushue	98	1,742	15	1,907 C
Memphis State University, Memphis, Tenn.	St	1912	C. Humphreys	327	4,701	55	6,556 C
Menlo College, Menlo Park, Calif.	Pri	1915	W. E. Kratt	47	485	...	485 M
Mercer University, Macon, Ga.	Bapt	1833	R. C. Harris	115	1,020	286	1,397 C
Mercy College, Detroit, Mich.	RC	1941	Sr. M. Lucille	98	544	...	803 W
Mercyhurst College, Erie, Pa.	RC	1926	Moth. M. Loretta	30	453	...	540 W
Meredith College, Raleigh, N.C.	Bapt	1891	C. Campbell	72	738	...	774 W
Merrimack College, North Andover, Mass.	RC	1947	V. McQuade	101	1,272	...	2,004 C
Miami, University of, Coral Gables, Fla.	Pri	1925	H. K. Stanford	961	8,627	931	14,412 C
Miami University, Oxford, Ohio	St	1809	J. Millett	357	6,965	167	7,484 C
Michigan, University of, Ann Arbor, Mich. (incl. Dearborn Center, Dearborn; and Flint College, Flint)	St	1817	H. Hatcher	1,769	15,167	5,796	28,775 C
Michigan Coll. of Min. & Tech., Houghton & Sault Ste. Marie, Mich.	St	1885	J. R. Van Pelt	231	3,064	19	3,348 C
Michigan State University, East Lansing, Mich.	St	1855	J. Hannah	2,000	19,001	5,103	26,044 C
Middle Tennessee State College, Murfreesboro, Tenn.	St	1909	Q. E. Cope	161	2,825	12	3,358 C
Middlebury College, Middlebury, Vt.	Pri	1800	S. Stratton	95	1,272	2	1,285 C
Midland College, Fremont, Nebr.	Luth	1887	P. Dieckman	40	584	...	769 C
Midwestern University, Wichita Falls, Texas	St	1922	T. A. White	73	1,120	13	1,924 C
Millersville State College, Millersville, Pa.	St	1855	D. Biemesderfer	125	1,892	...	2,133 C
Milligan College, Milligan College, Tenn.	CC	1881	D. E. Walker	29	530	...	541 C
Millikin University, Decatur, Ill.	Pres	1901	P. L. McKay	130	953	...	1,728 C
Mills College, Oakland, Calif.	Pri	1852	C. E. Rothwell	86	688	34	754 W
Millsaps College, Jackson, Miss.	Meth	1892	H. Finger, Jr.	69	849	...	904 C
Milwaukee School of Engineering, Milwaukee, Wis.	Pri	1903	K. Werwath	100	1,128	...	2,024 M
Minneapolis School of Art, Minneapolis, Minn.	Pri	1886	W. B. Bryan	34	281	...	648 C
Minnesota, University of, Minneapolis and Duluth, Minn.	St	1851	O. M. Wilson	2,913	26,307	4,539	42,130 C
Misericordia, College, Dallas, Pa.	RC	1923	Sr. M. Celestine	90	724	...	1,103 W
Mississippi, Univ. of, University & Jackson, Miss.	St	1848	J. Williams	331	3,876	503	4,546 C

Institution and location	Control or affiliation	Year founded	Chief executive	Teaching faculty	Full-time students: Undergraduate	Full-time students: Graduate	Total students enrolled	
Mississippi College, Clinton, Miss.	Bapt	1826	R. A. McLemore	82	1,333	7	1,709	C
Mississippi State College for Women, Columbus, Miss.	St	1885	C. P. Hogarth	104	1,600	...	1,769	W
Mississippi State University, Starkville, Miss.	St	1878	W. Colvard	443	4,382	231	4,885	C
Missouri, University of, Columbia & Rolla, Mo.	St	1839	E. Ellis	1,387	13,639	1,973	16,260	C
Missouri Valley College, Marshall, Mo.	Pres	1888	M. E. Collins	37	529	...	553	C
Monmouth College, Monmouth, Ill.	Pres	1853	R. W. Gibson	61	826	...	861	C
Monmouth College, West Long Branch, N.J.	Pri	1933	W. Van Note	134	1,613	...	2,684	C
Montana School of Mines, Butte, Mont.	St	1893	E. G. Koch	30	349	7	380	C
Montana State College, Bozeman, Mont.	St	1893	R. R. Renne	351	3,938	202	4,319	C
Montana State University, Missoula, Mont.	St	1893	H. Newburn	230	3,739	264	4,380	C
Montclair State Coll., Upper Montclair, N.J.	St	1908	E. Partridge	140	2,234	6	3,534	C
Montreal, University of, Montreal, P.Q.	RC	1876	I. Lussier	2,602	19,692	1,159	24,454	C
Moore Institute of Art, Philadelphia, Pa.	Pri	1844	H. R. Rice	38	378	...	384	W
Moorhead State College, Moorhead, Minn.	St	1887	J. Neumaier	112	1,571	8	2,108	C
Moravian College, Bethlehem, Pa.	Mor	1807	R. S. Haupert	79	834	37	1,007	C
Morehead State College, Morehead, Ky.	St	1923	A. Doran	134	2,253	19	2,854	C
Morehouse College, Atlanta, Ga.	Pri	1867	B. E. Mays	56	787	...	796	M
Morgan State College, Baltimore, Md.	St	1867	M. D. Jenkins	172	2,345	...	2,588	C
Morningside College, Sioux City, Iowa	Meth	1894	J. R. Palmer	61	1,115	...	1,458	C
Morris Brown College, Atlanta, Ga.	AME	1881	F. Cunningham	68	745	...	902	C
Morris Harvey College, Charleston, W.Va.	Pri	1888	L. Riggleman	97	1,008	...	2,276	C
Mount Allison University, Sackville, N.B.	UCCa	1840	W. Flemington	82	1,200	6	1,219	C
Mount Angel College, Mount Angel, Oreg.	RC	1888	Moth. M. Gemma	29	214	...	369	C
Mount Holyoke College, South Hadley, Mass.	Pri	1837	R. G. Gettell	157	1,465	41	1,506	W
Mount Marty College, Yankton, S.Dak.	RC	1937	Sr. M. Anderson	39	272	...	326	W
Mount Mary College, Milwaukee, Wis.	RC	1913	Sr. M. J. Francis	108	808	...	1,091	W
Mount Mercy College, Cedar Rapids, Iowa	RC	1928	Sr. M. Agnes	36	193	...	325	W
Mount Mercy College, Pittsburgh, Pa.	RC	1929	Sr. M. Gallagher	101	604	...	1,146	W
Mount St. Agnes College, Baltimore, Md.	RC	1890	Sr. M. Cleophas	51	368	...	417	W
Mount St. Joseph-on-the-Ohio, Coll. of, Mount St. Joseph, Ohio.	RC	1854	Sr. M. Corona	80	759	...	875	W
Mount St. Joseph Teachers Coll., Buffalo, N.Y.	RC	1937	Sr. M. Jane	30	64	...	431	W
Mount St. Mary's College, Los Angeles, Calif.	RC	1925	Sr. Rebecca	97	796	32	1,130	W
Mount St. Mary's College, Emmitsburg, Md.	RC	1808	R. R. Kline	55	762	...	762	M
Mount St. Scholastica College, Atchison, Kans.	RC	1863	Moth. M. Schroll	44	428	...	526	W
Mount St. Vincent, College of, New York, N.Y.	RC	1910	Sr. C. Marie	67	609	...	862	W
Mount Union College, Alliance, Ohio	Meth	1846	C. Bracy	60	906	...	957	C
Muhlenberg College, Allentown, Pa.	Luth	1848	E. N. Jensen	87	1,081	...	1,542	C
Multnomah School of the Bible, Portland, Oreg.	Pri	1936	W. M. Aldrich	19	351	...	560	C
Mundelein College, Chicago, Ill.	RC	1930	Sr. M. Ida	88	1,116	...	1,177	W
Murray State College, Murray, Ky.	St	1923	R. H. Woods	142	3,130	19	3,681	C
Muskingum College, New Concord, Ohio	Pres	1837	R. Montgomery	84	1,294	...	1,543	C
National College of Education, Evanston, Ill.	Pri	1886	K. R. Johnson	45	390	11	801	C
Nazareth College, Louisville, Ky.	RC	1920	Sr. M. C. Fowler	93	489	2	1,351	W
Nazareth College, Nazareth, Mich.	RC	1897	Sr. M. Kathleen	37	293	...	429	W
Nazareth College, Rochester, N.Y.	RC	1924	Sr. H. Daniel	75	784	...	784	W
Nebraska, University of, Lincoln and Omaha, Nebr.	St	1869	C. M. Hardin	660	6,620	1,574	10,649	C
Nebraska State Teachers College, Chadron, Nebr.	St	1911	F. C. Elkins	66	773	...	1,074	C
Nebraska State Teachers College, Kearney, Nebr.	St	1905	M. J. Hassel	96	1,865	7	2,311	C
Nebraska State Teachers College, Peru, Nebr.	St	1867	N. S. Gomon	56	567	...	722	C
Nebraska State Teachers College, Wayne, Nebr.	St	1910	W. Brandenburg	90	1,205	5	1,437	C
Nebraska Wesleyan University, Lincoln, Nebr.	Meth	1887	V. D. Rogers	72	1,050	...	1,133	C
Nevada, University of, Reno & Las Vegas, Nev.	St	1874	C. J. Armstrong	341	2,693	206	5,235	C
New Brunswick, University of, Fredericton, N.B.	Prov	1785	C. B. MacKay	146	1,968	199	4,021	C
New England Conservatory of Music, Boston, Mass.	Pri	1867	C. Williams	140	251	103	1,783	C
New Hampshire, University of, Durham, N.H.	St	1866	J. F. Reed	430	3,523	325	5,344	C
New Haven College, West Haven, Conn.	Pri	1920	M. Peterson	117	485	...	2,061	C
New Mexico, Univ. of, Albuquerque, N.Mex.	St	1889	T. L. Popejoy	428	4,737	295	9,655	C
New Mexico Highlands University, Las Vegas, N.Mex.	St	1892	T. Donnelly	77	954	92	1,110	C
New Mexico Inst. of Mining & Tech., Socorro, N.Mex.	St	1889	E. J. Workman	30	204	30	282	C
New Mexico State University, University Park, Alamogorde, Carlsbad, Farmington, & White Sands, N.Mex.	St	1888	R. Corbett	227	...	...	4,565	C
New Mexico Western College, Silver City, N.Mex.	St	1893	...	70	640	5	947	C
New Orleans Baptist Theol. Sem., New Orleans, La.	Bapt	1917	H. Eddleman	40	48	705	802	C
New Rochelle, College of, New Rochelle, N.Y.	RC	1904	Moth. M. St. John	84	936	...	936	W
New School for Social Research, New York, N.Y.	Pri	1919	H. David	292	30	98	6,849	C
New York, State University of, Albany,[9] N.Y.	*St*	*1948*	*T. H. Hamilton*	4,069	50,859	2,398	*78,174*	
College of Agriculture at Cornell Univ., Ithaca	St	1904	C. Palm	352	1,818	659	2,513	C
College of Ceramics at Alfred Univ., Alfred	St	1900	J. McMahon	26	417	36	465	C
College of Forestry at Syracuse Univ., Syracuse	St	1911	H. Shirley	79	667	136	828	M
College of Home Economics at Cornell Univ., Ithaca	St	1925	H. Canoyer	69	711	107	818	W
Downstate Medical Center, Brooklyn	St	1858	R. Moore	198	...	643	643	C
Harpur College, Binghamton	St	1946	G. Bartle	83	1,229	...	1,696	C
Long Island Center, Oyster Bay	St	1957	T. Hamilton	47	557	...	559	C
Maritime College, Fort Schuyler	St	1874	H. Moore	42	607	...	607	M
School of Industrial & Labor Relations at Cornell Univ., Ithaca	St	1944	J. McConnell	42	360	68	428	C
State University College, Albany	St	1844	E. Collins	196	2,611	164	3,546	C
State University College, Brockport	St	1867	D. Tower	113	1,689	...	2,403	C
State University College, Buffalo	St	1867	P. Bulger	213	3,206	...	4,307	C
State University College, Cortland	St	1868	D. Moffet	158	2,524	...	2,707	C
State University College, Fredonia	St	1866	O. Lanford	90	1,256	...	1,368	C
State University College, Geneseo	St	1871	F. Moench	102	1,524	19	1,834	C
State University College, New Paltz	St	1885	W. Haggerty	114	1,822	...	2,315	C
State University College, Oneonta	St	1887	R. Netzer	115	1,954	...	2,130	C
State University College, Oswego	St	1867	F. Brown	159	2,731	2	2,980	C
State University College, Plattsburgh	St	1889	G. Angell	108	1,542	...	1,911	C
State University College, Potsdam	St	1867	F. Crumb	103	1,481	...	1,567	C
Upstate Medical Center, Syracuse	St	1834	C. Jacobsen	127	85	330	502	C
Veterinary College at Cornell Univ., Ithaca	St	1894	G. Poppensiek	35	...	234	248	C
New York Law School, New York, N.Y.	Pri	1891	J. A. Cox	52	...	251	600	C
New York Medical College, New York, N.Y.	Pri	1860	R. E. Snyder	229	...	506	506	C
New York University, New York, N.Y.	Pri	1831	J. M. Hester	4,492	9,762	4,561	42,867	C
Newark College of Engineering, Newark, N.J.	St-Mun	1881	R. Van Houten	289	1,781	...	5,292	C
Newark State College, Union, N.J.	St	1855	E. Wilkins	138	1,685	...	2,639	C
Newberry College, Newberry, S.C.	Luth	1856	A. Wiles	46	701	...	720	C
Newcomb College of Tulane University, New Orleans, La.	Pri	1886	J. Hubbard	145	1,014	...	1,017	W

Institution and location	Control or affiliation	Year founded	Chief executive	Teaching faculty	Full-time students: Undergraduate	Full-time students: Graduate	Total students enrolled	
Newton College of the Sacred Heart, Newton, Mass.	RC	1946	Moth. G. Husson	59	634	...	634	W
Niagara University, Niagara University, N.Y.	RC	1856	V. T. Swords	136	1,345	50	1,782	C
Norfolk College of William & Mary, Norfolk, Va.	St	1930	L. W. Webb, Jr.	192	2,171	...	4,701	C
North Carolina, A. & T. Coll. of, Greensboro, N.C.	St	1891	L. C. Dowdy	196	2,418	16	2,713	C
North Carolina, Univ. of, Chapel Hill, N.C. (incl. Univ. of North Carolina, Chapel Hill; North Carolina State Coll. of Agric. & Engr., Raleigh; & Woman's Coll. of Univ. of North Carolina, Greensboro; qq.v.)	St	1789	W. Friday	1,572	15,763	3,575	19,338	C
North Carolina, University of,[10] Chapel Hill, N.C.	St	1789	W. B. Aycock	1,000	6,612	1,934	10,098	C
North Carolina, Woman's Coll. of the Univ. of, Greensboro, N.C.	St	1891	O. Singletary	214	2,870	46	3,305	W
North Carolina College, Durham, N.C.	St	1910	A. Elder	172	1,970	59	2,359	C
North Carolina State Coll. of Agric. & Engr.,[10] Raleigh, N.C.	St	1889	J. T. Caldwell	631	6,029	489	7,017	C
North Central College, Naperville, Ill.	EUB	1861	A. Schilling	58	867	...	990	C
North Dakota, University of, Grand Forks, N.Dak.	St	1883	G. W. Starcher	355	3,965	380	5,529	C
North Dakota State Teachers Coll., Mayville, N.Dak.	St	1889	T. S. Jenkins	38	607	...	626	C
North Dakota State Teachers Coll., Minot, N.Dak.	St	1913	C. P. Lura	100	1,379	...	1,379	C
North Dakota St. Tchrs. Coll., Valley City, N.Dak.	St	1889	R. L. Lokken	55	818	...	830	C
North Dakota State Univ. of Ag. & Appl. Sci., Fargo, N.Dak.	St	1890	H. Albrecht	254	3,219	124	3,596	C
North Georgia College, Dahlonega, Ga.	St	1873	M. E. Hoag	48	927	...	927	C
North Park Coll. & Theol. Sem., Chicago, Ill.	EC	1891	K. Olsson	103	926	57	1,396	C
North Texas State University, Denton, Texas	St	1890	J. Matthews	506	7,657	217	8,846	C
Northeast Louisiana State College, Monroe, La.	St	1928	G. T. Walker	172	2,452	20	2,992	C
Northeast Missouri St. Teachers Coll., Kirksville, Mo.	St	1867	W. H. Ryle	145	2,806	172	3,286	C
Northeastern State College, Tahlequah, Okla.	St	1846	H. Garrison	86	2,934	10	3,167	C
Northeastern University, Boston, Mass.	Pri	1898	A. Knowles	800	6,000	3,000	20,000	C
Northern Illinois University, DeKalb, Ill.	St	1895	L. A. Holmes	490	5,924	203	8,806	C
Northern Michigan College, Marquette, Mich.	St	1899	E. L. Harden	128	2,133	31	2,405	C
Northern Montana College, Havre, Mont.	St	1929	L. Brockmann	53	757	...	1,060	C
Northern State Teachers Coll., Aberdeen, S.Dak.	St	1902	J. H. Kramer	93	1,358	12	1,661	C
Northland College, Ashland, Wis.	Pri	1892	R. Bailey	31	400	...	457	C
Northrop Institute of Technology, Inglewood, Calif.	Pri	1942	H. W. Hartley	94	1,061	...	1,362	C
Northwest Missouri State College, Maryville, Mo.	St	1905	J. W. Jones	103	2,148	...	2,247	C
Northwest Nazarene College, Nampa, Idaho	Naz	1913	J. E. Riley	38	596	2	678	C
Northwestern College, Orange City, Iowa	Ref	1885	P. Stegenga	30	345	...	412	C
Northwestern State College, Natchitoches, La.	St	1884	J. S. Kyser	210	2,412	53	3,246	C
Northwestern State College, Alva, Okla.	St	1897	J. W. Martin	53	1,254	...	1,327	C
Northwestern University, Evanston and Chicago, Ill.	Pri	1851	J. R. Miller	1,496	5,973	2,775	15,811	C
Norwich University, Northfield, Vt.	Pri	1819	E. N. Harmon	70	1,046	...	1,046	M
Notre Dame, College of, Belmont & Saratoga, Calif.	Pri	1851	Sr. C. Julie	65	301	1	822	W
Notre Dame, University of, Notre Dame, Ind.	RC	1842	T. Hesburgh	487	5,655	621	6,609	M
Notre Dame of Maryland, College of, Baltimore, Md.	RC	1873	Sr. M. Mary	78	661	...	1,024	W
Notre Dame College, St. Louis, Mo.	RC	1954	Sr. M. Leontine	24	228	...	393	W
Notre Dame College, Cleveland, Ohio	RC	1922	Sr. M. Loyole	50	418	...	487	W
Notre Dame Coll. of Staten Island, Staten Island, N.Y.	RC	1931	Moth. St. Egbert	29	382	...	382	W
Nova Scotia Technical College, Halifax, N.S.	Prov	1907	G. Holbrook	33	325	6	343	C
Nyack Missionary College, Nyack, N.Y.	CMA	1882	H. W. Boon	37	471	...	519	C
Oakwood College, Huntsville, Ala.	SDA	1896	G. J. Millet	29	291	...	325	C
Oberlin College, Oberlin, Ohio	Pri	1833	R. K. Carr	243	2,197	85	2,452	C
Occidental College, Los Angeles, Calif.	Pri	1887	A. G. Coons	120	1,420	17	1,498	C
Oglethorpe University, Atlanta, Ga.	Pri	1835	D. C. Agnew	35	398	...	418	C
Ohio Northern University, Ada, Ohio	Meth	1871	F. McIntosh	116	1,530	...	2,030	C
Ohio State University, Columbus, Ohio	St	1870	N. G. Fawcett	3,324	19,686	4,707	27,565	C
Ohio University, Athens, Ohio	St	1804	V. R. Alden	638	9,265	336	12,258	C
Ohio Wesleyan University, Delaware, Ohio	Meth	1841	E. T. Smith	161	2,014	...	2,061	C
Oklahoma, University of, Norman, Okla.	St	1892	G. L. Cross	768	9,954	...	12,525	C
Oklahoma Baptist University, Shawnee, Okla.	Bapt	1906	J. R. Scales	99	1,039	...	1,364	C
Oklahoma City University, Oklahoma City, Okla.	Meth	1904	J. S. Wilkes	136	1,194	167	2,674	C
Oklahoma College for Women, Chickasha, Okla.	St	1908	C. Grady	52	528	5	667	W
Oklahoma State Univ. of Ag. & Appl. Sci., Stillwater, Okla.	St	1891	O. S. Willham	1,084	...	...	11,301	C
Olivet College, Olivet, Mich.	Cong	1844	G. Riethmiller	36	494	...	552	C
Olivet Nazarene College, Kankakee, Ill.	Naz	1907	H. W. Reed	66	863	...	1,103	C
Omaha, Municipal University of, Omaha, Nebr.	Mun	1908	M. Bail	222	3,343	431	8,439	C
Ontario Agricultural College, Guelph, Ont.	Prov	1874	J. MacLachlan	230	1,135	107	1,242	C
Ontario College of Art, Toronto, Ont.	Prov	1875	S. H. Watson	54	607	...	1,367	C
Ontario Veterinary College, Guelph, Ont.	Prov	1862	T. L. Jones	70	321	15	338	C
Orange County State College, Fullerton, Calif.	St	1957	W. Langsdorf	72	590	26	1,642	C
Oregon, Univ. of, Eugene & Portland, Oreg.	St	1872	A. S. Flemming	512	...	...	8,850[11]	C
Oregon College of Education, Monmouth, Oreg.	St	1856	L. W. Rice	81	1,200	...	1,284	C
Oregon State University, Corvallis, Oreg.	St	1868	J. H. Jensen	640	8,016	791	9,039	C
Osgoode Hall Law School, Toronto, Ont.	Pri	1872	H. A. Leal	27	407	...	414	C
Osteopathic Medicine and Surgery, Coll. of, Des Moines, Iowa	Pri	1898	M. McLaughlin	40	...	277	279	C
Ottawa, University of, Ottawa, Ont.	RC	1848	H. Légaré	600	2,751	535	9,146	C
Ottawa University, Ottawa, Kans.	Bapt	1865	A. B. Martin	42	581	...	654	C
Otterbein College, Westerville, Ohio	EUB	1847	L. W. Turner	73	1,061	...	1,282	C
Ouachita Baptist College, Arkadelphia, Ark.	Bapt	1886	R. A. Phelps, Jr.	64	1,175	11	1,232	C
Our Lady of Cincinnati College, Cincinnati, Ohio	RC	1935	Sr. M. Virginia	72	674	...	981	W
Our Lady of the Elms, College of, Chicopee, Mass.	RC	1928	Sr. R. Williams	40	589	...	841	W
Our Lady of the Lake College, San Antonio, Texas	RC	1896	J. McMahon	64	557	58	923	W
Ozarks, College of the, Clarksville, Ark.	Pres	1834	R. McAdoo	30	430	...	445	C
Pace College, New York, N.Y.	Pri	1906	E. Mortola	200	1,126	...	4,892	C
Pacific, University of the, Stockton, Calif.	Meth	1851	R. E. Burns	158	1,683	91	2,146	C
Pacific Lutheran University, Tacoma, Wash.	Luth	1891	S. Eastvold	99	1,394	15	1,751	C
Pacific Union College, Angwin, Calif.	SDA	1882	R. W. Fowler	60	980	16	1,184	C
Pacific University, Forest Grove, Oreg.	Cong	1849	M. Ritchie	72	766	46	868	C
Paine College, Augusta, Ga.	Meth	1882	E. Calhoun	35	388	...	427	C
Pan American College, Edinburg, Texas	Co	1927	R. Schilling	85	1,107	...	1,956	C
Panhandle A. & M. College, Goodwell, Okla.	St	1909	M. E. McKee	49	1,010	...	1,024	C
Park College, Parkville, Mo.	Pres	1875	P. Morrill	55	452	...	507	C
Parsons College, Fairfield, Iowa	Pres	1875	M. G. Roberts	71	1,821	...	1,891	C
Pasadena College, Pasadena, Calif.	Naz	1902	O. J. Finch	62	943	28	1,127	C
Paterson State College, Wayne, N.J.	St	1855	M. E. Shea	185	1,711	...	2,972[1]	C
Peabody Conservatory of Music, Baltimore, Md.	Pri	1868	H. J. Watt	68	179	34	317	C
Pembroke State College, Pembroke, N.C.	St	1887	W. J. Gale	34	552	...	570	C
Pennsylvania, University of, Philadelphia, Pa.	Pri	1740	G. Harnwell	3,155	6,039	2,287	17,894	C

Institution and location	Control or affiliation	Year founded	Chief executive	Teaching faculty	Full-time students: Undergraduate	Full-time students: Graduate	Total students enrolled	
Pennsylvania Military College, Chester, Pa.	Pri	1821	C. R. Moll	112	1,073	...	1,896	M
Pennsylvania State University, University Park, Pa.[12]	St	1855	E. A. Walker	1,495	18,374	695	22,969	C
Pfeiffer College, Misenheimer, N.C.	Meth	1885	J. L. Stokes, II	60	840	...	884	C
Philadelphia College of Bible, Philadelphia, Pa.	Inter	1913	C. C. Ryrie	44	379	...	1,023	C
Philadelphia College of Osteopathy, Philadelphia, Pa.	Pri	1899	F. H. Barth	165	...	306	306	C
Philadelphia College of Pharmacy & Science, Philadelphia, Pa.	Pri	1821	V. J. Keenan	77	671	31	728	C
Philadelphia College of Textiles & Science, Philadelphia, Pa.	Pri	1884	B. Hayward	50	487	...	685	C
Philadelphia Museum College of Art, Philadelphia, Pa.	Pri	1876	B. S. Ingersoll	166	643	...	1,222	C
Philander Smith College, Little Rock, Ark.	Meth	1868	R. D. Crockett	42	515	...	626	C
Phillips University, Enid, Okla.	Pri	1907	H. G. Gantz	81	932	109	1,193	C
Pikeville College, Pikeville, Ky.	Pres	1889	A. A. Page	35	520	...	782	C
Pittsburgh, University of, Pittsburgh, Pa.	Pri	1787	E. Litchfield	1,230	5,192	1,844	13,623	C
Pittsburgh Theological Seminary, Pittsburgh, Pa.	Pres	1794	D. G. Miller	30	...	180	208	C
Plymouth Teachers College, Plymouth, N.H.	St	1871	H. E. Hyde	48	765	3	946	C
Pomona College, Claremont, Calif.	Pri	1887	E. W. Lyon	114	1,068	...	1,084	C
Portland, University of, Portland, Oreg.	RC	1901	H. J. Kenna	125	1,400	55	1,811	C
Portland State College, Portland, Oreg.	St	1955	B. P. Millar	224	4,479	...	5,285	C
Prairie View A. & M. Coll., Prairie View, Texas	St	1876	E. B. Evans	173	2,643	26	3,126	C
Pratt Institute, Brooklyn, N.Y.	Pri	1887	R. H. Heindel	293	2,127	46	4,131	C
Presbyterian College, Clinton, S.C.	Pres	1880	M. W. Brown	36	533	...	540	C
Prince of Wales College, Charlottetown, P.E.I.	Prov	1834	F. MacKinnon	40	240	...	640	C
Princeton Theological Seminary, Princeton, N.J.	Pres	1812	J. I. McCord	43	...	...	455	C
Princeton University, Princeton, N.J.	Pri	1746	R. F. Goheen	681	3,063	950	4,013	M
Principia College, Elsah, Ill.	Pri	1910	D. Andrews	53	551	...	557	C
Providence College, Providence, R.I.	RC	1917	V. C. Dore	151	2,295	...	2,772	M
Puerto Rico, Catholic Univ. of, Ponce, P.R.	RC	1948	J. E. McManus	151	1,763	...	2,638	C
Puerto Rico, Univ. of, Río Piedras, Mayagüez, & San Juan, P.R.	Ter	1903	J. Benítez	1,668	6,847	6,311	21,262	C
Puget Sound, University of, Tacoma, Wash.	Meth	1888	R. F. Thompson	135	1,635	29	2,794	C
Purdue University, Lafayette, Ft. Wayne, Indianapolis, Hammond, and Michigan City, Ind.	St	1869	F. L. Hovde	1,550	...	...	21,282	C
Queens College, Flushing, N.Y.	Mun	1937	H. W. Stoke	767	5,700	18	13,528	C
Queens College, Charlotte, N.C.	Pres	1857	E. R. Walker	58	600	...	600	W
Queen's University, Kingston, Ont.	Pri	1841	J. A. Corry	235	3,087	293	3,449	C
Quincy College, Quincy, Ill.	RC	1860	J. Woods	71	745	...	1,129	C
Quinnipiac College, Hamden, Conn.	Pri	1929	N. G. Sahlin	89	846	...	1,486	C
Radcliffe College, Cambridge, Mass.	Pri	1879	M. I. Bunting	...[13]	1,137	675	1,812	W
Radford College,[14] Radford, Va.	St	1913	C. K. Martin, Jr.	99	1,528	...	1,682	W
Randolph-Macon College, Ashland, Va.	Meth	1830	J. Moreland	49	666	...	672	M
Randolph-Macon Woman's Coll., Lynchburg, Va.	Meth	1891	W. Quillian, Jr.	83	723	...	734	W
Redlands, University of, Redlands, Calif.	Pri	1907	G. Armacost	109	1,299	41	1,629	C
Reed College, Portland, Oreg.	Pri	1909	R. H. Sullivan	99	732	1	844	C
Regis College, Denver, Colo.	RC	1887	R. F. Ryan	79	847	...	1,136	M
Regis College, Weston, Mass.	RC	1927	Sr. M. Alice	74	694	...	700	W
Rensselaer Polytechnic Institute, Troy, N.Y. (incl. Hartford Graduate Center, East Windsor Hill, Conn.).	Pri	1824	R. G. Folsom	658	2,927	261	4,502	C
Rhode Island, University of, Kingston, R.I.	St	1892	F. H. Horn	486	3,356	208	6,813	C
Rhode Island College, Providence, R.I.	St	1854	W. C. Gaige	121	1,284	6	2,639	C
Rhode Island School of Design, Providence, R.I.	Pri	1877	A. Bush-Brown	157	809	18	2,204	C
Rice University, Houston, Texas	Pri	1891	K. S. Pitzer	197	1,569	423	1,992	C
Richmond, University of, Richmond, Va. (incl. Westhampton College)	Bapt	1830	G. M. Modlin	205	1,823	209	4,015	C
Richmond Professional Institute,[15] Richmond, Va.	St	1917	G. J. Oliver	340	1,928	84	4,655	C
Rider College, Trenton, N.J.	Pri	1865	F. F. Moore	118	2,477	...	3,770	C
Ripon College, Ripon, Wis.	Pri	1851	F. O. Pinkham	54	698	...	718	C
Rivier College, Nashua, N.H.	RC	1933	Sr. Clarice	46	307	...	500	W
Roanoke College, Salem, Va.	Luth	1842	H. S. Oberly	50	739	...	921	C
Rochester, University of, Rochester, N.Y.	Pri	1850	W. A. Wallis	1,131	3,176	1,049	7,384	C
Rochester Institute of Technology, Rochester, N.Y.	Pri	1829	M. Ellingson	497	1,980	9	6,948	C
Rockford College, Rockford, Ill.	Pri	1847	J. Howard	83	486	5	1,320	C
Rockhurst College, Kansas City, Mo.	RC	1910	M. Van Ackeren	56	765	...	2,159	M
Rocky Mountain College, Billings, Mont.	Inter	1883	P. Widenhouse	30	325	...	343	C
Rollins College, Winter Park, Fla.	Pri	1885	H. F. McKean	100	819	...	1,591	C
Roosevelt University, Chicago, Ill.	Pri	1945	E. Sparling	325	2,645	153	5,534	C
Rosary College, River Forest, Ill.	RC	1901	Sr. M. Aurelia	83	802	35	963	W
Rosary Hill College, Buffalo, N.Y.	RC	1947	Sr. M. Angela	69	706	...	803	W
Rose Polytechnic Institute, Terre Haute, Ind.	Pri	1874	H. A. Moench	50	445	...	459	M
Rosemont College, Rosemont, Pa.	RC	1921	Moth. M. Aidan	66	559	...	561	W
Royal Military College, Kingston, Ont.	Fed	1876	W. Anderson	97	450	...	450	M
Russell Sage College, Troy and Albany, N.Y.	Pri	1916	L. A. Froman	163	1,301	...	2,757	W
Rutgers—The State University, New Brunswick, Camden, Newark, Paterson, and Jersey City, N.J. (incl. Douglass College, New Brunswick, q.v.).	St	1766	M. W. Gross	2,166	9,425	1,198	23,160	C
Sacramento State College, Sacramento, Calif.	St	1947	G. A. West	311	3,229	192	7,723	C
Sacre-Coeur, Universite du, Bathurst, N.B.	RC	1899	A. Gauvin	60	178	...	2,528	C
Sacred Heart Dominican Coll., Houston, Texas	RC	1945	Sr. M. Antoinette	49	239	...	490	W
St. Ambrose College, Davenport, Iowa	RC	1882	W. J. Collins	73	1,048	...	1,376	M
St. Andrews Presbyterian College, Laurinburg, N.C.	Pres	1858	A. C. Moore	65	782	...	879	C
St. Anselm's College, Manchester, N.H.	RC	1889	B. G. Holmes	86	1,077	...	1,256	M
St. Augustine's College, Raleigh, N.C.	PE	1867	J. A. Boyer	45	640	...	642	C
St. Benedict, College of, St. Joseph, Minn.	RC	1913	Sr. L. Welter	53	420	...	456	W
St. Benedict's College, Atchison, Kans.	RC	1857	C. McDonald	69	725	...	725	M
St. Bernard College, St. Bernard, Ala.	RC	1892	B. Egan	50	547	...	547	C
St. Bernardine of Siena College, Loudonville, N.Y.	RC	1937	E. F. Christy	105	1,227	6	1,795	M
St. Bonaventure University, St. Bonaventure, N.Y.	RC	1856	F. W. Kearney	230	1,775	133	2,307	C
St. Catherine, College of, St. Paul, Minn.	RC	1905	Sr. M. E. Healy	110	1,221	...	1,438	W
St. Cloud State College, St. Cloud, Minn.	St	1869	G. F. Budd	161	3,596	16	4,499	C
St. Dunstan's University, Charlottetown, P.E.I.	RC	1855	J. A. Sullivan	34	437	...	518	C
St. Edward's University, Austin, Texas	RC	1885	Bro. R. Fleck	36	505	...	528	M
St. Elizabeth, College of, Convent Station, N.J.	RC	1899	Sr. H. Marie	77	666	...	912	W
St. Francis, College of, Joliet, Ill.	RC	1920	Sr. M. Elvira	50	444	...	556	W
St. Francis College, Fort Wayne, Ind.	RC	1890	Sr. M. Rosanna	47	282	5	654	C
St. Francis College, Brooklyn, N.Y.	RC	1858	Bro. Urban	68	1,010	...	1,703	M
St. Francis College, Loretto, Pa.	RC	1847	C. Devlin	75	1,120	...	1,142	C

Institution and location	Control or affiliation	Year founded	Chief executive	Teaching faculty	Full-time students: Undergraduate	Full-time students: Graduate	Total students enrolled	
St. Francis Xavier University, Antigonish, N.S.	RC	1853	H. J. Somers	111	1,526	37	2,053	C
St. Jerome's College, Kitchener, Ont.	RC	1864	C. Siegfried	17	243	...	270	C
St. John College, Cleveland, Ohio	RC	1928	L. P. Cahill	84	637	...	1,174	W
St. John Fisher College, Rochester, N.Y.	RC	1951	C. J. Lavery	52	585	...	610	C
St. John's College, Annapolis, Md.	Pri	1696	R. D. Weigle	40	287	...	287	C
St. John's University, Collegeville, Minn.	RC	1857	B. Dworschak	100	1,179	102	1,312	M
St. John's University, New York, N.Y.	RC	1870	E. J. Burke	487	5,870	681	10,783	C
St. Joseph College, West Hartford, Conn.	RC	1932	Sr. M. Theodore	58	445	...	716	W
St. Joseph College, Emmitsburg, Md.	RC	1809	Sr. Hilda	56	488	7	549	W
St. Joseph, College of, Albuquerque, N.M.	RC	1940	Sr. M. V. Schuller	39	339	...	476	C
St. Joseph's College, Rensselaer, Ind.	RC	1889	R. H. Gross	77	1,058	...	1,073	M
St. Joseph's College, Philadelphia, Pa.	RC	1851	J. J. Bluett	151	1,713	27	4,804	M
St. Joseph's College for Women, Brooklyn, N.Y.	RC	1916	Sr. V. Therese	49	525	...	632	W
St. Joseph's Seminary and College, Yonkers, N.Y.	RC	1896	T. Donnellan	20	93	123	216	M
St. Joseph's University, St. Joseph & Moncton, N.B.	RC	1864	C. Cormier	50	441	...	643	C
St. Lawrence University, Canton, N.Y.	Pri	1856	E. G. Bewkes	101	1,362	14	1,652	C
St. Louis College of Pharmacy, St. Louis, Mo.	Pri	1864	C. C. Rabe	28	450	10	470	C
St. Louis University, St. Louis, Mo. (incl. St. Mary's Jr. College, St. Louis; and Mercy Jr. College, Webster Groves)	RC	1818	P. C. Reinert	1,297	4,521	1,737	9,701	C
St. Martin's College, Olympia, Wash.	RC	1895	R. Heider	35	344	...	407	M
St. Mary, College of, Omaha, Nebr.	RC	1923	Sr. M. Alice	43	396	...	513	W
St. Mary College, Xavier, Kans.	RC	1923	A. M. Murphy	54	416	...	479	W
St. Mary of the Springs, College of, Columbus, Ohio	RC	1911	Sr. M. Angelita	45	385	...	495	W
St. Mary-of-the-Woods College, St. Mary-of-the-Woods, Ind.	RC	1840	Sr. M. Perpetua	54	621	...	621	W
St. Mary's College, St. Mary's, Calif.	RC	1863	Bro. T. Michael	75	853	...	867	M
St. Mary's College, Notre Dame, Ind.	RC	1843	Sr. M. Renata	119	1,029	18	1,171	C
St. Mary's College, Winona, Minn.	RC	1912	Bro. I. Basil	69	984	2	1,050	M
St. Mary's Dominican College, New Orleans, La.	RC	1910	Sr. M. Louise	54	398	...	500	W
St. Mary's Seminary and University, Baltimore, Md.	RC	1791	L. P. McDonald	19	...	...	792	M
St. Mary's University, Halifax, N.S.	RC	1802	C. J. Fischer	50	566	1	835	M
St. Mary's University, San Antonio, Texas	RC	1852	C. Neumann	160	1,405	98	2,302	C
St. Michael's College, Winooski, Vt.	RC	1904	G. E. Dupont	62	885	27	912	M
St. Norbert College, West De Pere, Wis.	RC	1898	D. M. Burke	101	1,011	...	1,298	C
St. Olaf College, Northfield, Minn.	Luth	1874	C. Granskou	140	1,891	...	1,902	C
St. Paul Seminary, St. Paul, Minn.	RC	1896	L. McCarthy	27	93	190	283	M
St. Paul's College, Lawrenceville, Va.	PE	1888	E. McClenney	34	391	...	395	C
St. Peter's College, Jersey City, N.J.	RC	1872	E. F. Clark	143	1,364	...	2,340	M
St. Procopius College, Lisle, Ill.	RC	1887	D. W. Kucera	58	543	...	620	M
St. Rose, College of, Albany, N.Y.	RC	1920	Sr. C. Francis	79	750	4	1,388	C
St. Scholastica, College of, Duluth, Minn.	RC	1912	Sr. A. Edward	51	416	...	444	W
St. Teresa, College of, Winona, Minn.	RC	1907	Sr. M. Bowe	94	834	...	879	W
St. Teresa, College of, Kansas City, Mo.	RC	1916	Sr. O. Dallavis	54	331	...	593	W
St. Thomas, College of, St. Paul, Minn.	RC	1885	J. P. Shannon	122	1,792	15	2,066	M
St. Thomas, University of, Houston, Texas	RC	1947	J. F. Murphy	42	498	...	670	C
St. Vincent College, Latrobe, Pa.	RC	1846	M. G. Duman	75	754	133	897	M
St. Xavier College, Chicago, Ill.	RC	1846	Sr. M. Josetta	74	758	2	998	W
Salem College, Winston-Salem, N.C.	Mor	1772	D. H. Gramley	53	471	...	505	W
Salmon P. Chase College, Cincinnati, Ohio	YMCA	1893	R. Hutchens	43	...	...	500	C
Salve Regina College, Newport, R.I.	RC	1934	Sr. M. Hilda	50	535	...	615	W
Sam Houston State Teachers College, Huntsville, Texas	St	1879	H. Lowman	289	...	...	5,044	C
San Diego, University of, College for Men, San Diego, Calif.	RC	1949	J. Cadden	42	421	...	438	M
San Diego College for Women, San Diego, Calif.	RC	1949	Moth. F. Danz	49	489	8	758	W
San Diego State College, San Diego & El Centro, Calif.	St	1897	M. A. Love	606	7,363	372	13,432	C
San Fernando Valley State College, Northridge, Calif.	St	1958	R. Prator	364	3,638	123	7,554	C
San Francisco, University of, San Francisco, Calif.	RC	1855	J. Connolly	243	1,979	166	4,334	M
San Francisco Art Institute, San Francisco, Calif.	Pri	1874	G. Woods	55	220	9	706	C
San Francisco College for Women, San Francisco, Calif.	RC	1930	Moth. C. Parks	47	419	9	517	W
San Francisco State College, San Francisco, Calif.	St	1899	P. A. Dodd	733	7,074	802	16,965	C
San Jose State College, San Jose, Calif.	St	1857	J. Wahlquist	846	10,660	540	19,168	C
Santa Clara, University of, Santa Clara, Calif.	RC	1851	P. A. Donohoe	169	1,331	253	2,849	C
Sarah Lawrence College, Bronxville, N.Y.	Pri	1928	P. L. Ward	78	527	4	759	W
Saskatchewan, University of, Saskatoon & Regina, Sask.	Prov	1907	J. Spinks	517	5,663	565	7,331	C
Savannah State College, Savannah, Ga.	St	1890	W. K. Payne	73	1,065	...	1,065	C
Scranton, University of, Scranton, Pa.	RC	1888	J. J. Long	109	1,516	14	2,405	M
Scripps College, Claremont, Calif.	Pri	1926	F. Hard	42	299	...	299	W
Seattle Pacific College, Seattle, Wash.	Meth	1891	C. D. Demaray	85	1,075	15	1,363	C
Seattle University, Seattle, Wash.	RC	1891	A. A. Lemieux	204	2,547	34	3,454	C
Seton Hall University, South Orange, N.J.	RC	1856	J. Dougherty	885	3,142	576	8,875	C
Seton Hill College, Greensburg, Pa.	RC	1883	W. G. Ryan	78	565	...	971	W
Shaw University, Raleigh, N.C.	Bapt	1865	W. Strassner	41	543	...	555	C
Shepherd College, Shepherdstown, W.Va.	St	1871	O. S. Ikenberry	50	806	...	933	C
Sherbrooke, Université de, Sherbrooke, Quebec	RC	1954	I. Pinard	361	1,612	806	3,176	C
Shimer College, Mount Carroll, Ill.	Pri	1853	F. J. Mullin	32	291	...	293	C
Shippensburg State College, Shippensburg, Pa.	St	1871	R. E. Heiges	84	1,447	...	1,576	C
Shorter College, Rome, Ga.	Bapt	1873	R. H. Minor	40	480	...	598	C
Siena College, Memphis, Tenn.	Pri	1923	Sr. A. Magnus	24	185	...	336	W
Siena Heights College, Adrian, Mich.	RC	1919	Sr. B. Marie	41	474	...	572	W
Simmons College, Boston, Mass.	Pri	1899	W. E. Park	237	1,253	120	1,547	W
Simpson College, Indianola, Iowa	Meth	1860	W. Kerstetter	53	735	...	744	C
Sioux Falls College, Sioux Falls, S.Dak.	Bapt	1883	R. Jeschke	34	424	...	663	C
Sir George Williams University, Montreal, P.Q.	Pri	1929	H. F. Hall	256	2,063	...	8,363	C
Skidmore College, Saratoga Springs, N.Y.	Pri	1911	V. H. Wilson	125	1,262	...	1,278	W
Slippery Rock State College, Slippery Rock, Pa.	St	1889	N. Weisenfluh	88	1,505	...	1,530	C
Smith College, Northampton, Mass.	Pri	1871	T. Mendenhall	262	2,282	50	2,426	W
Snow College,[15] Ephraim, Utah	St	1888	F. S. Holm	34	500	...	551	C
South, University of the, Sewanee, Tenn.	PE	1856	E. McCrady	60	653	72	728	M
South Carolina, University of, Columbia, S.C.	St	1801	T. F. Jones, Jr.	466	5,272	429	7,969	C
South Carolina State College, Orangeburg, S.C.	St	1896	B. C. Turner	104	1,144	18	2,163	C
South Dakota, State University of, Vermillion, S. Dak.	St	1882	I. D. Weeks	261	2,149	129	2,712	C
South Dakota School of Mines & Tech., Rapid City, S.Dak.	St	1885	F. L. Partlo	75	808	15	858	C
South Dakota State College of A. & M. Arts, Brookings, S.Dak.	St	1881	H. M. Briggs	292	2,839	82	3,139	C
South Texas College, Houston, Texas	YMCA	1923	W. I. Dykes	52	389	20	1,678	C
Southeast Missouri State College, Cape Girardeau, Mo.	St	1873	M. F. Scully	135	3,024	...	3,272	C
Southeastern Baptist Theol. Sem., Wake Forest, N.C.	Bapt	1951	S. Stealey	31	50	600	658	C
South-Eastern Bible College, Lakeland, Fla.	AG	1935	A. E. Spence, Jr.	11	284	...	284	C
Southeastern Louisiana College, Hammond, La.	St	1925	L. H. Dyson	154	2,504	36	2,577	C

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Southeastern State College, Durant, Okla.	St	1909	A. E. Shearer	70	1,379	5	1,930	C
Southern Alberta Institute of Technology, Calgary, Alta.	Prov	1916	E. W. Wood	260	1,200	...	4,140	C
Southern Baptist Theological Seminary, Louisville, Ky.	Bapt	1859	D. K. McCall	67	...	692	847	C
Southern California, Univ. of, Los Angeles, Calif.	Pri	1880	N. H. Topping	1,362	5,328	2,550	17,476	C
Southern Connecticut State College, New Haven, Conn.	St	1893	H. C. Buley	187	2,001	24	3,777	C
Southern Illinois Univ., Carbondale and Edwardsville, Ill.	St	1869	D. Morris	1,248	10,706	481	16,469	C
Southern Methodist University, Dallas, Texas	Meth	1911	W. M. Tate	409	3,485	551	5,432	C
Southern Missionary College, Collegedale, Tenn.	SDA	1893	C. N. Rees	56	550	...	748	C
Southern Mississippi, University of, Hattiesburg, Miss.	St	1910	W. D. McCain	291	3,917	88	5,175	C
Southern Oregon College, Ashland, Oreg.	St	1926	E. Stevenson	109	1,378	22	1,465	C
Southern State College, Magnolia, Ark.	St	1909	I. E. Bruce	65	1,083	...	1,276	C
Southern State Teachers College, Springfield, S.Dak.	St	1897	W. W. Ludeman	42	596	...	696	C
Southern University A. & M. Coll., Baton Rouge & New Orleans, La.	St	1880	F. G. Clark	354	4,505	201	5,834	C
Southern Utah, College of,[16] Cedar City, Utah	St	1897	R. Braithwaite	53	935	...	963	C
Southwest Missouri State College, Springfield, Mo.	St	1906	L. Traywick	145	3,235	...	3,433	C
Southwest Texas State College, San Marcos, Texas	St	1903	J. Flowers	152	2,524	35	2,893	C
Southwestern Assemblies of God College, Waxahachie, Texas.	AG	1929	K. Kendrick	18	316	...	432	C
Southwestern at Memphis, Memphis, Tenn. (incl. Memphis College of Music)	Pres	1848	P. N. Rhodes	78	812	...	2,838	C
Southwestern Baptist Theol. Sem., Ft. Worth, Texas	Bapt	1908	R. E. Naylor	81	...	...	1,704	C
Southwestern College, Winfield, Kans.	Meth	1885	C. O. Strohl	47	570	...	672	C
Southwestern Louisiana, University of, Lafayette, La.	St	1898	J. Fletcher	352	4,783	40	5,421	C
Southwestern State College, Weatherford, Clinton-Sherman, and Altus, Okla.	St	1901	A. Harris	90	1,897	5	2,478	C
Southwestern University, Georgetown, Texas	Meth	1840	D. Fleming	54	678	...	743	C
Spelman College, Atlanta, Ga.	Pri	1881	A. E. Manley	54	603	...	654	W
Spring Hill College, Spring Hill, Ala. (incl. St. Charles College, Grand Coteau, La.)	RC	1830	A. W. Crandell	98	895	19	1,357	C
Springfield College, Springfield, Mass.	Pri	1885	G. Olds	106	1,206	107	1,540	C
Stanford University, Stanford, Calif.	Pri	1885	J. Sterling	1,976	5,668	2,602	9,835	C
Stephen F. Austin State College, Nacogdoches, Texas	St	1923	R. W. Steen	109	2,017	33	2,388	C
Sterling College, Sterling, Kans.	Pres	1887	W. M. McCreery	34	409	...	484	C
Stetson University, DeLand, Fla.	Bapt	1883	J. O. Edmunds	135	1,441	252	2,112	C
Steubenville, College of, Steubenville, Ohio	RC	1946	K. R. Keelan	35	514	...	767	C
Stevens Institute of Technology, Hoboken, N.J.	Pri	1870	J. H. Davis	159	1,065	...	2,165	M
Stillman College, Tuscaloosa, Ala.	Pres	1876	S. B. Hay	37	484	...	495	C
Stonehill College, North Easton, Mass.	RC	1948	R. H. Sullivan	53	...	...	829	C
Stout State College, Menomonie, Wis.	St	1893	W. Micheels	111	1,598	26	1,652	C
Suffolk University, Boston, Mass.	Pri	1906	D. C. Haley	72	979	41	1,275	C
Sul Ross State College, Alpine, Texas	St	1917	B. Wildenthal	72	1,062	8	1,472	C
Susquehanna University, Selinsgrove, Pa.	Luth	1858	G. W. Weber	54	797	...	813	C
Swarthmore College, Swarthmore, Pa.	Pri	1864	C. C. Smith	120	969	...	975	C
Sweet Briar College, Sweet Briar, Va.	Pri	1901	A. Pannell	68	590	...	591	W
Syracuse University, Syracuse, N.Y. (incl. Utica College, Utica, q.v.)	Pri	1870	W. Tolley	1,023	7,698	5,128	19,048	C
Talladega College, Talladega, Ala.	Cong	1867	A. D. Gray	39	414	...	414	C
Tampa, University of, Tampa, Fla.	Pri	1931	D. M. Delo	77	1,291	...	2,045	C
Tarkio College, Tarkio, Mo.	Pres	1883	W. Schechter	30	399	...	407	C
Tarleton State College, Stephenville, Texas	St	1899	E. J. Howell	75	1,219	...	1,389	C
Taylor University, Upland, Ind.	Pri	1846	B. J. Martin	57	795	...	820	C
Temple University, Philadelphia, Pa.	Pri	1884	M. Gladfelter	1,374	6,078	5,422	22,302	C
Tennessee, Univ. of, Knoxville, Memphis, Martin, & Nashville, Tenn.	St	1794	A. D. Holt	1,640	8,462	2,019	16,654	C
Tennessee A. & I. State University, Nashville, Tenn.	St	1912	W. S. Davis	240	3,655	31	3,901	C
Tennessee Polytechnic Inst., Cookeville, Tenn.	St	1915	E. Derryberry	177	2,960	5	3,122	C
Tennessee Wesleyan College, Athens, Tenn.	Meth	1857	R. Mohney	42	528	...	629	C
Texas, A. & M. College of, College Station, Texas	St	1876	E. Rudder	605	...	...	7,734	M
Texas, University of, Austin, Dallas, Galveston, and Houston, Texas (incl. Texas Western College, El Paso, q.v.)	St	1883	H. H. Ransom	1,413	19,204	3,417	28,223	C
Texas Christian University, Fort Worth, Texas	DC	1873	M. E. Sadler	460	4,085	169	6,309	C
Texas College, Tyler, Texas	ME	1894	R. L. Potts	26	356	...	376	C
Texas College of Arts & Industries, Kingsville, Texas	St	1925	E. H. Poteet	157	2,589	30	3,292	C
Texas Lutheran College, Seguin, Texas	Luth	1891	A. Gustafson	50	631	...	693	C
Texas Southern University, Houston, Texas	St	1947	S. M. Nabrit	185	2,615	34	3,600	C
Texas Technological College, Lubbock, Texas	St	1923	R. Goodwin	625	8,650	142	10,212	C
Texas Wesleyan College, Fort Worth, Texas	Meth	1891	L. Sone	58	894	5	1,468	C
Texas Western College,[17] El Paso, Texas	St	1913	J. M. Ray	180	3,288	32	4,771	C
Texas Woman's University, Denton, Texas	St	1901	J. A. Guinn	201	2,273	172	2,766	W
Thiel College, Greenville, Pa.	Luth	1870	C. G. Bly	55	902	...	925	C
Tift College, Forsyth, Ga.	Bapt	1849	C. T. Vinzant	31	566	...	574	W
Toledo, University of, Toledo, Ohio	Mun	1872	W. S. Carlson	352	3,873	43	7,806	C
Toronto, University of, Toronto, Ont.	Prov	1827	C. T. Bissell	2,181	10,701	2,164	16,681	C
Tougaloo Southern Christian College, Tougaloo, Miss.	Pri	1869	A. Beittel	34	496	...	497	C
Transylvania College, Lexington, Ky.	Pri	1780	I. E. Lunger	45	585	...	589	C
Trenton State College, Trenton, N.J.	St	1855	E. L. Martin	238	1,909	4	5,032	C
Trinity College, Hartford, Conn.	Pri	1823	A. C. Jacobs	108	1,012	...	1,426	M
Trinity College, Washington, D.C.	RC	1897	Sr. Margaret	93	807	...	909	W
Trinity College, Burlington, Vt.	RC	1925	Moth. M. Emmanuel	25	309	...	342	W
Trinity University, San Antonio, Texas	Pres	1869	J. W. Laurie	116	1,174	21	1,734	C
Troy State College, Troy, Ala.	St	1887	F. Stewart	88	1,812	7	2,102	C
Tufts University, Medford and Boston, Mass. (incl. Jackson College, Medford)	Pri	1852	N. Y. Wessell	509	2,661	1,047	4,276	C
Tulane University of Louisiana, New Orleans, La. (incl. Newcomb College, New Orleans, q.v.)	Pri	1834	H. Longenecker	1,492	3,161	1,900	7,005	C
Tulsa, University of, Tulsa, Okla.	Pres	1894	B. G. Henneke	214	2,478	115	4,951	C
Tusculum College, Greeneville, Tenn.	Pres	1794	R. C. Rankin	27	441	...	474	C
Tuskegee Institute, Tuskegee Institute, Ala.	Pri	1881	L. H. Foster	242	1,127	58	2,365	C
Union College, Barbourville, Ky.	Meth	1879	M. A. Miller	49	627	2	728	C
Union College, Lincoln, Nebr.	SDA	1891	D. J. Bieber	60	775	...	934	C
Union College and University, Schenectady and Albany, N.Y.	Pri	1795	C. Davidson	767	1,181	845	2,696	M
Union Theological Seminary, New York, N.Y. (incl. Auburn Theological Seminary)	Pri	1836	H. Van Dusen	79	...	480	559	C
Union Theological Seminary, Richmond, Va.	Pres	1812	J. A. Jones, Jr.	19	185	34	233	C
Union University, Jackson, Tenn.	Bapt	1825	W. F. Jones	49	622	...	681	C

Institution and location	Control or affiliation	Year founded	Chief executive	Teaching faculty	Full-time students: Undergraduate	Full-time students: Graduate	Total students enrolled	
United College, Winnipeg, Man.	UCCa	1871	W. C. Lockhart	46	1,116	23	1,205	C
U.S. Air Force Academy, USAF Academy, Colo.	Fed	1954	W. S. Stone	327	2,254	...	2,254	M
U.S. Coast Guard Academy, New London, Conn.	Fed	1876	S. H. Evans	71	574	...	574	M
U.S. Merchant Marine Academy, Kings Point, N.Y.	Fed	1938	G. McLintock	80	957	...	957	M
U.S. Military Academy, West Point, N.Y.	Fed	1802	W. Westmoreland	381	2,453	...	2,453	M
U.S. Naval Academy, Annapolis, Md.	Fed	1845	J. F. Davidson	505	3,983	...	3,983	M
U.S. Naval Postgraduate School, Monterey, Calif.	Fed	1909	M. E. Dormin	201	274	1,002	1,276	C
Upper Iowa University, Fayette, Iowa	Pri	1857	E. E. Garbee	42	728	...	741	C
Upsala College, East Orange, N.J.	Luth	1893	E. B. Lawson	91	1,415	...	1,995	C
Ursinus College, Collegeville, Pa.	UCC	1869	D. Helfferich	60	921	...	1,375	C
Ursuline College, Louisville, Ky.	RC	1938	Moth. M. Cosma	53	317	...	535	W
Ursuline College for Women, Cleveland, Ohio	RC	1871	Moth. M. Sands	49	329	...	329	W
Utah, University of, Salt Lake City and Price, Utah (incl. Carbon College, q.v.)	St	1850	A. R. Olpin	1,080	...	...	15,926	C
Utah State University, Logan, Utah (incl. Snow College, Ephraim; and College of Southern Utah, Cedar City, qq.v.)	St	1888	D. Chase	312	6,046	172	7,084	C
Utica College of Syracuse University, Utica, N.Y.	Pri	1946	J. Harrison	198	842	...	2,916	C
Valdosta State College, Valdosta, Ga.	St	1906	J. Thaxton	44	788	...	917	C
Valparaiso University, Valparaiso, Ind.	Luth	1859	O. Kretzmann	210	2,823	...	3,222	C
Vanderbilt University, Nashville, Tenn.	Pri	1872	H. Branscomb	769	2,721	1,044	3,858	C
Vassar College, Poughkeepsie, N.Y.	Pri	1861	S. G. Blanding	172	1,490	...	1,500	W
Vermont, University of, Burlington, Vt.	St	1791	J. T. Fey	427	3,169	310	4,151	C
Victoria College, Victoria, B.C.	Prov	1902	W. H. Hickman	125	...	...	2,791	C
Victoria University, Toronto, Ont. (incl. Victoria and Emmanuel colleges)	UCCa	1836	A. B. Moore	78	1,959	13	2,045	C
Villa Madonna College, Covington, Ky.	RC	1921	J. F. Murphy	97	665	...	1,379	C
Villa Maria College, Erie, Pa.	RC	1925	Moth. M. Aurelia	51	450	...	755	W
Villanova University, Villanova, Pa.	RC	1842	J. Klekotka	455	4,050	179	7,364	M
Virginia, Medical College of, Richmond, Va.	St	1838	R. B. Smith, Jr.	600	...	1,206	1,206	C
Virginia, University of, Charlottesville, Va. (incl. Clinch Valley College, Wise; and George Mason College, Alexandria)	St	1819	E. Shannon, Jr.	950	3,855	1,500	11,897	C
Virginia Military Institute, Lexington, Va.	St	1839	G. Shell	117	1,073	...	1,073	M
Virginia Polytechnic Institute, Blacksburg, Va. (incl. Radford College, q.v.)	St	1872	W. S. Newman	475	4,764	521	5,394	C
Virginia State College, Petersburg & Norfolk, Va.	St	1882	R. P. Daniel	278	2,577	10	3,993	C
Virginia Union University, Richmond, Va.	Bapt	1865	T. Henderson	55	888	19	1,156	C
Viterbo College, La Crosse, Wis.	RC	1931	Sr. M. Justille	41	314	...	357	W
Wabash College, Crawfordsville, Ind.	Pri	1832	B. K. Trippet	66	714	...	721	M
Wagner College, Staten Island, N.Y.	Luth	1883	A. Davidson	131	1,321	...	1,901	C
Wake Forest College, Winston-Salem, N.C.	Bapt	1834	H. W. Tribble	380	2,052	523	2,869	C
Walla Walla College, College Place, Wash.	SDA	1892	P. Christian	73	1,059	11	1,330	C
Wartburg College, Waverly, Iowa	Luth	1852	C. H. Becker	69	1,050	...	1,108	C
Washburn University, Topeka, Kans.	Mun	1865	H. Sponberg	160	1,748	129	3,567	C
Washington, University of, Seattle, Wash.	St	1861	C. E. Odegaard	3,043	12,860	3,065	25,151	C
Washington and Jefferson College, Washington, Pa.	Pri	1781	B. Patterson	65	784	...	794	M
Washington and Lee University, Lexington, Va.	Pri	1749	F. C. Cole	109	1,182	...	1,186	M
Washington College, Chestertown, Md.	St-Pri	1782	D. Z. Gibson	41	500	...	504	C
Washington State University, Pullman, Wash.	St	1890	C. C. French	562	6,989	161	8,243	C
Washington University, St. Louis, Mo.	Pri	1853	C. Tolman	2,012	3,689	1,428	13,452	C
Wayland Baptist College, Plainview, Texas	Bapt	1909	A. H. Owen	41	504	...	612	C
Wayne State University, Detroit, Mich.	St	1868	C. B. Hilberry	1,201	8,442	1,778	28,098	C
Waynesburg College, Waynesburg, Pa.	Pres	1849	P. R. Stewart	60	1,056	...	1,330	C
Webster College, St. Louis, Mo.	RC	1915	Sr. M. Barberis	70	590	...	730	W
Wellesley College, Wellesley, Mass.	Pri	1870	M. Clapp	189	1,716	8	1,733	W
Wells College, Aurora, N.Y.	Pri	1868	L. J. Long	56	478	...	481	W
Wesleyan College, Macon, Ga.	Meth	1836	W. Strickland	56	498	...	519	W
Wesleyan University, Middletown, Conn.	Pri	1831	V. Butterfield	145	960	58	1,074	M
West Chester State College, West Chester, Pa.	St	1812	E. F. Sykes	162	2,651	...	3,181	C
West Georgia College, Carrolton, Ga.	St	1933	J. E. Boyd	50	999	...	1,089	C
West Liberty State College, West Liberty, W.Va.	St	1837	P. N. Elbin	58	1,144	...	1,628	C
West Texas State College, Canyon, Texas	St	1910	J. P. Cornette	145	2,302	33	3,462	C
West Virginia Inst. of Tech., Montgomery, W.Va.	St	1895	L. C. Nelson	65	...	...	1,089	C
West Virginia State College, Institute, W.Va.	St	1891	W. Wallace	107	1,416	...	2,153	C
West Virginia University, Morgantown, W.Va.	St	1867	P. A. Miller	795	5,715	826	7,514	C
West Virginia Wesleyan College, Buckhannon, W.Va.	Meth	1890	S. H. Martin	72	1,181	...	1,268	C
Western Carolina College, Cullowhee, N.C.	St	1889	P. A. Reid	109	1,606	5	2,093	C
Western College for Women, Oxford, Ohio	Pri	1853	H. B. Young	58	442	...	443	W
Western Illinois University, Macomb, Ill.	St	1899	A. L. Knoblauch	234	3,159	35	4,229	C
Western Kentucky State College, Bowling Green, Ky.	St	1906	E. K. Thompson	178	3,623	21	4,797	C
Western Maryland College, Westminster, Md.	Pri	1867	L. S. Ensor	75	734	...	934	C
Western Michigan University, Kalamazoo, Mich.	St	1903	J. Miller	420	7,406	97	11,594	C
Western Montana College of Education, Dillon, Mont.	St	1897	J. E. Short	32	532	7	585	C
Western Ontario, University of, London, Ont.	Prov	1878	G. E. Hall	528	4,310	405	7,327	C
Western Reserve University, Cleveland, Ohio (incl. Adelbert, Flora Stone Mather, and Cleveland colleges)	Pri	1826	J. S. Millis	1,291	2,003	1,663	8,335	C
Western State College of Colo., Gunnison, Colo.	St	1901	D. H. Cummins	66	1,263	53	1,695	C
Western Washington State College, Bellingham, Wash.	St	1899	J. Jarrett	202	3,259	64	3,819	C
Westhampton College of Univ. of Richmond, Richmond, Va.	Bapt	1914	M. Roberts	100	581	...	603	W
Westmar College, Le Mars, Iowa	EUB	1890	H. Kalas	50	572	...	658	C
Westminster College, Fulton, Mo.	Pres	1851	R. Davidson	53	596	...	603	M
Westminster College, New Wilmington, Pa.	Pres	1852	W. W. Orr	89	1,076	...	1,379	C
Westminster College, Salt Lake City, Utah	Pri	1875	F. E. Duddy	52	445	...	458	C
Westmont College, Santa Barbara, Calif.	Pri	1940	R. Voskuyl	45	510	...	514	C
Wheaton College, Wheaton, Ill.	Pri	1860	V. R. Edman	146	1,693	60	1,813	C
Wheaton College, Norton, Mass.	Pri	1834	E. S. May	80	822	...	822	W
Wheeling College, Wheeling, W.Va.	RC	1954	W. F. Troy	33	481	...	493	C
Wheelock College, Boston, Mass.	Pri	1888	F. Mayfarth	27	441	7	502	W
Whitman College, Walla Walla, Wash.	Pri	1859	L. B. Perry	65	902	...	917	C
Whittier College, Whittier, Calif.	Pri	1901	P. S. Smith	85	1,396	47	1,524	C
Whitworth College, Spokane, Wash.	Pres	1890	F. F. Warren	80	929	8	1,587	C
Wichita, University of, Wichita, Kans.	Mun	1896	H. F. Corbin	290	2,808	86	5,748	C
Wiley College, Marshall, Texas	Meth	1873	T. W. Cole, Sr.	45	527	...	612	C
Wilkes College, Wilkes-Barre, Pa.	Pri	1933	E. S. Farley	93	1,174	...	1,621	C
Willamette University, Salem, Oreg.	Meth	1842	G. H. Smith	99	1,104	172	1,346	C

Institution and location	Control or affiliation	Year founded	Chief executive	Teaching faculty	Full-time students: Undergraduate	Full-time students: Graduate	Total students enrolled	
William and Mary, College of, Williamsburg and Norfolk, Va. (incl. Richmond Professional Institute, Richmond, q.v.)	St	1693	D. Paschall	294	2,242	69	4,464	C
William Carey College, Hattiesburg, Miss.	Bapt	1906	J. R. Noonkester	38	469	...	547	C
William Jewell College, Liberty, Mo.	Bapt	1849	W. P. Binns	59	961	...	1,068	C
William Mitchell College of Law, St. Paul, Minn.	Pri	1900	S. R. Curtis	26	...	...	402	C
William Penn College, Oskaloosa, Iowa	Fr	1873	S. A. Watson	33	406	...	490	C
Williams College, Williamstown, Mass.	Pri	1793	J. E. Sawyer	154	1,128	27	1,223	M
Willimantic State College, Willimantic, Conn.	St	1889	J. E. Smith	71	428	...	757	C
Wilmington College, Wilmington, Ohio	Fr	1870	J. M. Read	45	706	...	739	C
Wilson College, Chambersburg, Pa.	Pri	1869	P. S. Havens	55	538	...	544	W
Winona State Coll., Winona, Minn.	St	1858	N. Minné	83	1,266	10	1,787	C
Winston-Salem Teachers College, Winston-Salem, N.C.	St	1892	K. Williams	70	1,053	...	1,080	C
Winthrop College, Rock Hill, S.C.	St	1886	C. S. Davis	129	1,857	1	2,084	W
Wisconsin, University of, Madison and Milwaukee, Wis.	St	1849	F. Harrington	3,610	22,367	3,988	39,239	C
Wisconsin—Milwaukee, Univ. of, Milwaukee, Wis.	St	1848	J. M. Klotsche	619	5,714	96	10,598	C
Wisconsin State College, Eau Claire, Wis.	St	1916	L. C. Haas	136	2,166	...	2,652	C
Wisconsin State College, La Crosse, Wis.	St	1909	R. Mitchell	135	2,026	...	2,219	C
Wisconsin State College, Oshkosh, Wis.	St	1871	R. E. Guiles	150	2,745	...	3,958	C
Wisconsin State College, River Falls, Wis.	St	1874	E. Kleinpell	106	1,660	...	1,911	C
Wisconsin State College, Stevens Point, Wis.	St	1894	W. C. Hansen	120	2,066	...	2,823	C
Wisconsin State Coll., Superior, Wis.	St	1896	J. D. Hill	93	1,332	14	1,572	C
Wisconsin State College, Whitewater, Wis.	St	1868	R. Williams	113	2,586	...	2,586	C
Wisconsin State Coll. & Inst. of Tech., Platteville, Wis.	St	1866	B. Ullsvik	130	1,989	...	2,019	C
Wittenberg University, Springfield, Ohio	Luth	1845	C. Stoughton	216	1,756	...	3,095	C
Wofford College, Spartanburg, S.C.	Meth	1854	C. F. Marsh	51	773	...	780	M
Woodbury College, Los Angeles, Calif.	Pri	1884	D. E. Kirby	62	1,209	...	1,209	C
Woodstock College, Woodstock, Md.	RC	1869	E. J. Sponga	20	254	2	256	M
Wooster, College of, Wooster, Ohio	Pres	1866	H. F. Lowry	102	1,280	...	1,298	C
Worcester Polytechnic Institute, Worcester, Mass.	Pri	1865	H. P. Storke	162	1,120	38	1,338	M
Wyoming, University of, Laramie, Wyo.	St	1887	G. Humphrey	321	3,732	311	4,344	C
Xavier University, Cincinnati, Ohio	RC	1831	P. O'Connor	193	1,646	71	3,824	M
Xavier University of Louisiana, New Orleans, La.	RC	1925	Sr. M. Josephina	73	677	7	809	C
Yale University, New Haven, Conn.	Pri	1701	A. Griswold	2,101	3,911	3,711	8,270	M
Yankton College, Yankton, S.Dak.	Pri	1881	A. Rondeleau	38	318	...	336	C
Yeshiva University, New York, N.Y.	Jew	1886	S. Belkin	1,241	1,375	1,262	4,945	C
Youngstown University, Youngstown, Ohio	Pri	1908	H. W. Jones	423	4,504	...	7,662	C

COLOMBIA

The Republic of Colombia, situated on the northwest corner of South America, has an area of 439,519 square miles and a population of 14,768,510 (mid-1962 est.). Principal cities and populations (1961 est.): Bogotá, the capital, 1,256,640 (including suburbs); Medellín, 651,240; Cali, 639,900; and Barranquilla, 452,140. Spanish is the official language.

Government.—Colombia's constitution provides for a Senate (98 members, elected for 4-year terms) and a House of Representatives (184 members, elected for 2-year terms). A constitutional amendment adopted in 1957 requires bipartisan government until 1974; the presidency is to alternate between a Liberal and a Conservative, and legislative and administrative posts are shared equally. The president (Guillermo León Valencia, inaugurated Aug. 7, 1962) serves a 4-year term and is ineligible for the next four years. Major legislation requires a two-thirds majority for passage. The judicial system is headed by a 16-member Supreme Court.

Education and Religion.—Roman Catholicism enjoys privileged status under Vatican concordat. Courses in Catholicism are required by law in all public schools; in large sectors of the country private schools other than Catholic are prohibited. About 62% of the population is literate, but few pupils attend school beyond the third or fourth grade. School enrollment (1959): primary and secondary, 1,655,346; technical and commercial, 71,870; teacher-training, 19,108; higher education, 21,327. There is a technical institute at Cali; an industrial institute at Popayán; industrial training schools in Bogotá, Pereira, Barranquilla, and Medellín; an agricultural normal school at Buga; and a school of business administration and finance in Medellín.

Finance.—The peso exchange rate for export of most commodities is 6.5 pesos to the U.S. dollar; the free rate of exchange in November 1962 was 9.9 pesos to the dollar. Government revenue, 1963 est.: 4,090 million pesos (3,526 million in 1962); expenditure, 3,852 million (3,526 million), including 667 million for public works, 665.6 million for financial operations, 572.7 million for education, 440.6 million for the armed forces, and 205.9 million for development. National debt (May 1962): 2,333 million pesos; external debt (June 1961): $376.1 million (with payments not due on $176 million until after 1971). World Bank loans to Colombia totaled $270 million as of mid-1962. Gold and foreign exchange reserves (September 1962): $157 million (January 1962: $128 million).

Transportation and Communications.—In 1961 the Greater Colombia Merchant Fleet (48 ships) carried 1.94 million tons of cargo (11% above 1960) and grossed $48.5 million (8% increase). Civil air traffic (1961): 821,744,000 passenger-kilometers (6% above 1960); 48,144,000 ton-kilometers of cargo (up 14%). Railroad mileage, 2,191; roads, 18,651 miles (national highways, 8,542). Other data for 1960: passenger cars, 89,600; commercial vehicles, 82,900; telephones, 294,650 (1961); radios, 1,971,000; and television sets, 150,000.

Economic Indicators.—Gross national product (1960): 26,160 million pesos (23,150 million in 1959); average annual per capita income, $246. Cost-of-living index (1958 = 100): 124 as of July 1962. Index of agricultural production (1952–7 = 100): 118 in 1959–60. Average hourly wage of industrial workers (1961): 1.59 pesos. Annual rate of manufacturing growth: 4.1% in 1961 (5.3% in 1956–60).

Manufactures and Minerals.—Industrial production, 1961: crude oil, 53.2 million barrels (down 5% from 1960); cement, 1.6 million metric tons (up 12%); iron and steel, 180,000 tons; gold, 401,064 troy ounces (down 7.6%); silver, 127,943 troy ounces (down 5%); electric power, 3.75 billion kw.-hr. (1960). Industry employed 252,000 workers in 1960. In 1961, 48% of crude oil production was refined, and 52% was exported. The public oil corporation, ECOPETROL, earned 463.4 million pesos in 1961 (229.6 million in 1960).

Agriculture.—Colombia's chief crop is coffee; output in the 1960–61 crop year totaled 7.8 million bags (of 132.3 pounds each). The world market price quoted for Colombia's premium coffees dropped from 90 to 40 cents in the period 1954–62, causing a large loss in Colombian trade receipts. Other crops and 1961 output: sugar, 328,000 metric tons (1962 est., 375,000); tobacco, 61.3 million pounds (1962 est., 68.2 million); potatoes, 400,000 tons (1962 est.). In 1958, 40,000 tons of cotton were imported to meet domestic needs; in 1962, an estimated 26,000 tons were exported.

Foreign Trade.—Total exports, 1961: $433.5 million ($464.9 million in 1960); imports, $577.1 million ($517.2 million). Chief exports, 1961: coffee, $307.9 million ($333.5 million in 1960); petroleum, $68.2 million ($80.4 million); other products, $37.2 million ($26.6 million). The United States is Colombia's chief trading partner, supplying in 1961 about 51% of Colombia's imports and taking 60% of total exports. Shipments of coffee to the United States have declined steadily, from 26% of total United States coffee imports in 1940 to 18% in 1961.

Events, 1962.—On January 1 the state of siege was lifted. On March 18 the generally peaceful

and honest congressional elections gave a clear-cut victory to the bipartisan National Front. Election results were as follows:

Party	House seats	Senate seats
National Front	109	68
Liberals	(59)	(37)
Ospinista Conservatives	(50)	(31)
Laureanista Conservatives	36	16
Liberal Revolutionary Movement	33	12
Other Conservatives	6	2

From five nominations made by the Conservative Party Convention, the Liberal Party Convention chose as the National Front candidate for the presidency the Ospinista Conservative, Dr. Guillermo León Valencia. The aristocratic Dr. Valencia was elected president on May 6, receiving 1,636,081 votes. The ultra-conservative Jorge Leyva received 309,375 votes; ex-dictator Gen. Rojas Pinilla, 54,960; and López Michelsen, the "ambivalent leftist," 624,438. Only 44% of the 5,900,000 registered voters went to the polls, or 8% less than in the March congressional elections. Disenchantment with the National Front record was a factor in the high voter absenteeism.

President-elect Valencia visited Washington in late June, and discussed inter-American problems with President Kennedy and other administration officials.

Immediately after his inauguration, President Valencia appointed Maj. Gen. Alberto Ruiz Novoa as war minister. Colombia's armed forces commander, the head of the joint chiefs of staff, and the chief of the air force all resigned to protest Novoa's lack of seniority. They were replaced by three new officers chosen by Valencia.

The new president indicated he was particularly anxious to quell the chronic violence in Colombia's hinterlands. He also wanted to boost food production by putting a million hectares of land in the Cauca and Sinú River valleys into intensive cultivation, and desired to train enough teachers and build enough schools to make primary education compulsory.

Much of the violence had political objectives, and was a continuation of the civil war begun 14 years ago; in 1962 the death toll increased to some 4,000. In August, President Valencia asked for emergency powers to deal with the problem. Military chiefs, assisted by United States military advisers and equipment, began to adopt new anti-guerrilla tactics and training.

In May and June, university student demonstrations turned into anticlerical and antimilitary riots. Many persons were wounded (including 19 policemen), and property damage was inflicted on the capitol building, the cardinal's palace, and a newspaper building. The universities involved were closed until August 20. The government's program to remove extreme leftist and Communist teachers helped to spark the student protests, which were made in the name of academic freedom.

In May the Colombian Evangelical Confederation (Protestant) petitioned the United States ambassador, Fulton Freeman, to make conditional Alliance for Progress educational assistance (some $40 million) on the elimination of notorious religious discrimination in the public schools. Generally the press viewed the request as akin to intervention and ignored the human rights issue. President Lleras declared that aid terms affecting national religious policy would "never be accepted." In September, Procurator-General Holguín issued an opinion finding unconstitutional the 1953 agreement with the Vatican, which gave the Roman Catholic Church supervision of all schooling in the huge mission territories.

In July, 80 needy rural families of Cunday in Tolima Department were awarded 25–30 acre farms in the first distribution under the land reform law of 1961. The national program calls for compensated expropriation of "improperly cultivated" estates exceeding 4,940 acres, and for training in modern farming by the Agrarian Reform Institute.

A new oilfield was discovered at Cúcuta near the Venezuela border. Production from the first well exceeded 5,000 barrels daily. A 35-mile link to the National Andean pipeline terminating at Cartagena brought the Provincia field, which was discovered in 1960 and produces 13,500 barrels daily, into commercial production in October.

As of January 1 the 9% export proceeds tax was abolished. Colombia's annual sugar quota for the United States market was fixed at 35,000 tons; total 1962 export authorization for Colombia's 19 sugar mills was 100,000 tons. In August a free zone for industrial and commercial activity was created in Barranquilla. In May the government's heavy 1962 investment schedule (totaling 2,005 million pesos) was ordered reduced by 30% because of shortage of funds.

In August the Alliance for Progress' Committee of Nine approved Colombia's ten-year economic and social development plan, which calls for foreign loans averaging $200 million annually. A number of bond issues have been floated internally in an effort to finance development and agrarian reform.

On October 28, Colombia's foreign minister, José Joaquín Caicedo Castilla, condemned the Soviet missile bases in Cuba as intervention in the Western Hemisphere. He declared his country obligated under the Rió Treaty to support the collective action authorized by the American republics in concert.

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COLOMBO PLAN. See COMMONWEALTH OF NATIONS.

COLORADO

A Western state of the United States, Colorado ranks 8th among the states in area (land, 103,884 square miles; inland water, 363) and 30th in population (1,907,000 on July 1, 1962, an 8.7% increase from the 1960 census figure of 1,753,947). Urban places with populations above 12,000 in 1960:

Arvada	19,242	Greeley	26,314
Aurora	48,548	Lakewood[1]	19,338
Boulder	37,718	Littleton	13,670
Colorado Springs	70,194	Pueblo	91,181
Denver (*capital*)	493,887	Westminster	13,850
Englewood	33,398	Wheat Ridge[1]	21,619
Fort Collins	25,027		
Grand Junction	18,694		

[1] Unincorporated place.

Government.—Chief executive and judicial officers in 1962 included Stephen L. R. McNichols (Democrat), governor, serving a four-year term; Robert L. Knous, lieutenant governor; George J. Baker, secretary of state; Tim Armstrong, treasurer; Homer F. Bedford, auditor; Duke W. Dunbar, attorney general; Byron W. Hansford, commissioner of education; and Edward C. Day, chief justice of the 7-member Supreme Court.

The Colorado General Assembly, which convenes annually, comprised 19 Democrats and 16 Republicans in the Senate in 1962 and 33 Democrats and 32 Republicans in the House of Representatives.

Legislation, 1962.—The 43d General Assembly passed 94 of the 154 bills introduced during its second regular session (January 3–February 10), most of them concerning appropriations and other fiscal matters. For the fiscal year 1962–63 the lawmakers appropriated a record sum of $111,228,603 to provide funds for most state agencies and institutions. Also appropriated was $16,947,035 for capital construction projects, of which $13,557,585 is from the

general fund. A bill was approved to transfer surplus general fund revenues each year to the capital construction fund. Largest single item in the budget was nearly $47 million for support of public schools, an increase of $9.6 million. The system for apportioning state aid to schools was revised.

One of the measures approved authorized the sale of Camp George West, a National Guard base. It was suggested that funds from the sale be used to construct a new state military center at Buckley Field, near Denver, which would also serve as headquarters for a proposed state crime bureau and training center for state, county, and local police officers.

Among other measures adopted was an amendment to the criminal statute of limitation, making state officials liable to prosecution while in office for six years (instead of three) from the time the criminal act was committed, or for three years after leaving office; bills increasing expense allowances for legislators and raising the salaries of county officers, judges, several state officials, and supreme court justices; and a bill eliminating the state weather control commission and transferring its functions to the Department of Natural Resources.

Finance.—In the 1962 fiscal year, revenue of $364,821,863 included $214,508,704 from state taxes and $105,617,865 in federal funds. Chief tax yields were the 2% general sales and use tax ($55,485,353) and taxes on motor fuels ($40,367,138), individual income ($55,260,735), and corporate income ($22,243,802). Spending of $351,065,645 included $82,490,811 for education, $87,270,219 for health, welfare, and rehabilitation, and $88,860,229 for highways.

Education.—In the 1961–62 school year, public elementary schools staffed by 9,835 teachers enrolled 249,799 pupils; junior high schools with 3,507 teachers enrolled 64,585; senior high schools with 4,462 teachers enrolled 100,898; and parochial schools with 1,157 teachers enrolled 34,601. College enrollment totaled 49,707 in 18 institutions, including 6 junior colleges and 12 senior colleges and universities.

Estimated public school spending in the 1961–62 school year totaled $215,850,000, including current expenditures of $161 million ($426 per pupil) and capital outlays of $46 million. Revenue of $235,118,000 was drawn chiefly from state funds ($43,118,000) and local districts ($155 million). Teachers' salaries averaged $5,425 (high school, $5,550; elementary, $5,300). Actual spending for higher education (fiscal year 1961) totaled $57,897,000.

Public Assistance.—In the 1961 fiscal year, public assistance payments to a monthly average of 74,072 persons totaled $83,707,820. This amount included $62,551,318 for the aged and $12,356,059 for dependent children.

Transportation and Communications.—With 462 miles of highway construction and reconstruction completed in 1961, *roads and highways* on Jan. 1, 1962, totaled 78,630 miles (14,369 hard-surfaced). These served 989,637 *motor vehicles* (as registered on June 30, 1962). Operating in the state in 1961 were 7 *railroads* (using 3,671 line miles of track), 7 regularly scheduled *airlines*, and 63 commercial and municipal *airports*.

Communications media included (1962) 62 AM and 14 FM *radio stations*; 10 VHF *television stations* (exclusive of broadcast translator stations); (1961) 24 daily *newspapers* (circulation, 640,047) and 124 other newspapers (244,572); and Jan. 1, 1962, 259,800 business and 580,800 residential *telephones*.

Labor Force.—The state's labor force in August 1962 included 98,300 agricultural workers. Nonagricultural employment totaled 549,600, compared with 547,100 a year earlier, marking an 0.5% increase in the 12 intervening months. Of nonfarm employees, 129,500 were in trade, 117,900 in government services, and 94,500 in manufacturing. Unemployment in August 1962 stood at 29,800, compared with 24,400 a year earlier.

Manufacturing.—Manufacturing engaged 90,648 workers in 1960, including 62,224 in production, and provided a payroll of $524,978,000. Adjusted value added by manufacture totaled $935,401,000.

LEADING COLORADO MANUFACTURES, 1960

Industry group	Total employees	Total payroll	Adjusted value added by mfr.[1]
		(in thousands)	
Food and kindred products	19,152	$94,959	$222,974
Stone, clay, glass products	4,229	21,812	44,513
Chemicals and allied products	1,933	10,316	36,884
Electrical machinery	2,442	11,699	23,802
Petroleum and coal products	868	5,306	14,061
Paper and allied products	902	4,644	9,738

[1] For definition, see footnote 1 in the article *Industrial Production*
(Source: *1960 Annual Survey of Manufactures.*)

Mining.—Colorado ranked 17th among the states in the value of its 1961 mineral output, with 1.89% of the national total. This value was a 1% increase over the record of 1960. The state was first in the output of beryllium, molybdenum, tin (sole producer), and vanadium; second in carbon dioxide; and third in tungsten and uranium.

COLORADO MINERAL PRODUCTION, 1961

(In short tons, except as noted)

Mineral	Quantity	Value
Clays	556,000	$ 1,241,000
Coal	3,678,000	22,787,000
Copper (recoverable)	4,141	2,485,000
Gold (fine ounces)	67,515	2,363,000
Lead (recoverable)	17,755	3,658,000
Natural gas (1,000 cu. ft.)	108,142,000	12,544,000
Natural gasoline (1,000 gal.)	76,880	3,627,000
Petroleum (1,000 bbl.)	46,746[1]	134,628,000[1]
Petroleum gases (1,000 gal.)	115,410	5,498,000
Sand and gravel	18,360,000	16,946,000
Silver (fine ounces)	1,965,000	1,817,000
Stone	2,451,000	5,301,000
Uranium ore	1,282,462	21,509,000
Vanadium	4,149	...[2]
Zinc (recoverable)	42,647	9,809,000
Other minerals	...	101,957,000
Total	...	$343,256,000[3]

[1] Preliminary. [2] Figure withheld to avoid disclosing individual company's confidential data. [3] Total adjusted to eliminate duplicating the value of clays and stone. (Source: U.S. Bureau of Mines.)

Agriculture.—Cash farm income for the first nine months of 1962 (excluding government payments) totaled $417,089,000, compared with $446,002,000 for the corresponding period of 1961. For the full year 1961, income comprised $414,418,000 from livestock, $232,594,000 from crops, and $30,325,000 in government payments. Principal income sources in 1961 were cattle, $320,751,000, and wheat, $95,674,000.

COLORADO CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Apples (1,000 bu.)	1,146	1,500	1,300
Barley (1,000 bu.)	11,598	16,784	13,530
Beans, dry edible (1,000 bags)	1,774	2,247	1,718
Corn for grain (1,000 bu.)	10,346	14,562	9,922
Hay (1,000 tons)	2,486	2,934	3,030
Onions (1,000 cwt.)	1,847	2,376	2,760
Peaches (1,000 bu.)	1,599	1,900	1,800
Potatoes (1,000 cwt.)	10,834	13,097	12,708
Sorghum grain (1,000 bu.)	6,519	8,384	9,452
Sugar beets (1,000 short tons)	2,094	2,449	2,744
Wheat (1,000 bu.)	41,828	56,789	36,207

(Source: U.S. Department of Agriculture.)

The state's 33,000 farms in 1959 had an acreage of 38,787,000 (5,879,000 in harvested cropland). Livestock on farms on Jan. 1, 1962, included 2,333,000 cattle, 1,932,000 sheep, and 1,696,000 chickens. An average of 49,000 family and 19,000 hired workers engaged in farming during 1961.

Events, 1962.—The Republican Party scored a near sweep in the November elections, taking the governorship and a U.S. Senate seat from the Democrats, winning four of the six state house elective offices, and regaining control of both houses of the Colorado Legislature. John A. Love, a Colorado Springs attorney making his first bid for public office, defeated incumbent Steve L. R. McNichols in the gubernatorial race, and Rep. Peter H. Dominick of Denver won election to the U.S. Senate over Sen. John A. Carroll. Both Republicans won by surprisingly high margins, Love capturing 57% of the total vote, and Dominick 54%.

The Republican tide enabled that party to gain control of all three top elective offices—governor and the two U.S. Senate seats—for the first time in 36 years. In the state House of Representatives, the Republicans captured a command-

ing 41 to 24 majority. Each party claimed two of the state's four congressional seats, with Republican Donald G. Brotzman winning the 2d District seat vacated by Dominick.

A construction boom and a general economic upsurge continued in the state in 1962. In Denver, construction permits had risen by 29% in the first seven months of the year, compared with the same period of 1961. Major projects anticipated include new post office and Federal Reserve buildings, a 30-story office building, additions to two hospitals, and an expansion program for the Colorado National Bank. The F. W. Woolworth Co. began work on what is claimed will be the world's largest variety store, due for completion in late 1963. A $2.5 million electrical transmission line to supply power to the Denver area was being erected. The Martin Marietta Corporation was awarded a $204 million contract for development of the Titan III rocket, with most of the work to be done at the Denver division.

One of the major achievements of the year was the completion of the Navajo Trail Highway. Dedicated on September 16, it is the first all-weather route to cross the northern corner of the Navajo and Mountain Ute reservation, and will increase travel through the vast San Juan Basin.

After a 30-year campaign to win congressional approval, the Frying Pan–Arkansas River Project was passed and signed in August. The $171 million reclamation scheme will bring water from the western slope of the state to the eastern slope prairies, and eliminate the seasonal droughts which affect farmers in the Arkansas River Valley. Work began in July on the first unit of the Curecanti hydroelectric installation on the Gunnison River. Two dams and power plants are included in the $70 million project.

Lt. Comdr. M. Scott Carpenter received a hero's welcome in his home town of Boulder, on May 29, following his three-orbit space flight.

"Events" and "Legislation" by: PEARL ANOE, *Colorado Feature & Literary Service.*

COLUMBITE. See MINERAL PRODUCTION.

COMMERCE. See BUSINESS DATA, U.S.; INTERNATIONAL TRADE; RETAIL STORE SALES; WHOLESALE SELLING.

COMMON MARKET, European. See EUROPE.

COMMONWEALTH OF NATIONS

The Commonwealth of Nations is a voluntary association of 16 nations (Australia, Canada, Ceylon, Cyprus, Ghana, Great Britain, India, Jamaica, Malaya, New Zealand, Nigeria, Pakistan, Sierra Leone, Tanganyika, Trinidad and Tobago, and Uganda) and their dependencies, recognizing Queen Elizabeth II as its head and the symbol of the Commonwealth association. In 1962, Jamaica became a fully sovereign member on August 6; Trinidad and Tobago, on August 31; and Uganda, on October 9. On December 9, Tanganyika became a republic.

Colombo Plan.—Members of the Colombo Plan for Cooperative Economic Development in South and Southeast Asia are, with the dates they joined, Australia, Brunei, Canada, Ceylon, Great Britain, India, Malaya, New Zealand, North Borneo, Pakistan, Sarawak, and Singapore (all 1950); Cambodia, Laos, South Vietnam, and the United States (1951); Burma and Nepal (1952); Indonesia (1953); Japan, the Philippines, and Thailand (1954); and Bhutan and South Korea (1962). The 11th annual meeting of the Consultative

Table 1—COMMONWEALTH OF NATIONS

Component	Area (sq.mi.)	Population	Status
Europe			
Great Britain and islands of the British seas[1]	94,516	53,082,000	Sovereign state
Cyprus	3,572	581,000	Sovereign state
Gibraltar	2	24,075	Colony
Malta	122	329,000	Internally self-governing state
Total in Europe	98,212	54,016,075	
Africa			
British South African territories:			
Basutoland	11,716	697,000	Colony
Bechuanaland Protectorate	275,000	250,000	Protectorate
Swaziland	6,705	277,000	Protectorate
Gambia	4,003	290,000	Colony and protectorate
Ghana	91,863	7,150,000	Sovereign state
Kenya	224,960	7,287,000	Colony and protectorate
Mauritius	815	687,000	Colony
Nigeria	356,669	36,473,000	Sovereign state
Rhodesia and Nyasaland, Federation of:			
Northern Rhodesia	288,130	2,510,000	Protectorate
Nyasaland	49,177	2,920,000	Protectorate
Southern Rhodesia	150,333	3,200,000	Internally self-governing colony
St. Helena	47	4,707	Colony
Ascension	34	382	
Tristan da Cunha	38	0	
Seychelles	156	43,000	Colony
Sierra Leone	27,925	2,450,000	Sovereign state
Tanganyika	361,800	9,560,000	Sovereign state
Uganda	93,981	6,845,000	Sovereign state
Zanzibar	1,020	315,000	Protectorate
Total in Africa	1,944,372	80,959,089	
America			
Bahamas	4,404	109,622	Colony
Bermuda	21	42,640	Colony
British Guiana	83,000	582,000	Internally self-governing colony
British Honduras	8,866	90,019	Colony
British Virgin Islands	59	8,000	Colony
Canada	3,851,809	18,600,000	Sovereign state
Falkland Islands[2]	4,618	2,127	Colony
Jamaica	4,411	1,638,000	Sovereign state
Trinidad and Tobago	1,980	859,000	Sovereign state
West Indies:			
Antigua	171	54,304	Colony
Barbados	166	242,000	Colony
Cayman Islands	93	8,511	Colony
Dominica	290	59,916	Colony
Grenada	133	88,677	Colony
Montserrat	32	12,108	Colony
St. Kitts-Nevis	152	56,630	Colony
St. Lucia	238	86,108	Colony
St. Vincent	150	79,948	Colony
Turks and Caicos Islands	202	5,716	Colony
Total in America	3,960,795	22,625,736	
Asia			
Aden	112,132	905,000	Colony and protectorate
Bahrain[3]	213	152,000	Protected state
Borneo:			
Brunei	2,226	83,877	Protected state
North Borneo	29,388	454,421	Colony
Sarawak	48,250	744,529	Colony
Ceylon	25,332	10,167,000	Sovereign state
Hong Kong	398	3,226,400	Colony
India[4]	1,177,988	435,651,497	Sovereign state
Jammu and Kashmir	86,024	3,583,585[5]	In dispute
Malaya, Federation of	50,680	7,137,000	Sovereign state
Maldive Islands	115	92,301	Protected state
Pakistan	365,037	96,558,000	Sovereign state
Qatar[3]	8,000	55,000	Protected state
Singapore	225	1,687,000	Internally self-governing state
Trucial Oman[3]	6,000	110,000	Protected state
Total in Asia	1,912,008	560,607,610	
Australasia and Oceania			
Australia	2,974,581	10,660,750	Sovereign state
Christmas Island	64	3,000	External territory
Cocos Islands	5	548	External territory
Nauru	8	4,613	Trusteeship
New Guinea, Territory of	93,000	1,449,000	Trusteeship
Norfolk Island	13	1,045	External territory
Papua	90,540	523,000	External territory
Fiji	7,055	413,872	Colony
New Hebrides[3]	5,700	61,000	Condominium
New Zealand[6]	103,736	2,485,478	Sovereign state

COMMONWEALTH OF NATIONS, Cont'd

Component	Area (sq. mi.)	Population	Status
Pitcairn Island	2	146	Colony
Tonga	270	66,000	Protected state
Western Pacific Islands:			
British Solomon Islands	11,500	127,000	Protectorate
Gilbert and Ellice Islands	369	48,000	Colony
Western Samoa	1,130	113,567	Sovereign state
Total in Australasia and Oceania	3,287,973	15,957,019	
Total, Commonwealth of Nations	11,203,360	734,165,529	

[1] Includes Northern Ireland, Channel Islands, and Isle of Man. [2] Excludes dependencies, part of which became a separate colony, called the British Antarctic Territory, on March 3, 1962. [3] Not an integral part of the Commonwealth. [4] Excludes Jammu and Kashmir; includes Sikkim. [5] 1961 census population of India-held portion only. [6] Includes insular territories.

Committee, consisting of representatives of all the member countries, met at Melbourne, Australia, on Nov. 12–17, 1962. By June 1961, about £3,570 million in external aid had been provided to the Colombo Plan area by member countries. By June 1962, £102,589,679 had been spent under the technical assistance program, 24,062 persons from the area had been trained in technical fields, and 4,163 technical experts and equipment to the value of £32.6 million had been provided.

Commonwealth Relations.—In 1962 interest in Commonwealth relations centered on Britain's application to join the European Economic Community (EEC). At a meeting of Commonwealth prime ministers in London on September 10–19, the other governments expressed anxieties about the effects of Britain's entry on the Commonwealth. Some of the African countries considered that association with the EEC would not be acceptable; other governments wished to consider their attitude further; and India, Pakistan, and Ceylon urged the conclusion of trade agreements with the EEC to protect their interests as soon as possible. Special importance was attached to the need for safeguards for Commonwealth producers of temperate foodstuffs, certain raw materials, and, for some countries, trade in a broad range of manufactured and processed goods. As a result, the British government undertook to consult closely with other Commonwealth governments during the remainder of the negotiations. (See also EUROPE.)

Commonwealth External Trade.—Sterling Commonwealth exports in 1961, totaling £8,270 million, were about 4% higher than in 1960 despite some falling off in the second half of the year. This decline continued in the first quarter of 1962, but was halted in the second quarter. Imports in 1961, which totaled £9,779 million, were about 3% lower than in 1960. A decline in the first three quarters of the year was followed by a slight rise in the fourth quarter; another decline in the first quarter of 1962 was reversed in the second. Within the 1961 total, exports from Australia were 18% higher than in 1960, while exports from the Asian countries were lower. In 1961 imports into Australia fell by 12%, and those into Ceylon by 13%. Ghana, Hong Kong, and the West Indies showed increases. Commonwealth trade figures are shown in Table 2.

Table 2—COMMONWEALTH TRADE
(£ million)

	Imports (c.i.f.)		Exports (f.o.b.)	
	1961	1st half 1962	1961	1st half 1962
Great Britain	4,396	2,250	3,840	1,995
Australia	748	380	832	437
Canada	2,032	1,068	2,076	1,010
Ceylon	128	57	128	64
East Africa	140	34[1]	136	37[1]
Ghana	140	57	104	65
Hong Kong	372	209	244	132
India	792	369	496	237
Jamaica	76	19[1]	60	15[1]
Malaya	156	44[1]	220	57[1]
Mediterranean territories	80	20[1]	24	6[1]
New Zealand	324	...[2]	284	83[1]
Nigeria	224	94	172	94
Pakistan	228	123	144	66
Rhodesia and Nyasaland	156	74	208	94
Singapore	376	93[1]	264	66[1]
Trinidad and Tobago	120	31[1]	108	29[1]

[1] 1st quarter 1962. [2] Not available.

Dependent Territories.—By March 31, 1962, the total amount spent under the Colonial Development and Welfare Acts (1945, 1950, 1955, 1959) since April 1, 1946, was £251,086,464, including £24,388,055 in 1961–62. The financial contribution made by Great Britain to the dependent territories, including the investment of private capital, amounted to £90 million in 1961.

At the end of 1961 the Colonial Development Corporation had 102 projects in operation, including 13 approved during the year. Total capital committed since 1948 amounted to £115,770,000, and the corporation had a surplus of £3,453,068 on the year's working, compared with £2,417,770 in 1960. It was announced on Aug. 31, 1962, that the corporation would become the Commonwealth Development Corporation, enpowered to operate in independent countries. The ninth annual report of the Commonwealth Development Finance Company showed that the total value of investments committed by the company to March 31, 1962, amounted to £22,030,000, compared with £19,870,000 a year earlier. The company had a profit of £303,330 in 1961–62, or nearly £65,000 less than in 1960–61.

In 1961 public revenue of the colonial territories totaled £322,955,000, compared with £294,613,000 in 1960; public expenditure, £332,824,000, compared with £299,712,000. Exports from the dependent territories rose by £17 million (3%) in 1961, to £1,232 million. Imports into the territories also rose by 3% (£23 million), to £1,447 million. Britain's share of the dependent territories' trade again showed a slight decline, while that of other areas remained about the same.

In 1962 there were universities in Malta, Hong Kong, Singapore, and the West Indies, and university colleges in Rhodesia and Nyasaland, Uganda, and Kenya. There were 35,700 students from the Commonwealth in Britain in 1960–61.

On Jan. 18, 1962, the British and Malayan governments appointed a commission under the chairmanship of Baron Cobbold of Knebworth to ascertain the views of the peoples of North Borneo and Sarawak on the question of the formation of a Federation of Malaysia. Talks between the two governments followed in London, ending in an agreement in principle signed on July 31 (Brunei indicated its approval in principle on July 18). Under the agreement the federation was to be brought into being by Aug. 31, 1963. Elections in Malta on Feb. 17–19, 1962, resulted in a victory for Dr. George Borg Olivier's Nationalist Party. On August 20, in response to the Maltese prime minister's request for independence within the Commonwealth, the British government agreed to arrange discussions as soon as possible.

After a conference in London on Feb. 1–9, 1962, it was agreed that Jamaica should become independent on August 6. Princess Margaret, accompanied by the earl of Snowdon, represented the queen at the independence celebrations in Jamaica on August 3–10. Largely as a result of the Jamaican withdrawal, the dissolution of the West Indies federation was announced by the secretary of state for the colonies, Reginald Maudling, in the House of Commons on February 6. A conference of the territories (apart from Jamaica and Trinidad and Tobago, which also decided to withdraw) comprising the former federation met in London on May 9–24, and decided to form a new federation in the eastern Caribbean with its capital in Barbados. Agreement on independence for Trinidad and Tobago on August

31 was reached at a conference held in London on May 28–June 8, and the queen was represented at the independence celebrations in Trinidad on August 28–September 5 by Princess Mary, the princess royal. A conference on British Guiana independence, which was postponed from May to October 23 because of disturbances that took place in the territory on February 16–19, broke up on November 6 without reaching agreement.

Revised constitutional proposals for Northern Rhodesia were put forward by the British government on February 28. General elections held on October 30 resulted in no clear majority, and a caretaker government was formed until after elections for 11 unfilled seats on December 10. A proposed new constitution for Southern Rhodesia was to come into force after elections under new franchise arrangements. Dissolution of the Southern Rhodesian Parliament, preparatory to elections on December 14, was announced on October 27. In May and June, discussions on Nyasaland between Dr. Hastings K. Banda, leader of the Malawi Congress Party, the colonial secretary, and the governor of Nyasaland, in Zomba and London, resulted in an agreement to hold a constitutional conference. Meeting in London on November 12–24 under the chairmanship of the first secretary of state, R. A. Butler, the conference drew up a constitution for internal self-government of the protectorate.

A conference on further constitutional advance in Zanzibar, held on March 19–April 6, had to be adjourned in view of the failure of Zanzibari political leaders to agree. A conference on Kenya on February 14–April 6 resulted in agreement on a constitution providing for internal self-government. Both major political parties agreed to form a coalition government, with their leaders as ministers of state, and to continue discussions in Nairobi on the future constitution of the territory. Preindependence elections in Uganda, held on April 25, resulted in the victory of the Uganda People's Congress, and its leader, A. Milton Obote, became prime minister. Independence followed on October 9, and the duke of Kent, accompanied by the duchess, represented the queen at the independence celebrations in Uganda on October 7–17. Discussions between the British government and ministers of Aden and the Federation of South Arabia on July 23–August 16 resulted in agreement on the entry of Aden into the federation and on constitutional advances for the territory.

R. A. Butler, who became first secretary of state on July 13, had previously taken over responsibility for Central African affairs on March 15. Duncan Sandys, already secretary of state for Commonwealth relations, succeeded Reginald Maudling as secretary of state for the colonies on July 13.

(See also separate articles on the various countries and territories of the Commonwealth.)

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Director, Reference and Library Division, British Information Services.

COMMUNICATIONS. See Index entry.

COMMUNISM

During 1962, Moscow-aligned Communist governments ruled 16 countries: the Soviet Union, Estonia, Latvia, Lithuania, Poland, East Germany, Czechoslovakia, Rumania, Hungary, Bulgaria, Mongolian People's Republic, Communist China, North Korea, Tibet, North Vietnam, and Cuba. In addition, Yugoslavia and Albania were governed by Communists independent of Moscow's control. Altogether, about one third of the world's population in 1962 lived under Communist rule.

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Gathered in London on September 10 for Commonwealth conference are (from left) British Commonwealth Secretary Sandys, President Makarios of Cyprus, and Prime Ministers Menzies, Australia; Diefenbaker, Canada; and Nehru, India.

World Communist Strength.—In 1962, the 88 Communist and Communist-front labor and socialist parties of the world had a total membership of approximately 41.5 million, of whom about 36.4 million lived within the Soviet orbit of nations. The largest Communist parties were the Chinese, with 17 million members, and that of the Soviet Union, with 9.7 million. Outside the Soviet orbit, the biggest Communist parties were the Indonesian, with a membership of 1.75 million, and the Italian, with 1.5 million.

WORLD COMMUNIST STRENGTH, 1962

Country	Membership
Africa	
Algeria	5,000
Malagasy Republic	100
Morocco	1,500
Nigeria	500
South Africa	800
Sudan	2,100
Tunisia	1,000
Europe	
Albania	53,700
Austria	50,000
Belgium	11,000
Bulgaria	500,000
Cyprus	8,000
Czechoslovakia	1,600,000
Denmark	5,000
Finland	37,000
France	250,000
Germany, East	1,600,000
Germany, West	50,000
Greece	20,000
Hungary	478,000
Iceland	1,000
Ireland	150
Italy	1,500,000
Luxembourg	500
Netherlands	12,000
Norway	5,000
Poland	1,300,000
Portugal	2,000
Rumania	869,800
Spain	5,000
Sweden	25,000
Switzerland	6,000
United Kingdom	29,500
Yugoslavia	1,000,000
Far East	
Australia	6,000
Burma	5,000
Cambodia	50
Ceylon	4,000
China, Communist	17,000,000
India	177,500
Indonesia	1,750,000
Japan	100,000
Korea, North	1,311,600
Laos	100
Malaya	400
Mongolian People's Republic	43,900
Nepal	3,000
New Zealand	500
Pakistan	4,400
Philippines	2,400
Singapore	400
Vietnam, North	600,000
Vietnam, South	17,000
Middle East	
Iran	2,000
Iraq	500
Israel	2,000
Jordan	200
Lebanon	300
Syria	1,500
Turkey	300
United Arab Republic	1,000
North America	
Canada	4,000
Costa Rica	300
Cuba	27,000
El Salvador	500
Guadeloupe	1,000
Guatemala	1,100
Honduras	2,000
Martinique	700
Mexico	6,000
Nicaragua	300
Panama	150
United States	10,000
South America	
Argentina	50,000
Bolivia	5,000
Brazil	40,000
Chile	20,000
Colombia	8,000
Ecuador	3,000
Paraguay	5,000
Peru	7,000
Uruguay	3,000
Venezuela	20,000
USSR	
USSR	9,716,000

(Source: *World Strength of the Communist Party Organizations*, U.S. State Department, 1962).

Communist Dissension.—The dissension evident for some years within the Soviet orbit of nations continued in 1962. The most obvious quarrel was between the Soviet Union and Albania. As before, the two countries had no diplomatic relations, and no trade or cultural exchange with each other. The Soviet Union accused Albania of leader worship, rule by terror, one-man dictatorship, disobedience to Moscow, narrow nationalism, Stalin worship, and warlike policies. The Soviet press even stated that the Albanian leaders had joined with the international enemies of the Communist movement.

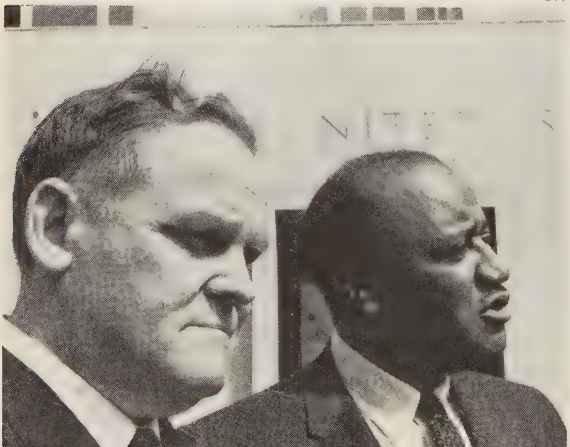
Albania retorted that it had not joined forces with Western capitalism, but that it was opposed to both capitalism and Communist revisionism. However, Albania severely criticized Soviet Premier Khrushchev as a despot who demanded slavish obedience from all Communist countries, as a vain man who encouraged hero-worship of himself while disparaging the past hero-worship of Stalin, as a revisionist subordinating Communist world revolution to disarmament, and for betraying Albania by courting archrevisionist Yugoslavia.

The Soviet-Albanian quarrel had considerable repercussion among the Communist parties of the world. Communist China openly supported Albania through credits, trade, technical aid, cultural exchanges, and pro-Albanian propaganda, but was careful to avoid any direct criticism of the Soviet Union. As a result, trade relations between the USSR and China were almost suspended early in 1962, but by spring trade was renewed at an undisclosed level apparently lower than before. A Soviet-Chinese trade agreement for 1962 was concluded in Peking on April 20, and in November a Chinese economic mission went to Moscow to conclude a trade agreement for 1963.

In this quarrel, most Communist parties in the Far East supported China and Albania. The Mongolian People's Republic and the eastern European satellites of the USSR took the side of the Soviet Union. However, both East German and Hungarian leaders publicly indicated that their countries need not fulfill all orders from Moscow. Yugoslavia and most western European Communist parties also backed the Soviet Union, but the Italian Communist Party stressed that it had some independence from Moscow. Latin American Communists generally supported the Soviet Union, as did the Communist Party of the United States, which purged a pro-Albanian group within the party. Meanwhile, Albania declared it would continue to follow Stalinist policies.

Gus Hall (l.), secretary general of the Communist Party of the United States, and Benjamin J. Davis, national secretary, meet newsmen in Washington on March 30 after pleading innocent in federal court to failure to register party.

UPI



In June the Council for Mutual Economic Assistance (an economic grouping of the USSR and its eastern European satellites) met in Moscow. Albania was not invited, but the Mongolian People's Republic was admitted to membership. Unlike previously, Communist China, North Vietnam, and North Korea sent no observers.

Eastern Europe.—The eastern European satellites of the Soviet Union contained more than 6 million Communists in 1962. During the year, alleged Stalinists were extensively purged in Hungary, and to a lesser extent in Rumania, Czechoslovakia, and Bulgaria. More than a million Communists resided in Albania and Yugoslavia. The Communist Party was illegal in Greece.

From July 29 to August 6, the 8th World Youth Festival of Peace and Friendship met in Helsinki, Finland, under the sponsorship of two Communist-front organizations: the World Federation of Democratic Youth, and the International Union of Students. The festival cost $25 million, and the attendance was 13,600—the lowest participation since these festivals began in 1947. Ghana and Nigeria refused to send official delegations, and part of the Ceylon delegation withdrew in the middle of the conference. Some delegates from Communist countries used the opportunity to defect to the West. Anti-Communist Finnish youths harassed the conference, whose pro-Soviet peace propaganda was somewhat upset by the resumption of Soviet nuclear tests before the conference ended.

Western Europe.—The largest concentration of Communists in the free world in 1962 was in western Europe, where nearly 2 million party members resided, with membership tending to decline. Communist parties were illegal in the German Federal Republic (West Germany), Portugal, and Spain. Western European Communists strongly opposed the European Economic Community (Common Market), the Franco dictatorship in Spain, the Salazar dictatorship in Portugal, the Secret Army Organization (OAS) in France and Algeria, the North Atlantic Treaty Organization (NATO), United States military and rocket bases in Europe, and West German rearmament, particularly the arming of West Germany with rockets and nuclear weapons.

Communist voting strength declined slightly in Italian local elections.

Far and Middle East.—There were nearly 1.9 million Communists in the free countries of the Far East in 1962, with party membership tending to increase. Communist parties were illegal in South Korea, Taiwan, South Vietnam, Thailand, Malaya, and the Philippines. Far Eastern Communists opposed United States military bases in Japan and American military aid to Laos, South Vietnam, Thailand, Taiwan, and Australia; the Southeast Asia Treaty Organization (SEATO); Dutch rule in West New Guinea; and the proposed Federation of Malaysia (Malaya, Singapore, and North Borneo). In July the Japanese Communist Party polled only about 3% of the total vote in elections to the upper house of the Japanese Parliament.

The Communist parties of the entire Middle East (including the Indian peninsula) in 1962 had about 200,000 members, with party membership declining. As an example of the extent of this decline, the Indian Communist Party alone had more than 200,000 members in 1960. Part of this decline is explained by the fact that Communist parties are illegal in Afghanistan, Bahrain, Iran, Iraq, Jordan, Kuwait, Lebanon, Pakistan, Saudi Arabia, Syria, Turkey, and Yemen. Another major factor was the Sino-Indian border dispute,

which split the Indian Communist Party into pro-Chinese and pro-Indian factions. Ajoy Kumar Ghosh, general secretary of the Indian Communist Party, died on Jan. 13, 1962; in April the party elected Shripad Amrit Dange as chairman and E. M. Sankaran Namboodiripad as general secretary.

Africa.—The entire African continent contained only about 12,000 Communists in 1962. Because of this numerical weakness the main Communist effort was to infiltrate non-Communist labor unions, student organizations, and liberal political parties. Communist parties were illegal in Ethiopia, Libya, Morocco, the Portuguese colonies, South Africa, the Spanish colonies, Sudan, and the United Arab Republic. African Communists opposed Western economic holdings in Africa, Portuguese and Spanish colonies there, United States technical aid to African countries, French rule in Algeria, and (after Algerian independence) the threatened civil war in Algeria.

Latin America.—There were more than 200,000 Communists in Latin America in 1962, with membership tending to increase, particularly in Cuba. The communization of Cuba continued in 1962, with the trade unions, armed forces, and governmental bureaucracy all directed by fanatic Communists, and with the entire Cuban population instructed in the concepts of Marxism-Leninism. Communist parties were illegal in Argentina, Brazil, Costa Rica, the Dominican Republic, El Salvador, Guatemala, Haiti, Honduras, Nicaragua, Panama, and Paraguay. On January 4, Peru legalized its Communist Party. On May 10, Venezuela outlawed its Communist Party, after suppressing a Communist-led rebellion. Another Communist revolt in Venezuela occurred in October but failed. Latin American Communists in 1962 generally concentrated their propaganda against the United States, particularly opposing the Alliance for Progress, United States economic holdings and political influence in Latin America, and United States actions against Cuba.

Canada.—The small Canadian Communist Party in 1962 was mostly urban, and consisted mainly of industrial workers, office employees, and students in Ontario. The party was active chiefly in mining, fishing, and electrical trade unions. Canadian Communists mainly opposed United States political, military, and economic influence in Canada.

United States.—The small Communist Party of the United States in 1962 claimed a membership of 10,000, and concentrated much of its propaganda against the John Birch Society, defensive military preparations, and the Central Intelligence Agency. The State Department on January 12 issued new regulations forbidding members of the Communist Party to receive United States passports. Almost simultaneously, the State Department revoked the passports of several Communist leaders.

On March 6, Philip B. Bart, the national organizational secretary of the Communist Party, was sentenced to six months' imprisonment by the U.S. District Court in Washington, D.C., for refusing to answer questions from a federal grand jury as to why the Communist Party did not register with the Justice Department under the Internal Security Act of 1950, in accord with a decision of the Supreme Court on June 5, 1961. On March 9, 1962, James E. Jackson, editor of the semiweekly newspaper *The Worker*, received the same sentence from the same court for refusing to give data to a federal grand jury concerning his newspaper's connections with the Communist Party. However, the decisions of the district court were reversed by the U.S. Court of Appeals in Washington, D.C., which freed Bart on June 7, and Jackson on June 28.

On March 15, Gus Hall, general secretary of the party, and Benjamin J. Davis, the party's national secretary, were arrested in New York by the Justice Department for refusing to register the party with the department in accord with the Internal Security Act of 1950. Such registration would require the party to reveal its membership and sources of financial support. The party was convicted of the charges and fined $120,000 by a federal court in Washington on December 11. On May 31, the Justice Department requested the U.S. Subversive Activities Control Board to order ten other members of the National Committee of the Communist Party to register with the department. On March 19 the government sued the Communist Party for $500,000 in delinquent income taxes (including interest) for the year 1951, claiming that the party had legally lost its status as a normal political party entitled to tax exemptions.

In a precedent-making decision the U.S. District Court in San Francisco on May 4 sentenced Archie Brown, an officer of the International Longshoremen's and Warehousemen's Union, to six months' imprisonment for violating the Landrum-Griffin Labor Act of 1959 forbidding Communists to serve as union officials.

J. Edgar Hoover, the director of the Federal Bureau of Investigation, on October 1 published a book entitled *A Study of Communism*, revealing much data on Communist subversive activities in the United States. The states of Florida and Louisiana have required compulsory courses about communism in high schools. Such courses were widespread in several other states, and many more states were in the process of introducing them.

(For further references, see articles on the countries named herein, and the Index entry, *Communism.*)

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COMORO ISLANDS

Comprising four main islands (Grand Comore, Mayotte, Anjouan, and Mohéli) situated in the Indian Ocean off the coast of Africa, the Comoro Islands are a French overseas territory with an area of 838 square miles, and a population (1961 est.) of 185,000. Most of the inhabitants are Muslims of Arab-African-Malagasy descent. Dzaoudzi (pop., 3,000), on Mayotte, is the capital. Legislative power is vested in a 31-member Territorial Assembly elected by universal suffrage. Executive power is exercised by a Government Council and a French-appointed high commissioner (Louis Saget). On Dec. 12, 1961, the French Parliament approved complete internal autonomy for the Comoros. In 1960–61 there were 48 primary schools (with 4,377 pupils), and 2 secondary schools (177 pupils).

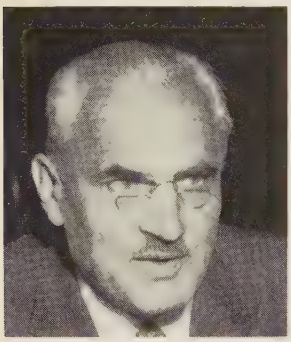
The economy is based primarily on subsistence agriculture. In 1961, exports totaled 686 million francs CFA; imports, 909 million (246.85 francs CFA equal U.S.$1). Major exports (in million francs CFA, 1961): vanilla, 265; perfume oils, 232; copra, 123; and sisal, 31. Major imports are rice and other foodstuffs. Principal trading partners are France and the Malagasy Republic. The Comoro Islands have a road network aggregating 435 miles, of which 370 miles are all-weather roads. Dzaoudzi is the principal port. There are four airports. Air France provides interisland service and overseas flights to France.

COMPTON, Arthur Holly

U.S. physicist and educator: b. Wooster, Ohio, Sept. 10, 1892; d. Berkeley, Calif., March 15, 1962.

Throughout his distinguished career as a scientist who made many contributions to nuclear physics, Arthur H. Compton retained his concern for education and for human welfare.

Compton was the youngest son of a Presbyterian minister who was dean of the College of Wooster. His older brothers Karl and Wilson became presidents of Massachusetts Institute of Technology and Washington State College, respectively. Compton received his bachelor's degree from Wooster (1913) and did graduate work in physics at Princeton University, where he received his Ph.D. in 1916. During World War I, after teaching physics for a short time at the University of Minnesota, he was a research engineer for the Westinghouse Lamp Company and helped develop aircraft instruments for the Signal Corps. In 1919–20 he studied physics at the Cavendish



Arthur Compton (1892–1962)

UPI

Laboratory at Cambridge University under the atomic scientist Ernest Rutherford.

After returning to the United States, he became head of the Physics Department at Washington University in St. Louis (1920), then professor of physics at the University of Chicago (1923) and dean of its Division of Physical Science (1940). His brilliance in physical experiment and theory was demonstrated with his discovery of the variation in wavelength of X-rays when scattered, and his interpretation of this Compton effect, as it came to be known, in terms of photons of radiation led to advances in quantum physics. For this work he was awarded the Nobel Prize in physics in 1927, sharing it with Charles T. R. Wilson of Scotland, who had invented the Wilson cloud chamber.

Compton and his associates also discovered the total reflection and polarization of X-rays, and he obtained the first X-ray spectra with finely ruled diffraction gratings. As director of the world survey of the mysterious cosmic rays (1931–34), he determined their variation with altitude above, and latitude on, the earth, and went on to discover their particle composition and tremendous energies. Early in World War II he became involved in the Manhattan Project on nuclear fission for bombs and, as head of the project's Metallurgical Laboratory at the University of Chicago, directed the government's research in plutonium. He initiated and directed the development of the first nuclear chain reaction and the first quantity production of plutonium.

Compton subsequently served as chancellor of Washington University from 1945 to 1953, and then as distinguished service professor of natural philosophy until 1961, when he became professor-at-large in order to divide his services among Washington and California (at Berkeley) universities, and the College of Wooster. Typically, while he wrote numerous scientific articles and the technical *X-Rays in Theory and Experiment* (1926; 2d ed. with S. K. Allison, 1935), he also contributed such nontechnical books as *The Freedom of Man* (1935); *Human Meaning of Science* (1940); and *Atomic Quest; A Personal Narrative* (1956).

CONFECTIONERY

United States sales of confectionery and competitive chocolate products in 1961 totaled $1,232 million in value, according to the U.S. Bureau of the Census. This figure was 2% higher than the 1960 total of $1,204 million. Data in the accompanying table represent more than 92% of manufacturers' total sales in 1961.

CONFECTIONERY AND CHOCOLATE PRODUCTS: SALES BY TYPES OF PRODUCTS, 1961[1]

Type of product	Pounds (1,000)	Value ($1,000)
Package goods:		
$1.00 or more per lb.	115,392	$ 116,145
$0.50 to $0.99 per lb.	266,303	124,018
Less than $0.50 per lb.	695,106	188,975
Bar goods	1,033,997	420,997
Bulk goods	637,252	186,448
5¢ and 10¢ specialties	272,980	114,850
Total	3,021,030	$1,151,433

[1] Excluding manufacturer-retailers' sales.

Sales in 1962 through September were estimated at $874,586,000, 2% above the 1961 level.

CONGO, Republic of (Brazzaville)

The Republic of Congo[1] (formerly the French overseas territory of Middle Congo in French Equatorial Africa) is an independent member of the French Community (q.v.), situated on the Atlantic coast of west-central Africa. Area (est.): 132,000 square miles; population (1960 est.): 900,000, predominantly Bantu and including 10,600 Europeans (1959 est.), mainly French. Chief cities: Brazzaville, the capital (1961 est. pop., 133,700); and Pointe-Noire (1958 est. pop., 57,700), an important seaport.

Government.—Independence was declared on Aug. 15, 1960. The premier and his cabinet are responsible to a National Assembly of 61 members elected by universal suffrage for 5-year terms. Party seating in the Assembly (following national elections of June 14, 1959): Democratic Union for the Defense of African Interests, 51 seats; African Socialist Movement, 10. Fulbert Youlou, leader of the victorious party, was chosen as president by the National Assembly in 1959, and was re-elected to a 5-year term by popular vote in 1961 with the support of all main parties. He is also premier, minister of defense, and minister of interior. Congo is a member of the Union of Central African Republics.

Education and Religion.—About 20% of the population was literate in 1961. School enrollment (1961), 133,366, including: primary, 125,000 (about 80% of the elementary school-age population); secondary, 3,061; teacher-training, 3,274; secondary technical, 560; vocational, 1,250; university, 221. The Congolese are mostly animists, although Christianity has made many converts.

Finance.—The 1961 budget totaled about 6 billion francs CFA, or $24.5 million (246.85 francs CFA equal U.S.$1). Government personnel costs accounted for nearly half of total expenditure; less than 7% ($1.5 million) was allocated for economic development, which is heavily dependent on aid from France ($12.3 million in 1961) and the Common Market Development Fund ($6.6 million). Taxes and duties on imports supplied nearly half of all revenues.

Transportation and Communications.—The 318-mile Congo-Ocean Railroad from the river port of Brazzaville to Pointe-Noire is the only line in former French Equatorial Africa, but a connecting railway and cable line to the manganese and uranium mines near Franceville, Gabon, was completed in October 1962. There are 4,340 miles of per-

[1] For purposes of distinction, this country is referred to herein as the *Republic of Congo*, whereas the former Belgian Congo, now an independent republic, is called the *Republic of the Congo*. Both countries are often referred to simply as Congo or the Congo.

MAP BY DONALD T. PITCHER; PHOTOS: UPI, WIDE WORLD

Leading figures in the continuing civil strife in the Republic of the Congo in 1962 were Moise Tshombe (l.), president of secessionist Katanga Province, and Cyrille Adoula, premier of the central government, shown here meeting President Kennedy in Washington on February 5.

manent roads (238 miles hard-surfaced). The chief airports are at Brazzaville and Pointe-Noire. Radio Brazzaville is a major world broadcasting center; 10,000 radio receivers were licensed in 1959.

Agriculture.—Agriculture is the mainstay of the economy. Subsistence crops (manioc, fruits, vegetables) and cash crops for local use (sugar, rice for fodder) comprise 75% of total production. Chief agricultural exports (in order of value with 1960 metric tonnage): palm kernels (6,515); palm oil (3,533); peanuts, including shelled nuts (2,960); peanut oil (902); and cacao (521).

Industry.—The wood- and sugar-processing industries are important, but total industrial production accounts for only 11% of the national product. Crude oil, produced since June 1960 (102,900 metric tons exported in 1961) has overtaken lead (6,000 metric tons) as the principal mineral export; lead production declined 22% from 1960. The Kouilou River dam and hydroelectric plant, on which construction began in 1961 with French aid, will eventually supply 820,000 kw. of electricity, permitting development of metallurgical and chemical industries in the Pointe-Noire area.

Foreign Trade.—Exports, 1961: 4,841 million francs CFA (up 10% from 1960); imports: 19,518 million (up 12%). These figures include an unknown value of goods to and from other members of the Central African customs union using Congolese ports, but exclude trade between Congo and the union. Lumber sales provided about two thirds of total export value. France accounts for nearly 70% of the Congo's trade.

Events, 1962.—Vice President Jacques Opangault, leader of the opposition African Socialist Movement in the 1959 elections, resigned in April, charging his exclusion from power in President Youlou's "national" government, which he had joined in August 1960. Opangault remained in the cabinet, however, as minister of public works, transportation, and tourism.

President Youlou proclaimed a state of emergency on September 24 after mobs of Congolese had killed several Gabonese citizens and injured 40 others in Pointe-Noire. The rioting broke out after mobs in Libreville, Gabon, had mistreated Congolese citizens and the Gabonese government had expelled all Congolese from the country. The violence stemmed from the disputed results of a soccer game between teams representing the two nations.

R.N.M.

CONGO, REPUBLIC OF THE (LÉOPOLDVILLE)

The Republic of the Congo (formerly the Belgian Congo before becoming independent on June 30, 1960) is situated in central equatorial Africa, with a narrow outlet on Africa's west coast. The country's estimated area of 905,370 square miles includes the vast central basin of the Congo River. The population of 14,450,000 (est. June 30, 1961) comprises mostly Negroes who speak a Bantu language, and about 45,000 Europeans (est. 1960), mainly Belgian. About 77% of the population lives in tribal communities, and the remainder in commercial and industrial centers. Principal cities (with estimated 1959 populations): Léopoldville (390,000), the federal capital and principal commercial center; Elisabethville (183,000), capital of Katanga Province in the southeast; and Stanleyville (80,000), in the northeast.

Government.—Under the *loi fondamentale*, or basic law, which took effect on June 30, 1960, the central government of the republic is headed by a titular president and is governed by a premier and cabinet responsible to a bicameral Parliament. The latter consists of a Chamber of Deputies of 137 members elected directly by universal male suffrage, and a Senate of 84 members chosen by provincial assemblies. Party seating in the Chamber of Deputies (following national elections in May 1960): the left-wing Congolese National Movement of Patrice Lumumba, 41 seats; the pro-Belgian National Progress Party, 22; the leftist African Solidarity Party, 13; and the conservative Association of the Bakongo (ABAKO), 12. Joseph Kasavubu, leader of ABAKO, has served as president of the republic since its founding. Cyrille Adoula, a moderate and independent nationalist leader, was elected by Parliament as premier of a coalition cabinet on Aug. 2, 1961.

Operation of the *loi fondamentale* has been impeded since independence by the temporary secession from the central government of Katanga, South Kasai, and Orientale provinces. As the result of a breakdown in public order following the chaotic events immediately after proclamation of the republic, a United Nations Force (aggregating 15,288 troops as of Sept. 1, 1962) has been stationed in the Congo since July 1960 to preserve peace and promote political stability. Robert K. A. Gardiner of Ghana was named chief of the UN Operation in the Congo on Jan. 26, 1962; he succeeded Sture C. Linner of Sweden, who had resigned.

Education and Religion.—Educational enrollment, 1959: 1,500,564 (about 30% of the school-age population). Number of schools (with enrollments, 1959): 15,970 primary (1,460,753); 107 secondary (13,858); 61 technical (6,480); 217 teacher-training (18,991); and 2 universities (482). Institutions of higher learning are the State University at Elisabethville, and the University of Lovanium near Léopoldville. In early 1962 some 853 Congolese students were studying at higher institutions in Belgium. Christian mission schools form an important part of the educational system. Most Congolese, particularly among the tribal population, are animists. Roman Catholics are estimated at 4.5 million; Protestants, 825,000; Muslims, 150,000.

Finance.—The federal budget for the calendar year 1962 (the first formal budget since independence) estimated total revenues at $150 million, and expenditures at $382 million. The budget deficit of $232 million was financed partly by advances from the United Nations and the Congolese Central Bank. United Nations expenditure in the Congo totaled $135 million in 1961. United States economic aid to the Congo since independence amounted to about $83 million by mid-1962. Gold and foreign exchange holdings of the Central Bank: $72 million at the end of 1960 ($87 million at the end of 1959). The Congolese franc equals U.S.$0.02 at the official rate, but since mid-1960 it has fluctuated widely in value on the free market.

Transportation and Communications.—The transportation system is largely inadequate to the needs of the vast country. Transport networks (miles, 1958 est.): public railways, 3,200; main roads, 22,000; navigable waterways (the Congo River and its tributaries), 8,540. The chief seaport is Matadi, situated at the mouth of the Congo River. There are five international airports and numerous secondary and local airfields. Sabena provides external air service to other points in Africa and to Europe; local companies provide internal services. Other data for 1959: passenger cars, 38,100; commercial vehicles, 22,400; telephones, 28,278 (1960); radio receiver licenses, 35,000.

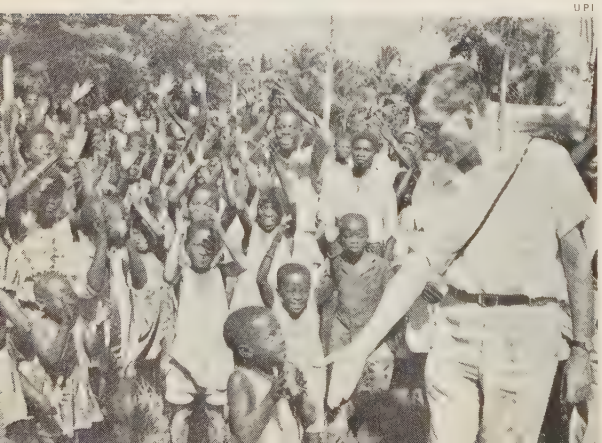
Agriculture.—About three fourths of the population engages in agriculture, hunting, and fishing. Total national income was valued at 48,185 million francs in 1959. Chief subsistence crops are manioc, maize, sweet potatoes, rice, sorghum, peanuts, bananas, and other food staples. Principal cash crops (with estimated outputs in the 1961–62 crop year): coffee (750,000 bags of 132.3 pounds each); cotton (90,000 bales of 480 pounds each); palm oil (176,368 short tons exported); and rubber (38,000 metric tons exported). The country's vast tropical forests yield hardwoods, cinchona bark, ivory, derris, and skins.

Minerals and Manufactures.—The Congo is an important producer of minerals, deposits of which are concentrated largely in Katanga Province. Chief minerals (metric tons, 1961): copper, 288,000 (down 4% from 1960); zinc, 57,000 (up 7%); tin, 2,400 (down 33%); cobalt, 9,300 short tons (up 2%); manganese, 390,000 (1960); and industrial diamonds, 18 million metric carats. Other minerals include tungsten, cadmium, radium, uranium oxide, and gold. Principal manufactures include processed foods, building materials, chemicals, soap, textiles, footwear, and glassware. Electric power production in 1958 totaled 2,519 million kw.-hr.

Foreign Trade.—Congolese exports, 1961: 5,912 million francs; imports: 6,514 million (figures exclude trade of Katanga, Kivu, Orientale, and South Kasai provinces; imports include 404 million francs for United Nations account). Chief exports are copper, coffee, manganese, cotton, and palm oil; imports are mainly foodstuffs, steel products, machinery, and other manufactures. The Congo's chief trading partners are Belgium, the United States, Great Britain, and West Germany.

Events, 1962.—For the first time since independence the Congo underwent an extended period of peace and stability in the year 1962. The chaotic and violent events that had plagued the nation in 1960 and 1961 continued to occur briefly in January 1962, but after that the country was relatively quiescent except for severe fighting between United Nations and Katangese troops in late December. During the year the Congolese central government, with the aid of the United Nations Force in the Congo, made progress in its efforts to end the secession of Katanga Province and to hold other provinces within its jurisdiction.

Congolese children in the remote village of Shabunda greet Anthony Gilpin, chief of a United Nations air mission to the Congo which provided medical care, administration, assistance with public works projects, and various supplies.



In January the central government of Premier Cyrille Adoula successfully thwarted the threatened secession of Orientale Province. The federal Chamber of Deputies on January 8 directed Antoine Gizenga, federal deputy premier and leftist political leader in Stanleyville, to return to Léopoldville and answer accusations of alleged secessionist activities. Gizenga's forces attempted to seize military control of Stanleyville on January 13–14, but were defeated by troops loyal to the Léopoldville regime. The central government immediately censured Gizenga and dismissed him as deputy premier. The UN Force placed Gizenga under "protective custody" and on January 20 flew him to Léopoldville, where he was arrested and imprisoned by the central government. The leftist regime which Gizenga and the late ex-Premier Patrice Lumumba had established in Orientale Province ceased to function, principally because of the apparent lack of public support.

It was revealed on January 17 that mutinous Congolese troops supporting Gizenga had murdered 22 European Roman Catholic missionaries at Kongolo in northern Katanga on January 1. The alleged murderers were captured later in the month by central government troops. Further incidents of violence continued to occur sporadically in Katanga. United Nations troops and Katanga forces exchanged gunfire at Kaminaville on March 5; Katangese women, at the instigation of the Tshombe government, on July 19 stormed a United Nations roadblock at Elisabethville; and on August 17, federal forces and Katanga troops clashed near Albertville. At the end of the year the UN Force decisively defeated the Katanga forces in pitched battles in Elisabethville and at other key points in Katanga.

Early in the year the Adoula government moved to end the secession (since July 11, 1960) of Katanga Province by implementing the Kitona agreement (Dec. 21, 1961), signed by Premier Adoula and Katanga President Moise Tshombe, to reintegrate the province within a unified Congo. Tshombe, the conservative and erratic leader of the secessionist province, continued to hedge on effecting the principal provision of the agreement, acceptance of the *loi fondamentale* or provisional constitution, but he did agree in late January to observe another vital point of the agreement, the expulsion of foreign mercenaries from Katanga's armed forces. Nearly all (about 300) of the mercenaries were reportedly expelled from Katanga by mid-February.

After the Katanga Assembly conditionally approved on February 15 the ending of secession provided the province retained a large measure of autonomy, Adoula and Tshombe conferred in Léopoldville from March 18 to April 17, and again from May 22 to June 26. They failed to agree on how reunification should be brought about, although an agreement to integrate Katanga's armed forces within the Congolese Army was announced on May 30. The leaders also agreed on the composition of separate commissions to prepare plans for reintegration in military, monetary, and economic affairs. It was apparent from reports on the negotiations, however, that Tshombe had not completely abandoned his hopes of retaining Katanga's independence, while Adoula was just as adamant in demanding Katanga's surrender of full sovereignty to the Congolese central government.

Premier Adoula sought and received the support of other countries for his policy of reintegra-

tion when he visited the United States in early February. In an address to the UN General Assembly in New York on February 2, he appealed for more military aid in order that his government might have the means to end Katanga's succession. Adoula conferred with President Kennedy in Washington on February 5 and reportedly was assured that the United States would continue to support his efforts to unify the Congo. He also discussed Congolese problems with U Thant, acting secretary general of the United Nations, and with Belgian and Soviet officials during his stay in New York.

Adoula strengthened his control of the government by dismissing extremist ministers of both left and right, and by nominating moderate supporters to important posts in a cabinet reshuffle announced on July 11. He reduced the number of ministers in the unwieldy 43-member cabinet by nearly half, and the change was approved by the Chamber of Deputies on July 16 after extended debate. The Adoula government narrowly survived a vote of "no confidence" in the Chamber on November 28. An opposition motion to topple the government fell only 16 votes short of the required two-thirds majority for adoption. The close vote indicated that Premier Adoula would have difficulty in obtaining future legislative support.

The central government moved in early August to force reunification by putting economic pressure on Katanga. The Léopoldville regime on August 7 banned unauthorized air travel to Katanga, cut telecommunications between the province and the outside world, and warned foreign firms in the country that they would no longer be "permitted" to support Katanga's secession and still do business in other parts of the Congo.

In the same month UN Acting Secretary General U Thant appealed to United Nations members to consider the use of economic sanctions against Katanga. He suggested that Union Minière du Haut-Katanga, the European-controlled mining company which produces three fourths of the Congo's minerals (valued at $220 million in 1961) and provides important revenues to Katanga (an estimated $40 million in 1961), should pay no more taxes to the province until reunification of the Congo was achieved. The use of economic pressures was supported by the United States and Belgium. On November 27 the two nations warned that "severe economic measures" against Katanga would be taken unless progress on reunification was achieved shortly.

A plan to end Katanga's secession was proposed by U Thant on August 24. The plan called for Katanga and the federal government to share equally all provincial revenues, and to reunify the Katangese and Congolese armed forces. These proposals were incorporated in a new federal constitution prepared by United Nations legal experts and introduced by Premier Adoula on October 16 to replace the country's *loi fondamentale* of 1960. The new constitution would retain the present structure of government; would place the Congo's armed forces, foreign affairs, and financial policy firmly under control of the central government; and would permit considerable autonomy by the provincial government in matters of education, legal systems, police powers, taxation, and other local affairs. It would allow the central government to assume control of a province in an emergency, however.

Although Tshombe at first welcomed U Thant's plan as "the basis of an acceptable settlement" for reunification, he later declared that the plan was but a ruse for an attempt to overthrow his regime. In mid-September he charged that the central government, assisted by the UN Force, was preparing to launch a "general attack" in northern Katanga. United Nations authorities denied the allegations. Robert K. A. Gardiner, chief of the UN Operation in the Congo, reported on October 9 that the Katanga government had greatly increased its air power and had recalled some 300 foreign mercenaries.

The heaviest fighting in the Congo in more than a year took place between the UN Force and Katanga forces in Elisabethville on December 28. In response to alleged attacks by Katangese gendarmes, United Nations troops seized control of the city by the following day, and then captured Kamina, Jadotville, and other key posts within the week. U Thant on December 31 issued an ultimatum giving Tshombe two weeks to negotiate Katanga's reunification. Tshombe at first fled to Southern Rhodesia, then returned to his last remaining stronghold of Kolwezi, where on Jan. 15, 1963, he capitulated and proclaimed that "Katanga's secession is ended."

President Joseph Kasavubu on August 16 promulgated laws creating 16 new provinces out of the five provinces under control of the central government. Territories of the new provinces were designated along tribal lines. The effect of the new alignment was to ease acute tribal tensions where hostile tribes were located in the same province, but it also indicated the failure of the central government to create among the people a strong national consciousness to replace their deep tribal loyalties. The names of the new provinces were as follows: Congo Central, Kwilu, Kwango, and Maindombe (all formerly comprising Léo-

(*Left*) Former Congolese Deputy Premier Antoine Gizenga (in dark suit, center) is escorted from United Nations plane in Léopoldville on January 20 to be turned over to the central government after a brief revolt in Orientale Province. (*Right*) Léopoldville policemen subdue a participant in demonstrations against the United States and Premier Adoula on November 27.

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poldville Province); Lomami, Luluabourg, Sankuru, South Kasai, and United Kasai (formerly Kasai Province); Cuvette Central and Ubangi (formerly Equateur); Kilbali, Ituri, and Uele (formerly Orientale); and Maniema and North Kivu (formerly Kivu). In addition, Parliament in early July approved the creation of the new province of North Katanga.

The economy of the Congo continued to be adversely affected in 1962 by Katanga's secession and by the aftermath of the chaotic political conditions of previous years. Unemployment was widespread and inflation was rampant. The central government operated with large budget deficits, and administrative services and transportation facilities remained impaired. Difficulties in importing raw materials and capital equipment hampered industrial production, and agricultural imports declined. Mineral production was continued at satisfactory levels. Although economic recovery was slow in 1962, the Congo has an excellent economic foundation for future expansion. The possible return of Katanga's tax revenues and foreign exchange holdings to the central government would improve considerably the country's budgetary position and greatly reduce its current balance of payments deficit. In a sense, therefore, economic developments in the Congo awaited the outcome of political events.

W. R. F.

CONGREGATIONAL CHRISTIAN CHURCHES. See UNITED CHURCH OF CHRIST.

CONGRESS, Library of. See Index entry.

CONGRESS, U.S. For a list of members of Congress, see UNITED STATES CONGRESS. For a discussion of legislation, see UNITED STATES and articles on specific subjects, such as HOUSING, TAXATION, etc.

CONNECTICUT

A New England state of the United States, Connecticut ranks 48th among the states in area (land, 4,899 square miles; inland water, 110) and 25th in population (2,597,000 on July 1, 1962, a 2.4% increase from the 1960 census figure of 2,535,234). Cities and towns (T) with populations above 20,000 in 1960:

Bridgeport	156,748	New Britain	82,201
Bristol	45,499	New Haven	152,048
Danbury T.	39,382	New London	34,182
Danbury[1]	22,928	Norwalk	67,775
E. Hartford T.	43,977	Norwich	38,506
E. Haven T.	21,388	Southington T.	22,797
Enfield T.	31,464	Stamford	92,713
Fairfield T.	46,183	Stratford T.	45,012
Greenwich T.	53,793	Torrington	30,045
Groton T.	29,937	Trumbull T.	20,379
Hamden T.	41,056	Wallingford T.	29,920
Hartford (*capital*)	162,178	Waterbury	107,130
Manchester T.	42,102	W. Hartford T.	62,382
Meriden	51,850	W. Haven T.	43,002
Middletown	33,250	Westport T.	20,955
Milford	41,662	Wethersfield T.	20,561

[1] Part of Danbury Town.

Government.—Chief executive and judicial officers in 1962 included John N. Dempsey (Democrat), governor, serving a four-year term; Anthony J. Armentano, lieutenant governor; Ella T. Grasso, secretary of state; Donald J. Irwin, treasurer; Raymond S. Thatcher, comptroller; Albert L. Coles, attorney general; William J. Sanders, commissioner of education; and Raymond E. Baldwin, chief justice of the 5-member Supreme Court.

The Connecticut General Assembly, which convenes in odd-numbered years, comprised 24 Democrats and 12 Republicans in the Senate in 1962 and 178 Republicans and 116 Democrats in the House of Representatives.

Finance.—In the 1961 fiscal year, revenue of $445,595,828 included $268,102,428 from state taxes and $60,684,446 in federal funds. Chief tax yields were the 3% general sales tax ($79,273,432) and taxes on corporate incomes ($30,771,132) and motor fuels ($48,406,530). Spending of $501,498,863 included $104,470,674 for education, $219,587,336 for health, welfare, and safety, and $116,978,206 for highways.

Education.—In the 1960–61 school year, public elementary schools staffed by 11,448 teachers enrolled 344,368 pupils; junior high schools with 2,223 teachers enrolled 47,403; senior high schools with 5,107 teachers enrolled 107,863; and private and parochial schools with 3,923 teachers enrolled 103,814. College enrollment (fall 1961) totaled 55,319 in 35 institutions, including 29 senior colleges and universities and 6 junior colleges.

Estimated public school spending in the 1961–62 school year was $276,450,000, including current expenditures of $226,800,000 ($497.36 per pupil) and capital outlays of $39 million. Revenue of $305.5 million was drawn chiefly from state funds ($98 million) and local districts ($168.5 million). Teachers' salaries averaged $6,150 (high school, $6,350; elementary, $5,750). Actual spending for higher education (fiscal year 1961) totaled $27,574,000.

Public Assistance.—In the 1961 fiscal year, public assistance payments to a monthly average of 23,964 persons totaled $42,925,707. This amount included $19,212,442 for the aged and $16,013,073 for dependent children.

Transportation and Communications.—With 85 miles of highway construction and reconstruction completed in 1961, *highways and roads* on Dec. 31, 1961, totaled 16,907 miles (15,606 hard-surfaced). These served 535,271 *motor vehicles* (as registered on June 30, 1962), including 324,351 automobiles. Operating in the state in 1961 were 3 *railroads* (using 820.29 line miles of track) and (1962) 7 regularly scheduled *airlines* and 1 helicopter airline. There were (1962) 28 commercial and municipal *airports* and 9 heliports.

Communications media included (1962) 33 AM and 11 FM *radio stations;* 2 VHF and 5 UHF *television stations;* 26 daily *newspapers* (1961 circulation, 806,805) and 91 other newspapers; and (Jan. 1, 1962) 367,100 business and 983,400 residential *telephones.*

Labor Force.—The state's labor force in June 1962 included 18,600 agricultural workers. Nonagricultural employment totaled 949,660, compared with 929,110 a year earlier and an average of 922,050 for the calendar year 1961. Of nonfarm employees, 43.4% were in manufacturing, 17.9% in trade, and 12.7% in service industries. Unemployment in June 1962 was down to 58,300 from the 77,100 reported for the previous June.

Manufacturing.—Manufacturing engaged 408,966 workers in 1960, including 295,019 in production, and provided a payroll of $2,233,974,000. Adjusted value added by manufacture totaled $3,779,137,000.

LEADING CONNECTICUT MANUFACTURES, 1960

Industry group	Total employees	Total payroll (thousands of dollars)	Adjusted value added by mfr.[1] (thousands of dollars)
Transportation equipment	70,867	$457,651	$663,985
Nonelectrical machinery	60,533	347,556	601,640
Electrical machinery	40,388	203,979	393,638
Fabricated metals	45,003	232,217	385,783
Primary metals	25,730	148,811	274,946
Chemicals and products	10,110	60,453	181,644
Rubber and plastics products	15,904	82,062	152,951
Food and kindred products	14,208	69,692	150,982
Instruments and related products	16,644	89,871	149,913
Printing and publishing	15,962	93,322	142,607

[1] For definition, see footnote 1 in the article *Industrial Production.* (Source: *1960 Annual Survey of Manufactures.*)

Mining.—In 1961, Connecticut ranked 45th among the states in the value of its mineral output, with 0.09% of the national total. The value of $16,501,000 (topping by 3% the record set in 1957) was attributed mainly to increased construction. Leading minerals were stone (valued at $8,616,000) and sand and gravel ($6,633,000).

Agriculture.—Cash farm income for the first nine months of 1962 (excluding government payments) totaled $101,921,000, compared with

CONNECTICUT CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Apples (1,000 bu.)	1,285	1,450	1,220
Corn for grain (1,000 bu.)	210	132	140
Potatoes (1,000 cwt.)	1,392	1,495	1,472
Tobacco (1,000 lb.)	18,528	11,422	11,036
Tomatoes (1,000 cwt.)	34	182	188

(Source: U.S. Department of Agriculture.)

$106,142,000 for the corresponding period of 1961. For the full year 1961 income comprised $93,903,000 from livestock, $47,998,000 from crops, and $590,000 in government payments. Principal income sources in 1961 were wholesale milk, $38,080,000; eggs, $26,952,000; and tobacco, $18,382,000.

Events, 1962.—The November elections resulted in a complete Democratic sweep of all state offices. John N. Dempsey was reelected governor by a margin of 66,175 votes over his Republican opponent, John Alsop. Incumbents Ella T. Grasso, secretary of state, Raymond S. Thatcher, comptroller, and Albert L. Coles, attorney general, were reelected, with the other two elective offices being won by Samuel J. Tedesco, lieutenant governor, and Gerald A. Lamb, treasurer.

Democrat Abraham A. Ribicoff, former governor and United States secretary of health, education, and welfare, defeated Horace Seely-Brown for the U.S. Senate seat of retiring Prescott Bush, Republican. Five of the six seats in the U.S. House of Representatives were won by Democrats. In the state Senate the Democrats retained control with 23 seats against 13 for the Republicans; the House of Representatives remained strongly Republican, with 188 Republican to 106 Democratic seats.

All five state constitutional amendments were approved by the voters. These provided for: (1) voting by absentee ballot on future constitutional amendments; (2) the pairing of governor and lieutenant governor on each party ticket so that they will be voted on as a unit; (3) the elimination of re-registering when a voter moves to another town within the state; (4) the transfer of authority for the method of new voter registration from local elector boards to the General Assembly; and (5) *in absentia* voter registration of armed forces members and those in related services.

Two important committees were appointed by Governor Dempsey early in the year—one to study the feasibility of establishing a major research center, and the other to survey library services at all levels in the state. In August a 107-acre site was selected in Farmington for the University of Connecticut's new medical-dental school, and in October construction began on its law school at the new 58-acre location in West Hartford. Two leading institutions of higher learning welcomed new presidents: Connecticut College inaugurated Charles K. Shain at New London on October 19, and the University of Connecticut inaugurated Homer D. Babbidge, Jr., at Storrs on October 20.

The economy of Connecticut continued strong during the year with all major business indicators, except construction activity, at or near all-time highs. The manufacturing output index registered the highest August level since 1956 and the third highest on record. Bank debits, the measure of general business, rose in August to make it the second highest month on record, exceeded only by the previous May.

An atomic plant for electric power principally for Connecticut was to be built at Haddam Neck, to be owned and operated jointly by 12 New England utility companies. Construction began in the fall to double the research facilities of the state's largest employer, United Aircraft. A 7,000-ton Polaris submarine, the *Alexander Hamilton*, was launched at Groton, August 18.

Over 50 urban renewal projects were in various stages of activity, with Hartford and New Haven leading in the redevelopment programs. Hartford won the All America City Award in 1962 for its Constitution Plaza project.

With appropriate pomp and ceremony, the newly completed St. Joseph's Cathedral at Hartford was dedicated on May 23. It replaces an edifice that was completely destroyed by fire on the last day of 1956. Two major events occurred in the television field in 1962. After a three-year trial, the first subscription television system in the United States went into operation in Hartford in June; and educational television was inaugurated from Trinity College, Hartford, in October.

"Events" by: ROBERT C. SALE,
State Librarian of Connecticut.

CONSERVATION OF NATURAL RESOURCES

The year 1962 was a banner year for conservation in the United States generally, and was especially notable for unprecedented developments involving outdoor recreation resources and wildlife conservation.

Bureau of Outdoor Recreation.—On Jan. 31, 1962, after more than three years of investigation and study, the Outdoor Recreation Resources Review Commission (ORRRC) transmitted its findings and recommendations to the president and the Congress in a report titled *Outdoor Recreation for America.* Among other recommendations, the ORRRC urged the establishment of a Bureau of Outdoor Recreation and the creation of central authority to ensure the comprehensive, unified development of outdoor recreation resources to meet national needs through close coordination of federal agencies actively involved, and cooperation with the several states.

In his message on conservation, delivered to the Congress on March 1, 1962, President Kennedy reiterated several salient proposals in the ORRRC report and requested legislation to implement them.

On April 2, Secretary of the Interior Stewart Udall established, by secretarial order, the Bureau of Outdoor Recreation in the Department of the Interior. Specific responsibilities of the new bureau were delineated as follows: (1) coordination of related federal programs; (2) stimulation of and provision for assistance to the states; (3) sponsorship and conduct of research; (4) encouragement of interstate and regional cooperation; (5) conduct of recreation resources surveys; and (6) formulation of a nationwide recreation plan on the basis of state, regional, and federal plans. Dr. Edward C. Crafts was appointed director of the new bureau, effective April 23.

The bureau will coordinate the outdoor recreation activities of some 20 federal agencies, but will manage none of the land involved. It will cooperate with all the states and lend them advisory and financial assistance toward optimal development and utilization of outdoor recreation resources.

Recreation Advisory Council.—On April 27, 1962, President Kennedy issued Executive Order 11017, providing for coordination with respect to outdoor recreation resources and establishing the Recreation Advisory Council. The council is composed of the secretaries of the interior, agriculture, defense, and health, education, and welfare, and the administrator of the Housing and Home Finance Agency. It is charged with providing broad policy advice to the heads of federal agencies on all important matters affecting outdoor recreation resources, and with facilitating coordinated efforts among the various federal agencies.

White House Conference.—On May 24–25, 1962, the president convened a White House Conference on Conservation, the first since the meeting of state governors called by President Theodore Roo-

sevelt in 1908. The problem of affording adequate outdoor recreation opportunities was, once again, a theme of major emphasis.

In addressing the conference, Secretary Udall asserted that resource problems require a unified approach and intelligent conflict resolution. He said in part: ". . . controversy between park enthusiasts and hydroelectric power advocates, dam builders and salmon fishermen, industrial needs and scenic values—all of these will become more frequent and more divisive unless we construct and adhere to a higher order of conservation statesmanship. . . . Social values must be equated with economic values; the overriding need of man for an environment that will renew the human spirit and sustain unborn generations requires some sacrifices of short-term profits. . . . Education is the key, both to the techniques and ethics of conservation."

Secretary of Agriculture Orville L. Freeman predicted that the United States will need 50 million fewer acres of crop-producing land in 1980 than are currently cultivated, and announced his department's readiness to cooperate with private land owners and local communities in new combinations of land utilization, including outdoor recreation.

Waterfowl Wetlands.—The emergency acquisition of wetlands for ducks by the Bureau of Sport Fisheries and Wildlife, authorized by Public Law 87–383 (Oct. 4, 1961) and implemented with a Treasury Department loan of $105 million expendable over a seven-year period, began slowly. As of July 1962 the bureau had obligated funds for the purchase of 11,682 acres (8,887 in North Dakota, 2,092 in South Dakota, and 703 in Minnesota) and lease of 4,968 acres (3,480 in North Dakota and 1,488 in South Dakota). Meanwhile, funds were obligated during the fiscal year 1962 for acquisition of additional waterfowl refuge areas aggregating 18,915 acres. The wetlands procurement program was obstructed by a proviso in P.L. 87–383 that the federal government might, under that law, neither purchase nor lease such land without consent of the state government within whose jurisdiction the land lies.

Most desired by the Bureau of Sport Fisheries and Wildlife were certain perennially wet potholes and marsh areas in the Dakotas and western Minnesota. These are breeding grounds for a considerable fraction of the North American duck population; they are also choice shooting grounds, and taxable assets, wet or dry. For those reasons the state governors were reluctant to relinquish them, although the projected federal purchases in any one of the three states would be a very small fraction of the states' total land area.

The wetlands acquisition program was frustrated by conflicting legislation. While the Bureau of Sport Fisheries and Wildlife sought duck habitats suitable for its purposes, the Soil Conservation Service continued its responsibility to assist with the artificial drainage of potholes and marshes to promote their agricultural utility.

Silting and filling have been even more detrimental than drainage to duck breeding grounds in certain morainic areas. During almost a century of inept cultivation on surrounding hills, many sloughs once productive of mallards have been depositories for erosion silt and receptacles for glacial stones and boulders. Their rehabilitation for ducks by excavation and revegetation might in many cases be more economical than to reserve for waterfowl such wet areas as would, with proper drainage, become highly productive and thereby enhance the human habitability of established farm units. An arbitrary choice between duck habitat and farm improvement was deliberately deferred by the Congress.

However difficult its initiation, the wetlands procurement program represents a profound change of concept with respect to wild waterfowl. Less and less may Americans rely on privately owned farmland to maintain desirable populations of migratory game birds.

Pittman-Robertson Act Anniversary.—Sept. 2, 1962, marked the 25th anniversary of the highly successful conservation program officially identified as the Federal Aid in Wildlife Restoration (Pittman-Robertson Act). The act provides for the collection of an 11% excise tax on sporting arms and ammunition and the distribution of such monies to finance (up to 75% of cost) approved wildlife restoration projects in the several states. (A comparable program for fish restoration, under the Dingell-Johnson Act, began in 1950. Its funds come from an 11% excise tax on sports-fishing gear.)

Under the Pittman-Robertson Act, almost $219 million was apportioned to states and territories from July 1, 1938, through June 30, 1961. Some 2,374,000 acres of land have been purchased by 47 states through this program, for wildlife management and public hunting areas. The first federal aid project was on the Ogden Bay Waterfowl Area in Utah.

Conservation Districts Anniversary.—The Soil Conservation Districts system also reached the quarter-century mark in 1962. Although Arkansas was the first state to pass enabling legislation for creating such districts (March 3, 1937), the first organized was the Anson County (Brown Creek) Soil Conservation District in North Carolina (Aug. 4, 1937). In 1962 the number of districts throughout the United States approached 3,000, encompassing about 96% of the nation's agricultural land—1.7 billion acres on some 3.6 million farms and ranches. Twenty-four states had been organized into districts in their entirety. Meanwhile, the Soil Conservation Service also had 384 projects operative under Public Law 566, the Watershed Protection and Flood Prevention Act.

(See also AGRICULTURAL RESEARCH SERVICE; FORESTRY.)

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CONSTRUCTION. See ARCHITECTURE; BUILDING AND CONSTRUCTION; HOUSING.

CONSUMER CREDIT

At the end of the first three quarters of 1962, consumer credit in the United States was at an all-time peak of $59.2 billion—an increase of $2.1 billion above the previous peak of December 1961, and $4.4 billion above the September 1961 level. A rapid expansion of such credit (credit extended to individuals for household and personal expenditures, except real estate mortgage loans) began in April and consisted largely of the increased use of installment credit. It was substantial, but fell short of the increases experienced in the two previous periods of business recovery.

Total disposable personal income (personal income remaining after payment of personal taxes and the like) increased substantially in the first three quarters of the year, but unemployment remained relatively high and the income position of many consumers improved only moderately. Incomes generally, however, were favorable enough to support a substantial increase in consumer expenditures, but nearly all of the increase was for

nondurable goods and services—items involving less consumer credit in their sale than durable goods, the basis of much installment credit.

The total consumer credit outstanding in September 1962 represented about 15% of total disposable personal income, approximately the same ratio as a year earlier. Since 1954, consumer credit has varied from 13 to 15% of disposable personal income—a ratio slightly higher than in the years before World War II. Personal saving was 6.9% of disposable personal income in the first three quarters, approximately the same as in 1961. (See also SAVINGS.)

Status of Consumer Credit, December 1961.—At the end of December 1961 the major portion of the $57.1 billion of consumer credit was installment credit totaling $43.2 billion. It consisted of $17 billion of installment sale credit on automobiles, provided mostly by commercial banks and sales finance companies, and a relatively small portion by other financial institutions and automobile dealers. Installment credit for other consumer goods (secured usually by the items purchased, and including revolving credit plans of retail stores) amounted to $11.8 billion, and was provided about equally by commercial banks, sales finance companies, and retail outlets such as department and furniture stores. Repair and modernization installment loans for owner-occupied dwellings totaled $3.2 billion, extended mostly by commercial banks. Personal loans (signature-alone borrowing) of an installment type amounted to $11.3 billion, granted by commercial banks, sales finance companies, and other financial institutions —mostly by the latter (credit unions and consumer finance companies). Such personal loans are mainly for consolidation of consumer debt, medical and other emergency expenses, education, and travel.

The minor portion of the $57.1 billion of consumer credit was noninstallment credit of $14 billion. It consisted of $5 billion of single-payment loans extended almost entirely by commercial banks. Charge accounts at stores amounted to $5.4 billion (including balances owed on credit-card and home-heating oil accounts). Service credit, the amount owed by individuals to professional practitioners and service establishments for such items as medical care and public utility services, totaled $3.6 billion.

Trend in Consumer Credit, 1962.—At the end of September 1962, consumer credit was $2.1 billion, or 8.7%, above the level at the end of 1961, and 8.1% above the level of a year ago. Installment credit was 5.5% above the year-end level and 8.6% above the September 1961 level. Noninstallment credit was 2.9% below the year-end level, but exceeded the September 1961 level by 7.1%.

Automobile credit, the largest component in installment credit, showed an increase in September 1962 of 9.2% over the September–December 1961 level. Other durable goods credit declined in the first quarter, and then increased to a level in September about equal to the December 1961 level but 6.3% greater than in September 1961. Practically no change occurred in repair and modernization loans. Personal loans were 7.9% higher than in December 1961 and 10.9% higher than in September 1961. Commercial banks supplied slightly more than half of the total increase of installment credit during the first three quarters of 1962.

Of the three components constituting noninstallment credit, single-payment loans supplied mostly by commercial banks were about 6% higher in September 1962 than in December 1961, and about 10% over September 1961. Charge accounts at stores declined in the first quarter, and then rose to a level about 15% below the December 1961 level, but about 5% higher than a year earlier. Service credit increased slightly in the first part of the year and then declined to a level in September about 3% higher than in December 1961 and about 6% higher than in September 1961.

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CONTRACT BRIDGE. See SPORTS, GAMES, AND SHOWS.

COOPERATIVES. See Index entry.

COPPER

World output of copper ore and concentrate rose from 4,640,000 short tons in 1960 to 4,850,000 tons in 1961, according to the U.S. Bureau of Mines. Of the total, the United States supplied 1,165,155 short tons, or 24%, in 1961 (23% in 1960). World output of smelter copper rose from 4,950,000 short tons in 1960 to 5,060,000 tons in 1961. The United States provided 1,207,354 short tons, or 24%, of the 1961 total (25% in 1960).

In the United States, output of recoverable copper in 1961 was 8% over 1960. In the first nine months of 1962, the total was 914,683 short tons, compared with 852,887 tons in the same period of 1961. Smelter output from domestic and foreign ores in 1961 totaled 1,207,354 short tons, against 1,233,629 tons in 1960, a decrease of 2%. In the first nine months of 1962, smelter copper totaled 990,121 short tons, against 877,403 tons in the same period of 1961.

The accompanying table shows United States mine production of copper by states for the period 1958–61.

MINE PRODUCTION OF COPPER BY STATES
(In thousands of short tons)

State	1958	1959	1960	1961
Arizona	485.8	430.3	538.6	587.1
California	0.7	0.7	1.1	1.4
Colorado	4.2	2.9	3.2	4.1
Idaho	9.8	8.7	4.2	4.3
Michigan	58.0	55.3	56.4	70.2
Missouri	1.4	1.1	1.1	1.5
Montana	90.7	65.9	92.0	104.0
Nevada	66.1	57.4	77.5	78.0
New Mexico	55.5	39.7	67.3	79.6
Tennessee	9.1	11.5	12.7	12.3
Utah	189.2	144.7	218.0	213.5
Others	8.8	6.6	8.1	9.2
Total	979.3	824.8	1,080.2	1,165.2

(Source: U.S. Bureau of Mines.)

Actual consumption of refined copper in 1961 rose 8% over that of 1960. Refined copper stocks in the United States declined 50%, to 49,000 tons, and stocks of unrefined copper decreased 10%, to 236,000 tons, the lowest point since 1955.

Imports of unmanufactured copper by the United States, continuing their downtrend, totaled 457,669 short tons (copper content)—13% less than in 1960 and the lowest since 1947. Imports of refined copper, also continuing to decline, were less than half of those in 1960. Chile remained the chief supplier with 226,971 tons, almost 50% of the total (9% more than in 1960). Peru, although supplying slightly less copper than in 1960, was second with 90,435 tons (almost 20%). Canada declined to third place with 78,354 tons, or 17% (33% less than in 1960).

Exports of refined copper declined from 433,762 short tons in 1960 to 432,253 tons in 1961. West Germany, the United Kingdom, Italy, Japan, and France were the main recipients. In the first nine months of 1962, exports of refined copper totaled about 260,000 tons, compared with 334,148 tons in the same period of 1961.

(See MINERAL PRODUCTION for output of major countries.)

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CORN. See AGRICULTURE; GRAINS.

CORSICA. See FRANCE.
COSMIC RAYS. See Index entry.

COST OF LIVING

The general level of prices in the United States and Canada was relatively stable in 1962. Prices in the United States having an effect on the cost of living increased slightly, but the average of wholesale prices increased only fractionally. A similar situation existed in Canada, except that wholesale prices showed a greater increase than retail prices.

United States.—The cost of living, as measured by certain retail prices, rose 1.5% in the United States during the first three quarters of 1962. In the same period the level of wholesale prices increased 0.8%. There was a steady increase in the cost of living except for unchanged averages in April–May and July–August. Consumer prices reached an all-time high in 1962. Wholesale prices in January 1962 were fractionally below the previous all-time high reached in the first quarter of 1961. They declined slightly in the first six months, and then rose appreciably in the third quarter to a new all-time high.

Demand for many consumer durable goods increased only moderately during the year, a notable exception being automobiles, with sales almost equal to the all-time record of 1955. Demand for nondurable goods also increased moderately, but the increase for services was substantial. Total consumer spending expanded each quarter of the year with the steady rise in total personal income. The rate of personal saving changed very little, but there was greater use of credit in making consumer purchases (see CONSUMER CREDIT).

Government expenditures, particularly those of the federal government for defense and related purposes, increased substantially the demand for many goods and services. All units of government, and particularly the federal government, enlarged appreciably their borrowings in order to finance the increase in expenditures.

Business investments increased moderately during the year and contributed to an enlarged demand for many kinds of producers' goods. Expenditures for new plant and equipment were about 8% more than in 1961. New residential construction increased appreciably to the highest level since 1959.

On the supply side of markets, there was no lack of capacity to make goods available. Total crop production was estimated to be about the same as in 1961 and only slightly below the record output for 1960. In industry, private investment in plant and equipment in recent years and in 1962 greatly expanded production capacity to meet present and prospective growth in demand. Partly as a result, many industries operated appreciably below their capacity in 1962. In some instances (such as rubber products, chemicals, and steel and aluminum products) the increased availability of supplies and vigorous competition among sellers were important in the downward movement of many wholesale prices.

Although employment improved appreciably as compared with 1961, there were no labor shortages, and substantial unemployment persisted among unskilled and semiskilled workers. Increases in wage rates were moderate and were offset in many branches of commodity production by improvements in techniques, equipment, and skills so that unit costs and supply prices were not changed appreciably. Many services, however, continued to have upward price movements.

Consumer Price Index and Retail Prices.—The Consumer Price Index, which shows average changes in retail prices of important goods and services purchased by city wage earners, indicated a slight rise in the cost of living in the United States in 1962. The index rose from 104.5 in December 1961 and January 1962 to 106.1 in September 1962 (the average of prices in 1957–59 being used as the base of 100). The cost of living in September 1962, an all-time high, exceeded by 1.5% the index of such costs in December and September 1961.

Average prices of services, having a weight of about one third in the general index, in September 1962 were 1.8% higher than a year earlier, while average retail prices of commodities were 1.3% higher, and prices of commodities with food excluded were 0.8% higher. Average retail food prices, having a weight of slightly less than one third in the general index, in September 1962 were 2.1% higher than a year previously. Higher prices for meats and cereal and bakery products accounted for nearly all of the increase. Prices of fruits and vegetables and dairy products were slightly lower. Egg prices were at the lowest level in 21 years. Prices of housing items were 0.9% higher than in September 1961, largely because of higher rents. Average retail apparel prices declined early in the year, increased irregularly later, and in September 1962 were 1.0% higher than a year earlier. Prices of transportation rose irregularly and were 1.7% higher than in September 1961; prices of medical care were 2.5% higher; personal care, 1.9% higher; reading and recreation, 1.9% higher; and miscellaneous items, 0.6% higher.

Consumer Price Indexes for Ten Large Cities.—Prices of items included in the cost-of-living index are collected in 46 cities which are representative of urban areas in the United States. Comparison of city indexes shows that prices in one place may have changed more or less than in another. They do not measure differences in the cost of living between cities. Among the ten cities represented in the table, the greatest increase in the cost of living between 1957–59 and August 1962 occurred in Seattle (6.7%); the smallest increase, in Detroit (2.3%). During this period the national Consumer Price Index increased 5.5%. From August 1961 to August 1962, the greatest increase in the cost of living occurred in Houston (2.0%), and the smallest increase in Cleveland (0.2%). During this one-year period, the national Consumer Price Index increased 1.2%.

CONSUMER PRICE INDEX FOR TEN LARGE CITIES, AUGUST 1962 AND 1961 (1957–59 = 100)

City	August 1962	August 1961	Percent change, 1961 to 1962
Chicago	104.4	103.7	0.7
Cleveland	103.8	103.6	0.2
Detroit	102.3	102.0	0.3
Houston	104.6	102.5	2.0
Los Angeles	106.6	105.1	1.4
New York	106.6	104.9	1.6
Philadelphia	105.2	104.2	1.0
Scranton	106.0	104.2	1.7
Seattle	106.7	104.9	1.7
Washington, D.C.	104.6	104.0	0.6

(Source: U.S. Department of Labor, Bureau of Labor Statistics)

Wholesale Commodity Prices.—The monthly wholesale price index of the U.S. Bureau of Labor Statistics showed a fractional increase of 0.8% in the first three quarters of 1962. This slight increase was in contrast to a fractional decrease in the same period of 1961. The index rose to 100.8 (1957–

59 = 100) in January 1962, declined to 100 in June, and then rose to 101.2 in September—0.2% above the previous high in the first quarter of 1961.

The increase in the early part of 1962 was the result of higher prices for all the principal commodity areas—farm products, processed foods, and industrial commodities. Prices of farm products showed the largest percentage increase as freeze damage in several producing areas raised prices of a number of fresh vegetables. Partly because of adverse weather conditions, prices of livestock, live poultry, and eggs also advanced sharply. Higher prices for meats, processed poultry, and raw sugar accounted for the increase in the average for processed foods. The rapid expansion of business activity early in the year was largely responsible for the higher average of industrial commodity prices (such as those of steel scrap, fuels, chemicals, and paper products).

The subsequent decline of the index to 100 in June 1962 was primarily the result of falling prices for farm products in the second quarter—the first drop in the average of such prices since October 1961. Lower prices for fresh vegetables and fruits, livestock, live poultry, fluid milk, eggs, and grains were mainly responsible for the drop in the average. Lower prices for meats, processed poultry, and dairy products were largely responsible for the decrease in the average for processed foods. The average of industrial commodity prices declined irregularly and only fractionally—the main items with lower prices being metal scrap (the lowest prices for iron and steel scrap in 12 years), fuel, chemicals, and wood pulp and some paper products.

The rise of the wholesale price index in the third quarter of 1962 more than offset the decline in the first half of the year. Nearly all of the rise in the index was accounted for by higher prices of farm products and processed foods. The index of 101.2 in September 1962 represented an increase of 1.2% as compared with September 1961. This increase resulted from prices for farm products 5.7% higher than in September 1961, and for processed foods, 3% higher. Prices of industrial commodities were 0.1% higher than a year earlier. In the farm group, appreciably higher prices prevailed for livestock and live poultry, fruits and vegetables, and eggs. In the group of processed foods, appreciably higher prices prevailed for meat, poultry, and fish, cereal and bakery products, sugar and confectionery, and animal fats and oils.

In the industrial group, appreciably higher prices prevailed in September 1962, as compared with September 1961, for textiles and apparel, fuels and related products, lumber and wood products, pulp and paper products, and miscellaneous products. These price increases were roughly offset in the industrial index by appreciably lower prices for chemicals and allied products, rubber and rubber products, and metals and metal products.

Canada.—The cost of living in Canada increased only slightly in 1962. During the first three quarters of the year the index of consumer prices rose 1%, and in September 1962 the index of 131 (1949 = 100) was 1.5% higher than a year earlier. Food prices fluctuated but moved generally upward, and in September were 2% higher than in December 1961 and 3% higher than a year earlier. In the same nine-month period, prices of housing (shelter and household operation) increased 1%, and in September were 1.3% higher than in September 1961. The changes in these two components of the index were important since they have weights of 27 and 32, respectively, as compared with a total of 41 for the other five components. Clothing prices declined early in the year and then increased irregularly to a level in September fractionally lower than in December 1961 and fractionally higher than in September 1961. Practically identical changes to those for clothing occurred in the prices for transportation. Prices involving health and personal care in September 1962 were fractionally higher than in December and 2% higher than a year earlier. Prices for recreation and reading, and for tobacco and alcoholic beverages were only slightly higher for both the nine- and twelve-month periods.

Wholesale prices showed greater change than the consumer price index. They rose steadily during the first three quarters to a level in September 1962 about 2.2% higher than in December 1961, and 2.8% higher than a year earlier. Higher prices for farm products—5.9% higher than a year earlier—accounted for most of the increase in the general index. Livestock prices showed a substantial advance of 13%, and prices of fresh meat a slightly higher advance of 16%. Industrial commodity prices also contributed to the rise in the general index. Slightly higher prices prevailed in September 1962 for fibers and textiles, wood and paper products, nonferrous metals, and nonmetallic minerals.

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COSTA RICA

Located between Nicaragua and Panama in Central America, the Republic of Costa Rica has an area of 19,653 square miles, and a population of 1,225,000 (1961 est.). Principal cities and populations (Jan. 1, 1960 est.): San José, the capital, 107,956; Puntarenas, 18,299; Alajuela, 17,901; Cartago, 17,544; Heredia, 17,334; and Limón, 15,703. The population explosion in Costa Rica continues to place the country among the world leaders in population growth, with a birth rate of about 6% in 1961. Spanish is the official language.

Government.—Costa Rica is a constitutional republic. The president, who is popularly elected for a 4-year term, is Francisco José Orlich Bolmarcich (inaugurated May 8, 1962, succeeding Mario Echandi Jiménez). The unicameral Legislative Assembly consists of 57 members popularly elected by secret, direct, and free ballot for 4-year terms. Number of seats held in the Legislative Assembly (following elections of Feb. 4, 1962): National Liberation Party, 29; National Republican Party, 18; National Union Party, 9; Democratic Popular Action, 1.

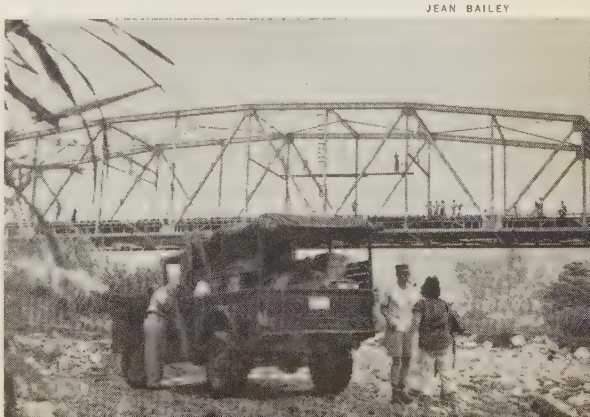
Education and Religion.—School enrollment, 1961: 230,906, about 51% of the school-age population. Number of schools (with enrollments), 1961: 1,561 primary (193,679); 62 secondary (27,491); 23 technical (5,935); 1 higher (3,801). The Inter-American Institute of Agricultural Sciences is located in Turrialba. It has been estimated that nearly 79% of the population is literate. Principal religion: Roman Catholicism, supported by the state. There is religious liberty under the constitution.

Finance.—Government revenue, 1961 est.: 345,751,000 colones (350,972,000 in 1960); expenditure, 345,751,000 (356,735,000 in 1960). Since Sept. 3, 1961, 6.62 colones equal U.S.$1. National debt: 461,111,833 colones on Dec. 31, 1960 (457,178,499 in 1959). Gold and foreign exchange holdings: $9.7 million as of Dec. 31, 1961 ($14.4 million in 1960).

Transportation and Communications.—Transport networks (miles): private and state-owned railways, 701 (1958–59); main roads, 497 paved (1960–61). National airlines: Líneas Aéreas Costarricenses (LACSA) and 8 smaller domestic lines. Costa Rica is also served by 5 foreign airlines; El Coco, near San José, is the principal airport. Other communications data: motor vehicles, 25,107 (1961); telephones, 15,933 (1960); radio receivers, 75,000 (1960); television was introduced in May 1960.

Under construction in a remote area of Costa Rica, bridge is part of new work completed on the Pan American Highway.

JEAN BAILEY



Economic Indicators.—Gross national product: 2,695 million colones in 1960 (up 6.1% from 1959). Cost-of-living index (1958 = 100): 106 in midyear 1962; 103 in 1961. Number of unemployed workers: 60,000 in March 1962 (about 14.5% of the total labor force of 412,406 persons).

Manufactures and Minerals.—Although a Ministry of Industry was formed in 1961, Costa Rican industry is still light and on a small scale. Chief products, 1960 est.: lumber, 253,000 cubic meters; wood pulp, 2,000 metric tons (1959); cigarettes, 1,101 million (1959); beer, 88,700 hectoliters; electric power, 383 million kw.-hr. Mineral production is negligible.

Agriculture.—Agriculture accounts for about 40% of the national income and 90% of the exports, and engages some 55% of the labor force. Chief crops (tons, 1961): sugar, 90,000 (74,000 in 1960); cocoa, 12,000 (12,450); tobacco, 891 (828), dried beans, 21,100 (15,700); rice, 58,000 metric tons (57,000); green coffee, 1,140,000 bags of 132.276 pounds each (1,165,000); bananas, 12,898,000 stems exported (9,946,000).

Foreign Trade.—Total exports, 1961: $81.8 million (down from $89 million in 1960); imports, $107.1 million (down from $110.4 million in 1960). Principal exports (in millions of United States dollars, 1961): coffee (green), $43.3; bananas, $20.4; cocoa beans, $4.3; beef, $2.8. Principal imports: manufactures, machinery and transport equipment, food, beverages, and tobacco, chemicals, mineral fuels. Chief customers, 1961: United States (57.6%); West Germany (20.9%); Netherlands (4.3%); Belgium-Luxembourg (2.3%). Principal suppliers, 1961: United States (46.7%); West Germany (10.9%); Great Britain (5.5%); Netherlands (3.04%).

Events, 1962.—The 1962–63 coffee crop was estimated at 1.240 million bags, an increase of about 8% over the previous year. The increase in production in this vital cash crop was matched, however, by low coffee prices, continuing unemployment, weakness in national currency, a continuing budgetary deficit, and the prospect of Costa Rica's failing to maintain her share of Central American trade because she had not yet joined the projected Central American Common Market. In 1961, imports exceeded exports for the seventh straight year with both exports and imports falling off from 1960 levels, thereby adding to the problems faced in 1962.

In January 1962 the United States announced its intention to offer up to $12 million to Central American and Mexican coffee growers to hold part of their export quotas off the market. The nature of the banana economy was altered through the United Fruit Company's sale of about 10% of its Costa Rican land holdings to "associate producers" who signed contracts up to five years in length to supply the company exclusively.

In the industrial sector, aid from the Alliance for Progress had reached $17,899,000 by March 1962. In August the Inter-American Development Bank (IDB) announced two loans totaling $5.7 million for electrical power and loans for expansion of light industry in construction materials, lumber processing, the manufacture of insecticides and fertilizers, pharmaceuticals, chemicals, foodstuffs, textiles, and electrical equipment. Earlier in the year the IDB lent $2.7 million to develop Costa Rica's first cement plant, scheduled for 1964. The stress on industrial development was also reflected in the near completion of an $18.5 million hydroelectric plant on the Río Macho to add (by 1963) 30,000 kilowatts, expanding the national generating capacity by 40%. A similar step was taken in the construction of a modern slaughterhouse at Montecillos.

Costa Rica's new president inherited a reported budget deficit of 180 million colones (about $27.3 million). The new administration sought to strengthen the currency by various economy measures and by announcing in June its intention to repay $4.9 million in defaulted government bonds; interest payments had been suspended since October 1961. Finally, it was interpreted that these many economic pressures led Costa Rica in July to sign the General Treaty of Central American Economic Integration, adopted in December 1960 at Managua, Nicaragua. This act brought all five Central American states into a unified effort to establish regional external tariffs and remove up to 95% of internal trade barriers, a most significant event for the regional common market movement.

Politically, the country witnessed a relatively peaceful presidential campaign in which Francisco José Orlich Bolmarcich led the National Liberation Party to victory over Rafael Calderón Guardia (National Republican), Otilio Ulate Blanco (National Union), and Enrique Obregón (Democratic Popular Action). Only one pro-Castro, pro-Communist candidate succeeded in gaining a seat in the Legislative Assembly; the Communist Party was denied registration for the election.

In 1962, Costa Rica continued to oppose Cuban activities in the Western Hemisphere, had no ties with Cuba, and continued to align itself with the Alliance for Progress program. However, reform measures were slow in land legislation, tax reform, and in developing a 10-year national development plan. A U.S. Peace Corps group of teachers of English, and trained personnel in physics, mathematics, chemistry, and biology was scheduled to go to Costa Rica by the year's end.

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COTTON

United States production of cotton in 1962 was 14,723,000 bales (500 pounds gross weight each), according to the Statistical Reporting Service of the U.S. Department of Agriculture. This was 405,000 bales more than in 1961 and 744,000 more than the 1951–60 average. Growers planted 16,296,000 acres in cotton in 1962, of which 15,521,000 were harvested. Both planted and harvested acreages were a little below 1961 and well below the 10-year average. Yield of lint per acre averaged 455 pounds in 1962, 17 pounds more than in 1961 and 75 pounds more than the average. California had the highest yield among the states, with a record 1,092 pounds per acre. The United States crop included 99,000 bales of American-Egyptian cotton, 36,400 bales more than a year earlier (mainly because of a 58% increase in the acreage allotment).

The carry-over of cotton into the 1962–63 marketing year totaled 7,850,000 bales, 622,000 more than a year earlier. With both production and stocks increasing, the total supply of cotton for 1962–63, including imports, was estimated at 22,773,000 bales. This was slightly above the 1961–62 supply and close to the level of recent years.

U.S. COTTON PRODUCTION IN LEADING STATES
(In thousands of bales)

State	Average, 1951–60	1961	1962
North Carolina	368	278	275
South Carolina	528	412	450
Georgia	608	512	535
Tennessee	567	554	560
Alabama	773	617	695
Mississippi	1,600	1,625	1,700
Missouri	389	377	465
Arkansas	1,339	1,456	1,450
Louisiana	570	479	545
Oklahoma	360	369	330
Texas	4,050	4,786	4,680
New Mexico	296	300	275
Arizona	835	828	885
California	1,650	1,689	1,840
Other states	47	36	38
United States	13,979	14,318	14,723

Production in 500-pound gross weight bales which contain about 480 pounds of lint. (Source: Statistical Reporting Service, U.S. Department of Agriculture.)

World cotton production continued to rise in 1962–63, setting a new record for the fifth consecutive season, according to the Foreign Agricultural Service of the U.S. Department of Agriculture. Production outside the United States amounted to 34,625,000 bales, compared with 32,922,000 bales in 1961–62 and the 1955–59 average of 30,653,000 bales. Both world acreage and yields were higher than in the preceding season.

COTTON PRODUCTION BY LEADING COUNTRIES (EXCLUDING THE UNITED STATES)

(In thousands of bales)

Country	Average, 1955–59	1961	1962*
China (Mainland)	7,160	6,700	7,000
USSR (Europe and Asia)	6,750	7,000	6,900
India	3,991	4,050	4,200
Brazil	1,490	2,475	2,600
Egypt (U.A.R.)	1,807	1,542	2,214
Mexico	2,032	1,995	2,050
Pakistan	1,367	1,450	1,475
Turkey	738	950	975
Sudan	500	930	750
Syria	441	572	690
Peru	518	600	600
Spain	209	485	490
Iran	306	485	460
Colombia	154	350	430
Greece	270	448	430

* Preliminary. Years shown refer to crop years beginning August 1 in which major portion of the crop is harvested. Production is in bales of 480 pounds net. (Source: Foreign Agricultural Service, U.S. Department of Agriculture.)

Most of the increase in production in 1962–63 came in free world countries, which had an output of 20,644,000 bales, 1.5 million bales more than in 1961–62 and 4 million bales more than the 5-year average. Increases were widespread, although Egypt accounted for nearly half. Output in Communist countries totaled 13,981,000 bales in 1962–63, compared with 13,773,000 bales in the preceding year and the 5-year average of 14,024,000 bales.

The 1962–63 increase in production came at a time when world consumption was slowing down. It appeared that production would exceed consumption for the first time since 1955–56, reversing the downtrend in stocks of the preceding six years.

(See also TEXTILE INDUSTRY.)

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COUNCIL OF EUROPE. See EUROPE.
COUNTERFEITING. See SECRET SERVICE, U.S.
COURTS OF LAW. See LAW.
CRANBERRIES. See FRUITS.
CREDIT, Consumer. See CONSUMER CREDIT.
CREDIT UNIONS, Federal. See SOCIAL SECURITY.
CREDITS, Foreign. See Index entry.
CRETE. See GREECE.
CRICK, Francis H. C. See NOBEL PRIZES.

CRIME

Trends in the incidence of crime, and in juvenile delinquency and crime prevention, are reviewed below under two headings: (1) U.S. Crime Statistics; and (2) Delinquency and Crime Prevention. For additional information, see also CHILDREN AND YOUTH; FEDERAL BUREAU OF INVESTIGATION; LAW; NARCOTICS; POLICE; PRISONS; SOCIOLOGY.

U.S. Crime Statistics

Crime in the United States for the first nine months of 1962 showed a 5% increase over the same period in 1961, according to the *Uniform Crime Reports* figures compiled by the Federal Bureau of Investigation (q.v.). Nearly all types of property crimes (involving all types of theft, through force or stealth) showed an increase over 1961. These crimes make up a large portion of the Crime Index and to a great extent control the total trend. Crimes against the person also recorded an increase. Serious assault was up 4%, forcible rape up 2%, and murder up 1%. In cities with over 25,000 population, murder was up 5%.

An analysis of robbery, burglary, and larceny by type for the first nine months of 1961 and 1962 shows that street robberies were up 2%, whereas residence robberies jumped 13%, bank robberies 21%, and chain store robberies 5%. Burglaries of residences during the daytime recorded a 5% increase. In the larceny category, shoplifting was up 21%, and pickpocket activity was up 2%.

Crime Trends, 1961.—The national population has increased 7% during the past five years while crime (based on the Crime Index) has gone up 34%. The estimated 1,926,090 serious crimes reported in the calendar year 1961 reflect a 3% increase over the number of crimes recorded the previous year.

Crimes against property showed the greatest increase, with an upsurge of 4% as a group. Crimes against the person, reported by 7,800 law enforcement agencies across the country, showed an increase of 1% as a group. The upward trend in the number of crimes reported continued at a faster pace in the smaller cities under 25,000, metropolitan fringe counties, and rural areas, with increases of 6 to 8%.

The number of crimes committed in the various individual categories showed the following percentage changes from 1960: murder, down 4%; forcible rape, unchanged; robbery, down 1%; aggravated assault, up 2%; auto theft, up 2%; burglary and larceny of $50 and over, up 4%.

The 1961 crime rate was 10% above the average for the past three years. The 4% decrease in murders committed in 1961 as compared with 1960 reflects a leveling off to the average for the period 1958 through 1960. Although robbery in 1961 was down 1% as compared with the peak reached in 1960, it was still 13% above the 1958–1960 average.

Crime index figures indicate that four serious crimes occurred each minute of 1961. Also in 1961, one murder occurred each hour, a forcible rape every 33 minutes, an aggravated assault every 4 minutes, a robbery every 6 minutes, a burglary every 37 seconds, a larceny ($50 or over) each minute, and an auto theft every minute and a half.

Persons Arrested.—The following data concerning the age, sex, and race of persons arrested are from annual reports prepared by city police. The figures include persons arrested and later released, as well as those held for prosecution under formal charges. The figures for age and sex are for arrests during the year 1961 in 2,776 cities, covering a total population of 85,158,360.

Sex.—Of the 3,851,825 persons arrested in 2,776 reporting cities during 1961, 433,962 were females and 3,417,863 were males.

Age.—Of the 3,851,825 persons arrested in 2,776 cities during 1961, 566,682 (or 14.7%) were under the age of 18. Of those persons under 18 arrested in 1961, 238,038 (42%) were not yet 15 years of age.

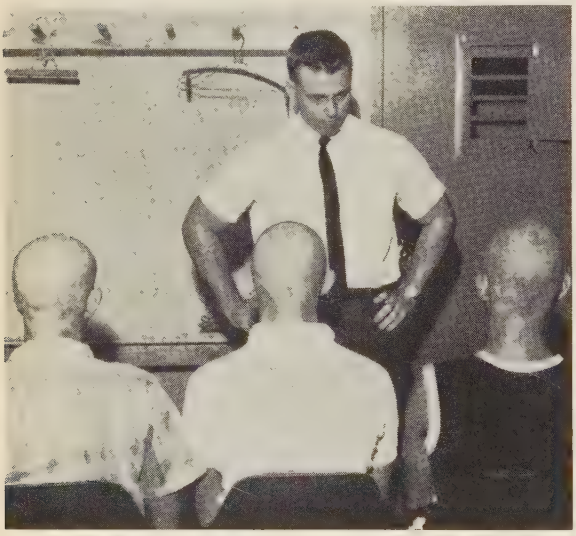
As a group, persons under 18 years of age represented 43% of all arrests for the more serious offenses of murder, forcible rape, robbery, aggravated assault, burglary, larceny, and auto theft. Young people were involved in 59% of the auto theft arrests, 47% of the burglaries, 48% of the larcenies, 22% of the robberies, 17% of the forcible rapes, 12% of the aggravated assaults, and 8% of the murders.

Persons under 25 accounted for 1,270,088 of the total arrests in 2,776 reporting cities. Of all arrests in 1961, 10.3% involved persons who were 25 to 29 years of age. The age group 30 to 34 ac-

counted for 10.7% of the arrests; the age group 35 to 39, for 11.2%; the age group 40 to 44, for 10.0%; and the age group 45 to 49, for 8.5%. Persons 50 or older accounted for 16.0% of arrests, and the age of persons involved in 2,667 arrests was not known.

Race.—Based on reports of 2,759 cities, covering a total population of 75,553,307, 96.9% of the total 3,608,317 arrests were members of the white and Negro races. Arrests of members of the white race totaled 2,424,631, or 67.2% of all arrests in reporting cities, and 1,073,491 arrests, or 29.8%, were members of the Negro race. The remaining arrests, totaling 110,195, were of 79,716 Indians, 3,428 Japanese, 1,725 Chinese, and 25,326 others.

Police Employee Data.—A total of 71 law enforcement officers were killed in 1961. In the same period there were 13,190 assaults against police officers. Eight of every 100 police officers employed were victims of assault at the hands of persons with whom they came in contact. Despite the increased total of serious crimes, the number of police employees per 1,000 inhabitants remained unchanged from 1960.



WIDE WORLD

Montgomery, Ala., court official examines three young car thieves shorn of fancy hairdos by judge's order, July 14.

J. EDGAR HOOVER,
Director, Federal Bureau of Investigation.

DELINQUENCY AND CRIME PREVENTION

Juvenile delinquency and adult crime are worldwide problems which have increased in extent and intensity during recent years. Increased awareness of the problems has stimulated efforts to deal with offenders and to prevent the spread of criminal activities.

In the United States, the delinquency rate has increased more than twice as fast since 1950 as the juvenile population, which has increased sharply. School dropouts and youth unemployment are related problems. Schools are expanding orientation courses, revamping curricula, and endeavoring in other ways to meet the situation, and public campaigns are being conducted to keep young people in school and to induce dropouts to return. Efforts are being made to provide suitable employment for those who need work. The problems of minority groups and substandard living areas are being given increased attention.

Federal Programs.—The Juvenile Delinquency and Youth Offenses Control Act (1961) authorized appropriations of $30 million for a three-year period, to be administered by the secretary of health, education, and welfare in consultation with the attorney general and the secretary of labor. These officials constitute the President's Committee on Juvenile Delinquency and Youth Crime, appointed earlier in the year. In 1962 a Citizens Advisory Council was added. A number of appropriations have been made, chiefly grants to cities for demonstration projects and grants to universities and several other institutions for technical training programs for personnel serving juveniles, short-term training institutes, and curriculum development.

The largest grant ($1.9 million) was made to the City of New York and Mobilization for Youth, Inc., for a major demonstration project for New York City's Lower East Side. The Mobilization for Youth also received grants from other sources. Education and work are basic aspects of the program, emphasizing the roles played by school failures, school dropouts, and youth employment in delinquency causation. The establishment of the Youth Development Unit in the U.S. Children's Bureau provides technical assistance to states and communities in implementing the Juvenile Delinquency and Youth Offenses Act.

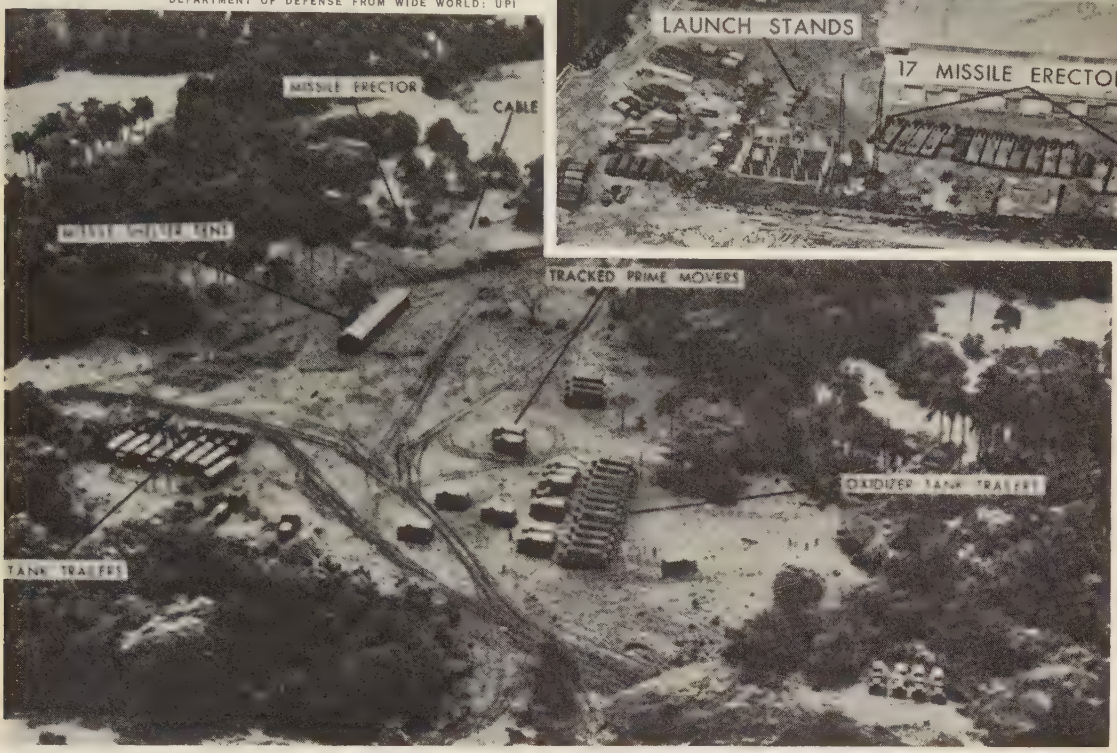
State Programs.—The National Governors' Conference on Delinquency and Youth Crime was held in Denver, Colo., Oct. 20–21, 1961. The four major areas of concern were: (1) school dropout and youth unemployment; (2) training of professional personnel working with youth; (3) development of means for collecting and disseminating information about delinquency and ways to combat it; and (4) public education programs dealing with the treatment and prevention of criminal behavior. *Juvenile Delinquency: a Report on State Action and Responsibilities* (1962), published by The Council of State Governments, describes the state governmental systems designed to combat juvenile delinquency and youth crime, and makes recommendations for improvement.

Private Organizations.—The National Council on Crime and Delinquency (NCCD), formerly the National Probation and Parole Association, has continued to expand its program of treatment, control, and prevention of crime and delinquency. The two main developments are the continued extension of the Citizen Action Program and the staffing and organization of the Research and Information Center on Crime and Delinquency. Funds for sponsoring the action program were provided by the Ford Foundation, and the research and information center activities have been supported by the Rockefeller Brothers' Fund and the National Institute of Mental Health. By midyear 1962, 16 states had organized citizen committees composed of representatives from business, industry, labor, agriculture, and the professions. Their major objectives are to strengthen facilities and services which deal with offenders and to promote more effective preventive programs.

The Research and Information Center published its first report in 1962 on *Current Projects in Prevention, Control, and Treatment of Crime and Delinquency*, listing over 500 research and demonstration projects, of which 385 are analyzed as to sponsorship, general purpose, theoretical orientation, characteristics of the groups studied, analysis of causative factors, treatment targets, and policies and practices. While governmental organizations, universities, and private agencies sponsor and support most of the research projects, slightly more than half of the projects are undertaken under the auspices of two or more agencies. NCCD

Defense Department photograph (*below*) taken on October 23, at the height of the Cuban crisis, shows missile site under construction near San Cristobal. Picture taken on November 4 at Mariel Naval Port (*right*) shows missile erectors and launching stands, ready to be loaded aboard vessels.

DEPARTMENT OF DEFENSE FROM WIDE WORLD; UPI



started publishing bimonthly bibliographies of material on crime and delinquency in over 500 journals and other publications.

International Organizations.—World concern about criminal activities is evidenced by the increase in organizations and publications. The International Society of Criminology lists over 60 affiliated societies and institutions concerned with crime and delinquency. The Research and Publications Section of the UN Bureau of Social Affairs compiled a list of publications by the United Nations and specialized agencies during the past 10 years, and the annotated bibliographical references listed in the publication *International Review of Criminal Policy* run into thousands.

Meetings.—The 9th National Institute in Crime and Delinquency was held July 22–25, 1962, in Seattle, Wash. In addition to general meetings, 45 workshops were held on a variety of subjects, including delinquency prevention, law enforcement, juvenile and adult probation and parole, research, education and training, citizen action, and special problems of delinquents. The International Criminal Police Organization held its 31st General Assembly in Madrid, Sept. 19–26, 1962. The International Association of Youth Magistrates met in Naples, Sept. 26–29, 1962. The 69th annual conference of the International Association of Chiefs of Police convened in St. Louis, Mo., Oct. 6–11, 1962. The European seminar on "The Evaluation of Methods Used in the Prevention of Juvenile Delinquency," which convened in Rome, Oct. 14–24, 1962, was organized by the United Nations within the framework of the European Social Welfare Programme. The American Society of Criminology met jointly with the American Association for the Advancement of Science in Philadelphia, Dec. 26–31, 1962.

Bibliography.—Among the recent publications on crime and delinquency were: Bloch, Herbert A., and Geis, Gilbert, *Man, Crime, and Society* (New York 1962); Cavan, Ruth S., *Juvenile Delinquency* (Philadelphia 1962); Scott, Sir Harold, ed., *The Concise Encyclopedia of Crime and Criminals* (New York 1961); Wolfgang, M. E., Savitz, L., and Johnston, N., *The Sociology of Crime and Delinquency* and *The Sociology of Punishment and Corrections* (New York 1962).

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CROPS. See AGRICULTURE; FRUITS; GRAINS; VEGETABLES; and the Index entry, *Farm.*

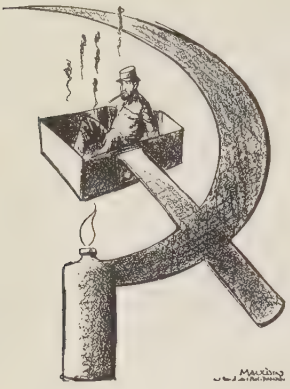
CROSS-COUNTRY. See SPORTS, GAMES, AND SHOWS.

CUBA

With an area of 44,218 square miles and a population (mid-1961 est.) of 6,933,000 (1953 census, 5,829,029), Cuba is strategically and commercially the most important of the West Indian republics. The capital, Havana, has a population (1959 est.) of 1,249,000. Other large cities, with urban populations (est. 1959), are: Santiago de Cuba, 190,000; Camagüey, 128,000; Santa Clara, 91,000; Guantánamo, 77,000; Matanzas, 71,000; and Holguín, 70,000.

Government.—Since the 26th of July Movement, headed by Dr. Fidel Castro Ruz, seized power by force on Jan. 1, 1959, Cuba has become a Communist-style dictatorship. The government is directed and controlled by the Integrated Revolutionary Organizations (ORI), headed by a National Directorate of 25 members (including 10 Communists) that was announced on March 9, 1962.

Premier Castro announced on July 26, 1961, that all military, political, labor, and other organizations would be merged into a single, all-powerful party. Preparations for the creation of the United Socialist Revolutionary Party (PURS) were carried out in 1962, and in a speech on September 28, Castro declared that the new party would



"Chafing Dish"

MAULDIN IN THE ST. LOUIS POST-DISPATCH

be launched formally in 1963. The first step in recruiting party members was to identify Communist activists and organize them as member-candidates in cells. Such persons were required to be so-called "vanguard" workers who possessed high moral virtues and revolutionary awareness; they received identification cards countersigned by Castro, and were placed on probation for one year. By September 1962, party meetings held in some 4,000 factories and mines had been attended by more than 350,000 persons, and more than 26,000 model workers were admitted to probationary status.

In an important political address on March 26, 1962, Castro made clear that he would not permit the old-line professional Communists to assume all positions of power in Cuba. He dismissed Aníbal Escalante from the National Directorate and reasserted the authority of his revolutionary comrades who had served in the 26th of July Movement. He named his brother, Raúl Castro, as vice premier.

Education.—Cuba's record in providing public primary and secondary education was for many years among the most distinguished in Latin America. Nevertheless, when Castro seized power in 1959, about 22% of the population above 15 years of age was illiterate; the average length of primary school enrollment was 4–5 years; and rural schools were usually inferior to urban ones. In a speech of Sept. 11, 1962, Premier Castro claimed the following achievements in education under his revolution: "the number of students matriculated in primary schools rose from 650,000 to 1.2 million; the number of classrooms, from 15,000 to nearly 30,000; illiteracy was virtually erased, and hundreds of thousands of adults learned to read and write; the number of secondary students rose from 120,000 to 250,000; the number of first grade students rose from 185,000 to 450,000." It was also claimed that 450,000 adults were enrolled in adult educational schools, nearly 100,000 in worker-improvement schools, and 50,000 in night schools. Castro further declared: "We Cubans can say with pride that in the field of education we are leading America, with no exceptions." Independent observers discredited the educational claims of the Castro regime and contended instead that very little was being accomplished at any level.

In order to indoctrinate as many Cubans as possible in Marxism-Leninism, a nationwide network of "revolutionary instruction schools" was created, and plans were made to graduate 30,000 students in 1962. Juan Marinello, a Communist leader who serves as the president of Havana University (estimated enrollment, 12,000), announced on June 14, 1962, the creation of a "workers' college," which is to enroll no less than 5,000 students.

Finance.—The government announced a budget for 1962 of about 1.8 billion pesos, including 700 million for economic investment; 228 million for "basic community services"; 208.3 for industry; 111.7 million for agriculture, forestry, livestock, and fishing; and 551.1 million for social services, including education, science, and culture. The Cuban peso has an official par value equal to the U.S. dollar, but at the free rate of exchange in 1962 the peso equaled about 5 U.S. cents.

Foreign Trade.—Trade with the United States virtually ceased after President Kennedy's trade embargo effective Feb. 7, 1962, on all commodities excepting certain foods and medicines. Cuba purchased only $95,000 worth of foodstuffs from the United States in the second half of 1961, as compared with $9,500,000 in the first half of the year. Only 3,000 taxable cigars were imported by the United States in the first half of 1962, as compared with 4,200,000 cigars in the same period of 1961 and with 9,200,000 in the first half of 1960.

According to Soviet trade figures, Cuba in 1961 bought civilian goods from the Soviet Union worth 248,000,000 rubles ($275,280,000), and sold sugar and some fibers to the Soviet Union worth 281,000,000 rubles ($311,091,000). The favorable trade balance equivalent to $36,063,000 could have been used to pay for military goods, salaries for Soviet technicians, and the expenses of 1,500 Cuban students and 1,000 Cuban farmers being trained in the Soviet Union. From July to October 1962, the Soviet bloc poured equipment and supplies into Cuba at an average rate of more than a shipload per day, and in late October, Soviet aid was estimated at more than $1 million per day above what the Soviet Union received from Cuba.

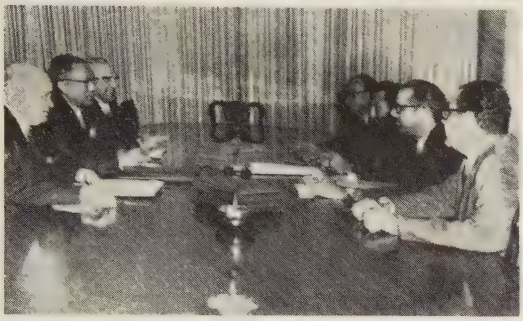
Industrial Developments.—Carlos Rafael Rodríguez, head of the National Institute of Agrarian Reform and the leading Communist theoretician in Cuba, declared that a socialist economic system had been achieved by 1962. He asserted that 80% of industrial output was produced in plants owned by the state, and that the same percentage of agricultural production was accounted for by enterprises under the close control of the socialist sector. Rodríguez projected an annual economic growth of 12% which would result by 1967 in a gross national product double that of 1962 and triple that of 1958.

Ernesto ("Ché") Guevara, minister of industry, stated in May 1962 that the iron and steel, nickel, electric power, automobile, shipbuilding, and cement industries were being developed with the assistance of the Soviet Union and other Soviet-bloc countries. Under the first four-year plan (1962–65), the ratio of industrial investment to agricultural investment was placed at 60 to 40, respectively. In 1962, the ratio of light to heavy industry was described at 55 to 45, but in the next nine years heavy industry was to be favored by an 80 to 20 ratio. Specific achievement claimed for 1962 included progress in constructing 1,000 canecutting machines, an increase in steel production, production of nickel sulphide for shipment to Soviet-bloc countries, and the near completion of the Hanabanilla hydroelectric power project, which is to supply 80 to 85 million kw.-hr. for the Cienfuegos area. Cuba signed an agreement with the Soviet Union on Sept. 25, 1962, for the construction of a port to include piers for unloading fish, re-

Cuba

Sites of seven missile bases, including one near the United States naval base at Guantánamo Bay, are shown on map.

AMERICANA MAP BY DONALD T. PITCHER



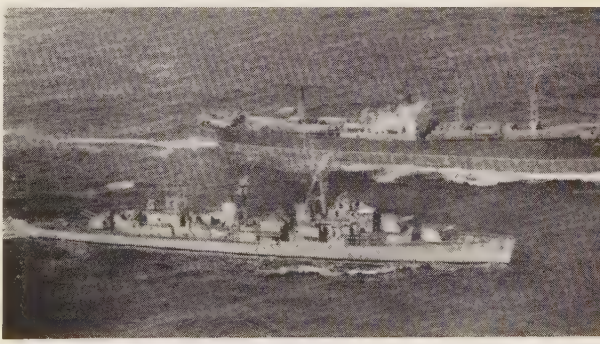
WIDE WORLD; WIDE WORLD; UPI

(*Upper left*) Soviet technicians and military personnel wave as they arrive in Havana in September. (*Lower left*) Acting UN Secretary General U Thant (second from left) confers with Cuban officials in Havana on October 30 during Cuban crisis; Cuban President Dorticós and Premier Castro are second and third from right, respectively. (*Right*) Soviet Deputy Premier Mikoyan (left) takes his leave of Castro in Havana on November 26 after ending three weeks of talks with Cuban leaders.

frigerated warehouses, ship repair shops, and industries to process and preserve fish. The entire project was to cost about $12 million.

Economic Conditions.—Official statements from the Cuban government in 1962 indicated that many economic problems had been encountered. Castro admitted that shoes produced were lasting only two months on an average. About 30% of the families receiving governmental housing were defaulting on their payments. Government officials used the term *gusanos* (worms) to describe persons accused of committing industrial sabotage. A new word—*sentismo*—was coined to describe labor featherbedding and work slowdowns. To overcome these and other difficulties, the ORI and the Central Planning Board instituted a campaign of "brotherly production competition" and "socialist emulation," under which various rewards were established for efficient workers. Some rewards were symbolic and included honorable mention, prizes, and diplomas; others were material and included increases in monthly wages up to 75% for "vanguard" workers, as well as paid vacations. In addition, a decree of August 29 provided for tight controls on wages, stiff penalties for absenteeism, and a sharp curtailment of vacation time; the measures were designed to increase productivity. The decree also authorized the transfer of workers from one job to another without their consent. Many instances were cited during 1962 of court actions taken against people for violating economic regulations.

By January 1962 all essential foods were rationed, and full-scale rationing was initiated on



(*Below*) Crates on deck of Soviet freighter are Il-28 bombers, leaving Cuba early in December. (*Upper right*) U.S.S. *Vezole* (foreground) steams beside Soviet ship thought to be carrying missiles from Cuba on November 10. (*Lower right*) Three more Il-28's leave Cuba on Soviet ship, December 1.

UPI UPI WIDE WORLD

March 19. Neighborhood Committees for Defense of the Revolution, made up of party activists, controlled the ration coupon books. The Communist press of Cuba admitted in January 1962 that food costs had risen by 150–200%. Food consumption from 1959 to 1962 declined by about 25%, and many foods, including ham, black beans, corn, lettuce, cabbage, garlic, turkey, pork, fish, and lobster, were almost nonexistent.

Agricultural Developments.—There was much evidence that the government's efforts to diversify agriculture had failed. The most important policy change with respect to agriculture was enunciated by Castro in a speech on August 18. He condemned individual land tenure, praised the people's farms (state farms operated like factories), and criticized Cuba's 600 cooperatives as inimical to the development of a rural proletariat. He indicated that the cooperatives would be transformed into people's farms, and declared: "We will not resort to individualism which will foment selfishness, which foments differences among men. We will depend on collectivity."

Sugar Marketing Conditions.—Cuba's sugar commitments for 1962 were estimated at 6,500,000 metric tons, of which 4,860,000 metric tons were destined for the Soviet bloc. However, Cuba produced only 4,800,000 metric tons in 1962, as compared with 6,767,000 metric tons in 1961. Drought and the failure to plant and fertilize adequately, combined with the refusal of many farmers to work, caused the decline. Because Cuba had on hand 1,419,000 metric tons from 1961 sugar stocks, the country had available 6,219,000 metric tons for foreign and domestic requirements in 1962. The Soviet bloc released about 500,000 metric tons from its import quota so that Cuba could earn foreign exchange in the world market. The trade deficit with the Soviet bloc was estimated at $150 million in 1962. Cuban workers in 1962 received less than half the average pay rate which prevailed in pre-Castro years. Only about 20% of sugar sales to the Soviet bloc were paid for in convertible currency.

Events, 1962.—Cuban relations with the United States and the Latin American countries steadily deteriorated during 1962, while ties with the Soviet Union and the Soviet bloc grew stronger. The United States submitted a 12,000-word document to the Inter-American Peace Committee on Dec. 6, 1961 (made public Jan. 3, 1962) which charged that Cuba "represents a bridgehead of Sino-Soviet imperialism and a base for Communist agitation and subversion within the inner defense of the Western Hemisphere." Only seven Western Hemisphere countries maintained diplomatic relations with Cuba at the beginning of 1962, and Argentina broke relations in February. At a conference of American foreign ministers in Punta del Este, Uruguay (Jan. 22–31, 1962), 20 countries voted to declare that the Cuban system was "incompatible" with the political ideals of the hemisphere, and by a vote of 14–1 (Cuba), with 6 abstentions, the conference excluded Cuba from activities of the Organization of American States (OAS).

Cuba's chief delegate to the United Nations, Mario Garcia-Inchaustegui, on January 29 vehemently attacked the United States in the General Assembly, using such expressions as "despicable hypocrisy" and "lack of international morality" to describe United States policy. The General Assembly's Political Committee on February 15 rejected the Cuban charge that the United States was planning aggression against Cuba. Similar efforts by Cuba later in the year also failed. On February 27, the UN Security Council refused to discuss Cuba's expulsion from activities of the OAS. Cuba then tried without success to get a ruling from the International Court of Justice on the legality of its exclusion.

The Castro government on April 7 convicted of treason 1,179 prisoners who had been captured in the abortive Bahía de Cochinos (Bay of Pigs) invasion by Cuban rebels on April 17–19, 1961. The prisoners were sentenced to 30 years' imprisonment but were permitted to obtain freedom on payment of fines. Each of the three invasion leaders was fined $500,000; 221 prisoners were fined $100,000 each; and 995 others were fined either $50,000 or $25,000. Cuba on April 14 returned 60 sick prisoners to the United States in exchange for a promised indemnity of $2.5 million to be paid by a Cuban exile group. The remaining 1,113 prisoners were returned on December 23–24 in exchange for foods and medicines valued at $53 million.

Cuban exile groups in the United States launched small armed raids against the Castro regime. Rebel boats shelled an Havana suburb on August 24, causing light damage. It was announced in New York on October 10 that Cuban rebel commandos had raided the port of Isabela de Sagua, and had killed some 20 defenders. Castro blamed the attacks on the United States and "mercenary agents."

It was reported that 75 Cubans were executed by the government in September for having engaged in an assassination plot against Premier Castro. Other executions of so-called enemies of the state were carried out by the regime during the year.

Beginning in July, Soviet shipments of arms to Cuba accelerated sharply. By October 3, 85 Soviet ships had unloaded military equipment and personnel. There were 4,500 Soviet servicemen in Cuba, 15 surface-to-air missile sites (25-mile range) were under construction, and three (or perhaps four) missile sites of a different type (20–35-mile range) also were being built. Cuba had 60 older-type Soviet MIG-15 and -19 jet aircraft, and at least one advanced-type MIG-21 jet plane. The Soviets had also delivered 16 Komar guided-missile patrol boats capable of carrying two guided missiles with a range of 11 to 17 miles.

President Kennedy on September 4 issued a statement calling attention to the arms buildup in Cuba. On September 13, the president warned that the United States would move swiftly against Cuba to protect its own security, but he said that military action was neither required nor justified at the time. The Soviet Union warned on September 11 that any attack by the United States on Cuba or on Soviet ships bound for Cuba would mean war.

Secretary of State Rusk on September 5 informed 19 Latin American ambassadors of United States determination to prevent the export of communism from Cuba. Rusk announced on October 3 a decision of the administration to deny use of American ports to nations whose ships were delivering arms to Cuba. Merchant vessels made more than 1,000 calls at Cuban ports between Jan. 1 and Sept. 1, 1962; 275 calls were made by Soviet-bloc ships and 250 calls by vessels of non-Communist nations under charter to the Soviet bloc. Turkey, Panama, and Japan agreed to cooperate with the United States.

On Monday evening, October 22, President Kennedy addressed the people of the United States on the subject of Cuba. The president declared that evidence had become available which demonstrated that "a series of offensive missile sites is now in preparation" in Cuba with the purpose of providing "a nuclear strike capability against the

Western Hemisphere." He disclosed that the missile sites were for medium-range ballistic missiles, capable of carrying a nuclear warhead for a distance of more than 1,000 nautical miles, and for intermediate-range ballistic missiles, capable of traveling 2,000 miles. President Kennedy then declared: "To halt this offensive buildup, a strict quarantine on all offensive military equipment under shipment to Cuba is being initiated. All ships of any kind bound for Cuba, from whatever nation or port, will, if they are found to contain cargoes of offensive weapons, be turned back. This quarantine will be extended, if needed, to other types of cargo and carriers." The presidential order, "Interdiction of the Delivery of Offensive Weapons to Cuba," went into effect on October 24. The OAS on October 23 voted unanimously to support President Kennedy's action.

In addition to the quarantine, the United States mobilized sufficient forces to provide an air strike against the offensive weapons or to invade Cuba. The confrontation produced great international tension and fears of a nuclear exchange between the Soviet Union and the United States, but Premier Khrushchev on October 28 acceded to President Kennedy's demands to dismantle and remove Soviet offensive weapons from Cuba. The United States government announced on November 11 that air surveillance had revealed that 42 Soviet medium-range missiles had been shipped out of Cuba "during the last few days." (See also MISSILES.) By December 6, 42 Il-28 Soviet medium-range (750-mile) jet bombers capable of carrying nuclear weapons had been shipped from Cuba. Premier Castro refused to permit on-site inspection by the United Nations, however, and the existence of Soviet troops and technicians (estimated at 15,000 or more) was another unresolved problem. (See also INTER-AMERICAN AFFAIRS.)

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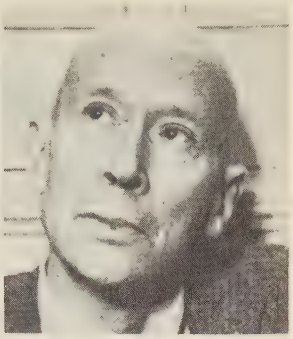
CUMMINGS, E(dward) E(stlin)

U.S. poet, novelist, and painter: b. Cambridge, Mass., Oct. 14, 1894; d. North Conway, N.H., Sept. 3, 1962.

One of the great individualists of 20th century letters, E. E. Cummings stood for the man against the masses. Yet he could jeer at authority and scoff at convention without losing the capacity to express tender emotion. "He was unique among the poets of his time," Mark Van Doren said, "because he was equally superb in satire and sentiment."

The son of a Congregationalist minister and former Harvard English professor, Cummings specialized in the classics at Harvard and received his bachelor's degree in 1915 (M.A., 1916). His early poems appeared with work by John Dos Passos and Robert Hillyer in *Eight Harvard Poets* (1917). Before the United States entered World War I, he joined the volunteer ambulance corps serving the French Army, but was interned because of his association with a suspected anarchist. He based his successful novel *The Enormous Room* (1922) on his experiences in the prison camp. After the war he went to Paris to study painting. He returned to the United States in 1924, went back to Paris in 1930 for several years, and then lived the remainder of his life in New York City and at his farm in Madison, N.H.

In Paris, Cummings met most of the technical innovators in literature and painting who frequented the Left Bank during the 1920's. Although his painting remained frankly sentimental and conservative, his poems displayed a virtuosity of effects that included bizarre verse forms, slang, and typographical oddities of which his apparently erratic use of capital letters became the most famous. He signed his work (but not his checks) e. e. cummings because he preferred, for example, a "SpRIN,k,LiNg" of capitals in the most effective places to a conventional usage that drew undue attention to the wrong words. Although many of these innovations distracted the eye, they helped to convey the immediacy of the poetic experience through visual form, as well as sound and meaning. When the effect of these novelties wore off, the poems often stood forth as clear expressions of great lyric intensity or satiric power.



E. E. Cummings (1894–1962)

UPI

Cummings received the Bollingen Prize in Poetry for 1957, and at the time of his death he was recognized as one of the great love poets of the English language.

His works, in addition to those mentioned above, include: *Tulips and Chimneys* (1923); *XLI Poems* (1925); *&* (1925); *Is 5* (1926); *him: a play* (1927); [no title] (1930); *CIOPW*, drawings and paintings (1931); *W [ViVa]* (1931); *Eimi*, a diary of his trip to Russia (1933); *No Thanks* (1935); *Tom*, a satirical ballet based on *Uncle Tom's Cabin* (1935); *1/20: poems* (1937); *Collected Poems* (1938); *Fifty Poems* (1940); *1 × 1* (1944); *Anthropos—the Future of Art* (1945); *Santa Claus: a Morality* (1946); *XAIPE* (1950); *i: six nonlectures* (1953); *Poems 1923–1954* (1954); *Ninety-Five Poems* (1958); and *One Hundred Selected Poems* (1959).

CURACAO. See NETHERLANDS ANTILLES.
CURLING. See SPORTS, GAMES, AND SHOWS.
CYCLING. See SPORTS, GAMES, AND SHOWS.

CYPRUS

Cyprus is the third largest island in the Mediterranean Sea (area, 3,572 square miles; pop., 1961 est., 581,000), lying off the Gulf of Alexandretta some 60 miles west of the coast of Syria. Ceded by Turkey to Great Britain in 1878, Cyprus remained a crown colony from 1925 to 1960, when on August 16 it became an independent republic under treaties with Britain, Greece, and Turkey, which provide for continuance of British military bases on the island. Cyprus is a member of the United Nations and was admitted to the Commonwealth of Nations on March 13, 1961. About 80% of Cypriotes are of Greek origin; nearly 18% are Turkish. The capital and largest town is Nicosia (1960 pop., 87,000); principal ports (with 1960 est. pop.) are Limassol (39,000), Famagusta (28,500), and Larnaca (19,000).

Government.—Under the constitution which came into force on August 16, 1960, the executive branch consists of a Greek president and a Turkish vice president elected for 5-year terms (Archbishop Makarios and Dr. Fazil Kutchuk, respectively, were elected to these offices in 1959), and a Council of Ministers (7 Greek, 3 Turkish). Legislative authority is vested in a 50-member House of Representatives (35 Greek and 15 Turkish members), consisting after the July 31, 1960, elections of 30 members of the Patriotic Front, 15 Turkish Cypriote Nationalists, and 5 members of the Communist-controlled AKEL (Progressive Party of

the Working People). Each of the chief ethnic groups has its own communal chamber, with control over purely internal affairs.

Education and Religion.—Educational institutions, administered by separate communal boards of education, totaled in 1960–61: Greek—526 elementary (67,276 pupils); 34 secondary (22,154 pupils); 120 evening; 2 technical; 1 agricultural; and the Teacher Training College, Nicosia (425 students in 1958); Turkish—229 elementary (15,766 pupils); 21 secondary (5,763 pupils); 109 evening; 2 technical; 6 institutes for foreign languages. The small Armenian, Maronite, and Roman Catholic minorities voted on Nov. 13, 1960, to join the Greek community.

Finance.—Cyprus is a member of the International Monetary Fund, which fixed the initial par value of the Cyprus pound at U.S.$2.80 (as of July 26, 1962). Revenue, 1961: £19,069,170; expenditure, £18,339,523 (development expenditure, £2,587,413). In January the House of Representatives provided funds to start the 1962 section of the Five-Year Plan, which calls for a total government investment of £61,970,000. Revised allocations included (in millions): water supplies, agriculture, and forestry, £24.5; harbor development, £11; electrification, £10.5; roads, £5.5; tourism, £3; health measures, £2.

Transportation and Communications.—Main roads, 1962: 1,046 miles (883 asphalt); secondary roads, 2,900. Air services: British European Airways equips Cyprus Airways on the Nicosia-Cairo and other routes; seven other airlines provide regular services; civilian passengers at Nicosia airport (1960), 92,910. Telephones, 20,458 (1960); radio receivers, 96,182 (1961); television sets, 3,102 (1960).

Economic Indicators.—Gross national product, 1960: £78.4 million; per capita national income, 1960: £139 (the Five-Year Plan seeks to achieve a GNP growth rate of 6.2% annually, and one of 4% for per capita national income). Outstanding public debt, 1960: £13,857,952; outstanding loans, £18,366,537.

Manufactures and Mining.—In 1961, 65,380 members of 354 trade unions were engaged in a wide variety of light manufacturing industries. Cyprus is the second largest exporter of pyrites in the world. Principal mineral products (with export figures for 1960 in long tons): iron pyrites, 815,412; cupreous concentrates, 115,784; cupreous pyrites, 248,931; gypsum, 109,704; asbestos, 15,328; chrome ore, 14,020.

Agriculture.—Farm land occupies about 1 million acres (570,000 acres cropped in 1960). Chief production: wheat, 2 million bushels; barley, 2,406,980 bushels; grapes, 90,125 tons. Forest area: 670 miles; forest roads, 533 miles.

Foreign Trade.—Total exports, 1961: £19,018,000 (down £214,000 from 1960); total imports, £40,416,000 (up £1,286,000). Exports to the United Kingdom: £8.02 million. Imports from United Kingdom: £14,027,936; from United States, £2,412,000. Principal exports (values in millions): minerals, £8.41; citrus fruit, £2.18; potatoes, £1.3; wine, £0.77; carobs, £0.41. Principal imports: foods, £7.36; mineral fuels and lubricants, £3.5; chemicals, £3.47; automobiles, £2.17; beverages and tobacco, £1.2; cotton piece goods, £0.86; cement, £0.27.

Events, 1962.—From May 20 to June 5, President Makarios paid state visits to the United States and West Germany at the invitation of Presidents Kennedy and Lubke, respectively. In Washington his talks with President Kennedy were believed to have focused on the penetration of the Cyprus economy by the Soviet Union and other members of the Communist bloc. Cyprus renewed on Dec. 22, 1961, a barter agreement with the USSR, and subsequently signed similar agreements with Yugoslavia (Jan. 5, 1962), Bulgaria (February 2), Czechoslovakia (February 6), Hungary (March 6), and Poland (March 17). Poland also contracted to improve Famagusta harbor. In a conference with Archbishop Makarios on August 30 during an official visit to Cyprus, U.S. Vice President Lyndon Johnson voiced the concern which Cyprus' relationships with Communist countries had caused among the NATO allies, in view of the importance of Cyprus as the chief army and air base of the West in the eastern Mediterranean and the site of a United States radio relay and monitoring service. Earlier, President Makarios had stated that the trade agreements with the Communist bloc were only "temporary measures made necessary by the island's agricultural surpluses," and that the Westward orientation of his government remained unchanged.

President Makarios and Vice President Kutchuk met in Nicosia on April 2 with Duncan Sandys, British secretary of state for Commonwealth relations, with whom they discussed the adverse effect on the republic's economy of any reduction of British forces at the Royal Air Force base at Akrotiri and the staging base at Dhekelia. They also called attention to the possibly "disastrous consequences" for Cyprus of Britain's proposed entry into the European Economic Community (EEC). (More than a third of Cyprus' exports are taken by the United Kingdom.) In October the government requested negotiations with the EEC, aimed at the admission of Cyprus as an associate member.

Scattered acts of violence, including the explosion of two bombs placed in Turkish Cypriote mosques, marked the seventh anniversary of the EOKA terrorist movement (April 1), which until the achievement of independence had sought to bring about the union of Cyprus with Greece.

DONOVAN ROWSE,
Author and Publicist.

CZECHOSLOVAKIA

The Czechoslovak Socialist Republic (ČSSR), a Soviet-dominated and Communist-ruled state of central Europe, has an area of 49,354 square miles and a population officially estimated (March 1962) at 13,820,300. The chief cities, with their populations (1959 estimates), are Prague (Praha), the national capital, 990,000; Brno, 312,000; Ostrava, 231,698; Bratislava, capital of Slovakia, 256,700; Pilsen (Plzeň), 136,854. Of the total population, there are approximately 9 million Czechs, 3.75 million Slovaks, 0.5 million Magyars, and 0.5 million of other nationalities.

Government.—The constitution of July 11, 1960, officially defines Czechoslovakia as a "socialist republic," a description previously used only by the Soviet Union, in contrast to the term "people's republic" used by all other Soviet-bloc countries. A significant change in the 1960 constitution was the reduction of Slovakia's local autonomy, although Slovakia retained its own National Council. The constitution provides for a unicameral National Assembly of 300 elected members, who serve four-year terms. The president is elected by the Assembly for a five-year term. Antonín Novotný has been president since Nov. 19, 1957. Villiam Široký, the premier, was first elected on March 21, 1953.

Actual power in Czechoslovakia is held by the Communist Party through its local and national organizations and the Communist-controlled National Front. The Communist Party is headed by President Novotný, who is first secretary of the Central Committee, and Karol Bacílek, first secretary of the subsidiary Slovak Communist Party. In 1960 the party had 1,559,082 members, or 12% of the total population—a higher percentage than in any other Soviet-bloc country.

Education.—The educational system has been secularized, nationalized, and modeled on that of the Soviet Union. Soviet-type 11-year schools have been established, and, as in the Soviet Union, a law provides for nine years of obligatory schooling, including part-time work in agriculture and industry. Number of schools (with enrollments), 1960: 12,581 primary (2,220,781); 451 secondary (78,754); 724 technical and normal (145,493); and 30 higher (88,564). In 1961, about 2,700 foreign students from 80 countries attended Czechoslovak universities. The five universities are the Charles University in Prague; the universities in Brno, Bratislava, and Olomouc; and the new University of the Seventeenth of November.

Religion.—The religious distribution of the population is: Roman Catholics, 9,300,000; Protestants (Lutherans, Calvinists, etc.), 780,000; members of the Czechoslovak church, 1,000,000; Eastern Orthodox, 465,000; and Jews, 18,000 (1961 est.). The official policy of the government is to discredit and destroy religion; every effort is made to use the church for the promotion of state policies. A law of October 14, 1949, made the clergy civil servants of the government, and clergymen were obliged to sign an oath of allegiance to the state. A special agency for church affairs handles religious matters. The religious life of the Jewish minority is supervised by the Council of Jewish Religious Communities in the Czech regions of Bohemia and Moravia and by the Central Union of Jewish Religious Communities in Slovakia.

Finance.—The Czechoslovak monetary unit is the koruna (crown), which has an exchange value of 1.80 koruny to 1 ruble, or 7.20 crowns to the U.S. dollar. The

budget for 1962 was balanced at 123.2 billion koruny (up 7.5% over 1961). Of total expenditures, 64.8 billion koruny were allotted to the planned development of the economy, 44.9 billion to cultural and social work, 10.8 billion to the defense and security of the state, and 2.7 billion to administration and the law courts.

Transportation and Communications.—Transport networks (miles, 1961): railroads, 8,400; roads, 80,901 (1957); navigable waterways (the Danube and Vltava rivers), 281. In 1961, Czech railways carried 205.6 million tons of freight, a 50% increase since 1955; 198 electric locomotives and 149 diesel engines were added to the rolling stock in 1961. Merchant fleet, 1960: 11 vessels (85,000 gross registered tons). Other communications data for 1961: radio receivers, 3,141,000; television sets, 1,089,449; telephones, 904,000 (June, 1962).

Agriculture.—As of September 1962, 91% of the land was collectivized. During 1961 and early 1962 more than 2,800 collectives were merged into larger units; the average size of each collective unit was 1,450 acres in the Czech provinces of Bohemia and Moravia and 662 acres in Slovakia. At the same time, however, greater efforts were made to eliminate private plots, and this development has caused considerable discontent.

In 1961, agricultural production suffered a severe setback, and all indications are that the planned 23% increase in the agricultural sector provided by the third five-year plan (1961–65) will not be achieved. Production of major crops in 1960 was as follows (in thousands of metric tons): wheat, 1,503; rye, 895; barley, 1,745; oats, 1,020; potatoes, 5,093; and sugar beets, 8,368.

Industry.—The third five-year plan envisaged a 54% increase in overall industrial production between 1961 and 1965. The stress was on the chemical industry, heavy engineering, and steel. The plan also called for expansion of the labor force and large increases in labor productivity. In 1961, industrial production rose to a level just short of the planned goal. The chemical industry overfulfilled its goals, but pig iron, steel, and rolled materials fell short, causing repercussions in other closely related spheres. The number of workers in industry (12,367,000 in 1961) exceeded the planned target, but labor productivity fell short of its mark. The 1962 plan called for continued industrial development, as well as for the "further leveling of economic standards of individual regions." Consumer products were expected to increase by 6.3% over 1961 production. In 1962, however, Czechoslovakia had serious failures in both collectivized agriculture and industry. As a result the third five-year plan was abandoned, a new one-year plan for 1963 was drawn up, and a seven-year plan (1964–70) was introduced to coordinate the country's economy more closely with other Soviet-bloc countries.

Chief industrial products and 1961 production figures (in millions of metric tons, with 1962 goals in parentheses): hard coal, 26.2 (27.3); brown coal, 61.4 (65.0); steel, 7.0 (8.0); coke 8.5 (9.1); rolled material, 4.7 (5.4); fuel, 1.9 (2.2); cement, 5.3 (6.5); cotton material, 463.5 million meters (488.5); electricity, 26.9 million kw.-hr. (29.7).

Foreign Trade.—Total imports, 1961: 14,570 billion koruny (13,072 billion in 1960); exports, 14,733 billion (13,892 billion in 1960). Approximately 75% of Czechoslovakia's trade in 1961 was with other Soviet-bloc countries. Czechoslovakia stands third behind the Soviet Union and China in intra-bloc trade credits, and has made substantial contributions to the underdeveloped nations of Asia, Africa, and Latin America in the form of financial and technical aid. From 1953 to 1961, Czechoslovakia granted loans and credits amounting to 1,389.8 million old rubles ($367.4 million).

Events, 1962.—Despite the fact that President Novotný has aligned his country firmly behind Khrushchev against Communist China, and against the concept of Communist polycentrism advocated by the Italian Communist leader Palmiro Togliatti, Czechoslovakia's relations with the Albanian and Italian Communists seemed to have improved in 1962. Trade with Albania even grew, and in July a Czech party delegation under Central Committee Secretary Vladimír Koucký spent two weeks in Italy on a mission aimed at improving relations with Togliatti's Communists.

In January it was announced that regular commercial flights between Havana and Prague would be opened immediately. In February, Czechoslovakia and Cuba signed a trade treaty under which trade between the two nations was anticipated to reach $100 million in 1962.

At a session of the Central Committee of the Communist Party on February 6–7, Rudolf Barák, a deputy premier, one-time minister of the interior, and (since June 1961) chairman of the Government Commission for National Committees, was expelled from the party and ejected from all state and public functions on charges of abuses of official duties. Barák was sentenced by a high military court to 15 years' imprisonment and confiscation of all his property. The trial, which avoided show and publicity, was noticeable in its contrast to earlier Stalinist purge trials.

The culmination of the government's de-Stalinization campaign was the destruction in October of the huge statue of Stalin which stood on Letná Hill in Prague. It was also decided to move the remains of the former Stalinist leader Klement Gottwald, first Communist president of Czechoslovakia, from his glass-topped coffin on Vitkov Hill, and rebury him elsewhere.

Following a meeting in early July of the National Assembly, President Novotný proposed several changes in the cabinet and the State Planning Commission. The proposals were immediately adopted and resulted in the eviction of Deputy Premier Otakar Simunek from his position as chairman of the State Planning Commission. Simunek was assigned to the organization and direction of Czechoslovak activities with respect to the Council for Mutual Economic Assistance (COMECON) and other lesser duties. Alois Indra succeeded Simunek as chairman of the commission.

COMECON continued to move haltingly forward in 1962. Its most notable achievement was the oil pipeline, opened in February 1962, which linked the Volga oilfields in the USSR with Poland, East Germany, Hungary, and Czechoslovakia.

On July 24 the draft of the new party statute was published for discussions prior to the 12th Communist Party Congress in December. It followed the Soviet party draft of 1962 in many respects. The statutes are to replace those passed in 1952, and they constitute a party constitution for at least the next four years. The Czech draft is much stricter than its Soviet counterpart. No provision is made for amendment, once the document is adopted, until the next party congress. Nor are any provisions made for removal of Central Committee members. Another striking difference is that the Soviet draft stipulates secret ballots for party bodies, while the former does not. The Czech draft also extends the term of party service required as a qualification for service as a functionary, so that regional and district leaders must be selected from older party members. The apparent effect of the statute, if adopted, will be to further strengthen President Novotný's tight grip on the nation.

Novotný arrived in Moscow on October 30 for a brief visit, during which he presumably discussed with Soviet leaders his country's economic difficulties and the Cuban crisis. Czechoslovakia had sent to Cuba military arms and economic aid worth an estimated $40 million to $100 million. The Czechoslovak press bitterly attacked the United States quarantine of Cuba, and, as in other Soviet-bloc countries, the Czechoslovak armed forces were placed on a combat-readiness alert during the crisis.

Zdeněk Nejedlý, president of the Czechoslovak Academy of Sciences and a minister without portfolio, died in March. He had been highly esteemed as a leftist historian during the 1930's, had served as a deputy premier after World War II, and was a member of the Communist Party Presidium and Central Committee. Rudolf Strechaj, a deputy premier and the chairman of the Slovak National Council, died on July 28. He was the top Slovak liaison man in the central government.

The first half of 1962 brought continued eco-

nomic progress in industrial production, which increased by 6.8% over the first half of the previous year but still fell about 1% short of the planned goals. Perhaps more important was the fact that key industries such as metallurgy, heavy engineering, and transport failed to meet their goals. Major projects were held up as a result, particularly the construction of power stations and the East Slovak ironworks.

Czechoslovakia has hesitated to follow the actions of the Soviet Union and other Soviet-bloc countries in raising the prices of certain foods and consumer goods. In August 1962 the Central Committee announced its intention to set up a Commission of People's Control at all levels of the economy. The function of the commission would be to mobilize the population for "a consistent execution of state and social tasks," and for the "protection of socialist property."

Agricultural production fell far short of the planned goals in the first half of 1962. According to official figures, agricultural production in 1962 was only 7% greater than the prewar level. In late summer the authorities were compelled to plead for volunteer brigade work to help harvest crops because of labor shortages and inefficiency.

As of April 1, social security benefits were extended to farmers on collective farms, but they were considerably less favorable than those given to industrial workers, for farmers are the only group which must pay for part of this social service.

WAYNE S. VUCINICH,
Professor of History, Stanford University.

DANCE—The January 17 premiere of *A Midsummer Night's Dream* highlighted the 1961–62 winter season of the New York City Ballet.

NEW YORK CITY BALLET

DAHOMEY

Situated in western Africa on the Gulf of Guinea, the Republic of Dahomey has an area of 44,696 square miles and a population of 2,050,000 (1961 est.). More than half the population is of the Fon-Adja ethnic group; the remainder comprises various Negroid tribes and a small minority of 800 Europeans, mostly French. The official language is French. Principal cities: Porto-Novo, the capital (1956 est., 31,500); and Cotonou, chief seaport and commercial center (54,100).

Government.—Formerly a French overseas territory within French West Africa, Dahomey became independent on Aug. 1, 1960. The constitution of Nov. 25, 1960, provides for a presidential-type government and a National Assembly of 70 members elected for a 5-year term by universal suffrage. Hubert Maga, leader of the dominant Party of Dahoman Unity, was elected president to a 5-year term in the elections of Dec. 11, 1960. Dahomey is a member of the Council of the Entente.

Education and Religion.—School attendance has doubled since 1951 and is concentrated in the urbanized south. School enrollment, 1959: 91,068 (about 30% of the school-age population), including 88,199 primary pupils and 2,869 secondary students. The people are mostly animists; there are some Christians in the south and a few Muslims in the north.

Finance.—The estimated budget for 1962 was balanced at 6,300 million francs CFA (246.85 francs CFA equal the U.S. dollar). The French government in 1962 supplied 1,200 million francs CFA of total receipts, and provided other aid in the form of loans and economic grants.

Transportation.—Dahomey's relatively advanced transportation system includes three railway lines which connect the seaport of Cotonou with the interior and aggregate 360 miles of track; 871 miles of all-weather roads; and 2,367 miles of secondary roads. Cotonou has a deep-water port and an international airport.

Production.—The economy is predominantly agricultural. Cassava and corn are the chief food staples in the south, and millet and yams are the main subsistence crops in the north. Cattle, sheep, and goats are raised in the northern uplands. Fishing in the southern lagoons is important; 2,429 metric tons of fish and fish products were exported in 1961. Chief cash crops (metric tons exported, 1961): palm kernels, 48,482; palm oil, 8,973; peanuts, 12,522; shea nuts, 2,891; and green coffee, 2,089. Industry consists chiefly of handicrafts and plants for processing agricultural products.

Foreign Trade.—Total exports, 1961: 3,204 million francs CFA (down 29% from 1960); imports, 5,609 million (down 26%). Chief exports (in million francs CFA, 1961): palm kernels, 1,358; peanuts, 550; and palm oil, 428. France in 1961 took 80% of Dahomey's exports and supplied 66% of its imports.

Events, 1962.—Early in the year the National Assembly approved a four-year economic and social development plan (1962–65) to increase the country's agricultural and industrial production by about 50%. In its first year of operation the plan cost an estimated $25.2 million, of which $4.2 million was provided by France and the remainder by Dahomey and other African states. The five-year plan is the first installment of a 20-year program which aims to double the country's per capita annual income of 34,000 francs CFA ($138). President Hubert Maga announced on February 14 that he had reshuffled his cabinet in order to "streamline the governmental machinery" necessary for carrying out the development plan.

W. R. F.

DAIRY PRODUCTS

United States milk production in 1962 was about 126.5 billion pounds, according to preliminary estimates of the Agricultural Economic Re-

search Service. Such production would be a billion pounds larger than the 1961 production of 125.5 billion pounds, and a new record. Annual milk production per cow rose to 7,325 pounds, compared with 7,211 pounds in 1961 and 5,374 in 1952. The number of milk cows at mid-year 1962 was estimated to be 17,270,000, as against 17,395,000 a year earlier and 21,291,000 in 1952. Except for the year 1953, the trend in milk cow numbers has been downward since 1944.

The milk equivalent of Commodity Credit Corporation (CCC) purchases for price support in the first 10 months of 1962 was at an annual rate of about 11.3 billion pounds. This was about 9% more than the previous record of 1953. Purchases in 1962 were estimated at 435 million pounds of butter, 215 million pounds of cheese, and about 1,375 million pounds of nonfat dry milk. Such purchases are equivalent to about 9% of production.

Total civilian consumption of milk and dairy products was about 117 billion pounds of milk equivalent, or 1.5 billion more than in 1961. Most of the gain was due to substantially heavier CCC donations of dairy products for welfare and the school lunch and special milk programs. Per capita consumption was about 640 pounds of milk equivalent, the same as a year earlier, but 60 pounds less than a decade earlier. Per capita consumption of fluid milk and cream was only 312 pounds, compared with 314 in 1961 and 352 in 1952.

U.S. PER CAPITA CONSUMPTION OF CERTAIN DAIRY PRODUCTS AND MARGARINE

(In pounds)

	1947–49	1952	1961	1962[1]
Fluid milk and cream	359	352	314	312
Evaporated milk	18.1	15.7	10.7	9.9
Frozen dairy products	47.7	47.3	51.3	51.1
Cheese	7.0	7.6	8.5	9.0
Butter	10.6	8.6	7.4	7.4
Margarine	5.6	7.9	9.5	9.3

[1] Preliminary.

According to preliminary estimates of the Foreign Agricultural Service, milk production in 34 countries which normally account for about 85% of the world's production was about 620 billion pounds, or 1% more than in 1961. Production was larger in all but seven countries, but only in East Germany and Chile was the decline 5% or more.

In western Europe, which accounts for more than a third of world output, production was up about 1%. Only in Denmark, France, and Italy did output fall. Eastern Europe also showed a gain of 1%, despite declines in East Germany and Hungary. Compared with 1951–55, world milk production was up about 25%.

MILK PRODUCTION IN PRINCIPAL COUNTRIES

(In million pounds)

	Average 1951–55	1961	1962[1]	1962 compared with 1961
Canada	16,339	19,245	19,435	101%
Mexico	3,806	5,998	6,530	109%
United States	119,222	125,456	126,500	101%
Belgium	7,771	8,702	8,825	101%
Denmark	11,521	12,178	12,000	99%
Finland	6,147	7,936	8,165	103%
France	38,051	52,846	52,210	99%
Germany, West	36,023	43,810	45,395	104%
Ireland	5,257	6,727	7,000	104%
Italy	16,663	21,485	21,055	98%
Netherlands	12,654	15,329	15,940	104%
Norway	3,554	3,571	3,655	102%
Sweden	9,829	8,862	8,850	100%
United Kingdom	23,250	29,019	29,975	103%
Germany, East	8,616	11,580	11,025	95%
Poland	20,651	28,625	28,600	100%
USSR	79,080	113,000	116,000	103%
Argentina	10,108	9,761	9,565	98%
Brazil	7,294	11,618	11,685	101%
Australia	12,518	14,683	15,345	104%
New Zealand	11,187	11,889	12,230	103%

[1] Preliminary.

C. J. Enzler,
Information Specialist, Office of Information, U.S. Department of Agriculture.

DALLAS

Rapidly growing Dallas, Texas, with a population in 1960 of 679,684 (1962 est., 725,000), advanced in the decade 1950–60 from 22d to 14th among the most populous United States cities, and retained the distinction of being the nation's largest city not served by water transportation. It is the seat of Dallas County, and the center of a four-county standard metropolitan area (3,653 square miles; 1962 est. pop., 1,250,000). Area within the city's corporate limits: 283.4 square miles, or 31% of the county area.

Dallas and its metropolitan area support a diversified economy which employed 474,040 people as of Aug. 1, 1962, about 25% of whom were in manufacturing. The city is the largest wholesale trade center in the South; a major insurance, finance, and service center; and a leading international spot-cotton market. Principal manufactures are clothing, food processing, aircraft, automobile assembling, and electronics. Recently the container industry has become well-established in the area, as has the paint industry. Such indicators as bank debits, postal receipts, consumption of gas and electricity, residential and nonresidential construction, and employment reveal that economic activity of the area increased approximately 11% during the year ending June 30, 1962.

Dallas has a council-manager form of government headed in 1962 by Mayor Earle Cabell, one of a 9-member Council popularly elected biennially. City Manager Elgin Crull has served continuously since 1952.

For the fiscal year 1962–63, city budget: $82,994,800; assessed valuation for tax purposes: $2,541,000,000; tax rates per $100 assessed value: city, $1.56; schools, $1.25; and hospitals, $0.46. Long-term net debt: $184,499,664.

Work was begun in 1962 on a $19 million County Government Center to be erected in downtown Dallas. The largest construction project begun during the year was the 50-story First National Bank building, to be the tallest building west of the Mississippi. Total dollar volume of construction in Dallas in 1962 set an all-time record, exceeding the old high of $190 million set in 1961.

In 1962 the U.S. Army Engineers released an eagerly awaited report affirming the feasibility of a 360-mile barge canal on the Trinity River from Galveston Bay on the Gulf of Mexico to Dallas and beyond. The favorable report constitutes a major step nearer to realization of water transportation for Dallas. Canalization is one phase of the proposed $900 million Trinity River improvement program.

Two highly controversial issues of major proportions emerged in Dallas in 1962. Federal authorities announced a policy opposing further development of Love Field, the city's busy airport located close in, and favoring expansion and joint use of Carter Field, located midway between Dallas and Fort Worth, and owned by the latter. Self-supporting Love Field, built at a locally financed cost of $45 million, ranked seventh nationally in 1962 in the number of passengers enplaned and in air cargo loaded, and sixth in airmail loaded. Eight commercial airlines operate at Love Field.

The second issue arose over construction of 3,000 additional units of new low-cost housing to eliminate substandard dwellings in West Dallas, as urged by Mayor Cabell. Stormy conservative opposition to the expansion of public housing forced a referendum on November 6, and the proposal was decisively defeated.

In September, the city's public schools entered their second year of peaceful integration under the

"stair-step" grade-a-year plan approved by the federal court.

ARTHUR A. SMITH,
Vice President and Economist,
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DAMS

Construction of record-breaking dams continued at a rapid pace in many parts of the world during 1962. Both the structures and their cost established records—a dam nearly 1,000 feet high is said to be under construction in the Soviet Union, and work started on a dam in Pakistan under a $354 million contract, the largest ever awarded in nonmilitary competitive bidding.

Oroville Dam.—Although preliminary work has been under way for several years and the first huge diversion tunnel is nearly completed, the highlight of 1962 on this California project was the award of a $120.9 million contract for the main earth-fill embankment, the largest nondefense, competitively bid contract ever awarded in the United States. The 735-foot-high earth-fill dam is equally impressive itself, with a volume of 78 million cubic yards. Except for a 990-foot-high rock-fill dam which the Soviet Union claims is under construction, Oroville has no equal for height in either earth- or rock-fill dams. The mammoth embankment on the Feather River in north-central California is the key feature in the state's big water project which will involve an unprecedented transfer of water from the mountains in the north to areas hundreds of miles away, as far south as San Diego. In addition, flood-control benefits are estimated at $3 million annually. Work on the dam will continue for at least five years.

Glen Canyon Dam.—At the end of 1962 this graceful, thin concrete arch towered over 500 feet high to plug the Colorado River gorge in Arizona near the Utah border. When it is completed in 1964, 710-foot-high Glen Canyon Dam will be the second highest dam in the United States, at least for a short time. Including its 900,000-kw. powerhouse, which huddles in the curve of its base, the dam will require over 5 million cubic yards of concrete.

Flaming Gorge Dam.—A second concrete-arch dam—also part of the Upper Colorado River Basin Project—Flaming Gorge Dam reached roughly three quarters of its 502-foot height in 1962. Started in 1958, this $30 million, 108,000-kw. project on the Green River in northeastern Utah will be completed in 1964.

Navajo Dam.—Construction crews topped out this 405-foot-high, earth-fill embankment at summer's end in 1962. The 26.4 million-cubic-yard structure holds back the San Juan River in the mesa country of northwestern New Mexico. The Bureau of Reclamation project's primary aim is to provide irrigation water for 110,000 acres on a nearby Navajo Indian reservation.

San Luis Dam.—Preliminary work started in 1963 on this big California dam. On Aug. 18, 1962, President John F. Kennedy set off the ceremonial dynamite blast at the site 150 miles southeast of San Francisco to start the joint federal-state irrigation project. The 75 million-cubic-yard earth-fill dam will share fourth place in volume with Mangla Dam in Pakistan. The 2.1 million-acre-foot reservoir will be filled with water diverted from the Sacramento-San Joaquin Delta. San Luis is part of a $511 million project associated with California's ambitious State Water Project which includes Oroville Dam.

Cougar Dam.—This 519-foot-high, rock-fill dam, now more than 60% complete, will be the world's highest rock-fill dam when it is completed in 1964. (Japan's 432-foot Miboro Dam now holds the rock-fill record.) The U.S. Army Corps of Engineers is building Cougar Dam primarily for flood control on the McKenzie River's South Fork in Oregon.

Missouri Basin.—President John F. Kennedy dedicated this huge project on Aug. 17, 1962 during a tour of the West. The dam itself is essentially complete and ranks as the second largest fill embankment in the world; Fort Peck, also on the Missouri, is the biggest with 126 million cubic yards. Oahe Dam stretches more than 1¾ miles across the Missouri Valley. The 242-foot-high fill contains 91 million cubic yards and forms a reservoir that will eventually reach 250 miles upstream and contain 23.6 million acre-feet of water. Oahe is being built mainly as a flood-control facility, but there is also a 595,000-kw. powerhouse. The first 85,000-kw. generator went on the line in April 1962. Irrigation water for some 750,000 acres will be an added benefit.

The smallest of the six main-stem dams on the Missouri, Big Bend, moved ahead during 1962. The 8,000-foot-long earth-fill dam located near Fort Thompson, S. Dak., will generate first power in 1964.

Canada.—Construction began in earnest in 1962 on Portage Mountain Dam, an ambitious undertaking of the British Columbia government. The rolled, earth-fill embankment on the Peace River will be 650 feet high with a volume of 65 million cubic yards, holding back an 88 million-acre-foot reservoir. A very large 2.5 million-kw. powerhouse is planned for the $880 million project.

Europe.—Roselend Dam in the French Alps, a beautiful and structurally unique concrete dam, was completed in 1962. Combining a buttress design with a concrete supporting arch across a deep gorge, Roselend is a fitting climax to the career of the famous French dam expert, the late André Coyne. The dam is 490 feet high and is located on the Isère River. Its reservoir supplies an underground power plant with an installed capacity of 500,000 kw., the largest in France.

Another notable dam completed in France during 1962 was Monteynard on the Drac River in the Alps. This 510-foot-high concrete-arch dam has its 320,000-kw. powerhouse built into its base to protect the generators from the frequent dangerous rock slides in the steep gorge.

Soviet Union.—During the summer of 1962, some 150 engineers and experts on dams met in the Soviet Union for the 29th Executive Meeting of the International Commission on Large Dams. The conferees returned with eyewitness reports on many of the USSR's hydroelectric projects. The tour behind the iron curtain took the engineers along the Volga River, which is almost completely developed hydroelectrically. Hydro dams already built, under construction, and on the drawing boards will bring the Volga system's aggregate generating capacity to almost 9 million kw. The 2,576,000-kw. Volgograd (formerly Stalingrad) plant is the world's largest completed hydroelectric installation (Grand Coulee's capacity is 1,974,000 kw.). The Kiubyshev Dam power plant, completed in 1957, has a capacity of 2.3 million kw.

All that visitors found at the site of the record-breaking, 990-foot-high, concrete-arch dam reportedly under construction on the Inguri River in Georgian SSR was a sign marking the spot and some evidence of foundation

The Yanhee Dam in northern Thailand, under construction in 1962, is to begin generating 70,000 kw. of electricity in late 1964.

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investigations. The delegates were not taken to see the 980-foot-high, rock-fill Nurek Dam, said to be under construction on the Vakhsh River near the Afghanistan border, or the mammoth, 5 million-kw. Krasnoyarsk hydroelectric project on the Yenisey River in south-central Siberia. A construction start was claimed on Krasnoyarsk as early as 1958. But the huge Bratsk plant on the Angara River, with a planned power capacity of 4.5 million kw., was displayed. Bratsk began generating partial power late in 1961, even though the dam has reached only about half its full 418-foot height.

Asia.—Construction started in 1962 on the big Mangla Dam project in Pakistan, a key unit in the $1 billion Indus River project which will irrigate vast areas of India and Pakistan. The construction contract for the Jhelum River earth-embankment dam set a record as the largest competitively bid, nonmilitary award ever made, at $354 million. Pakistan also inaugurated its $100 million Karnafuli earth-fill dam in 1962, despite protests from India that the reservoir will flood Indian territory.

Bhakra Dam was completed in India in 1962. This 740-foot-high concrete dam is on the Sutlej River in Punjab State. Prime Minister Nehru officiated at ceremonies dedicating the 450,000-kw. powerhouse. India's Rihand hydroelectric and irrigation project on the River Rihand in Uttar Pradesh State also was completed. The development includes a 306-foot-high, 2.2 million-cubic-yard concrete dam and a 300,000-kw. powerhouse.

Southeast Asia's largest construction project, Yanhee Dam in Thailand, reached more than half its 508-foot height during 1962. This $100 million concrete-arch gravity dam on the Ping River is officially named Bhumiphol Dam, but is more often called Yanhee after a mountain forming one of its abutments. Two 70,000-kw. generators will be installed initially in its powerhouse, with space for a total of eight.

Africa.—This continent's largest water project, the 30-year, $650 million Orange River project in South Africa, is scheduled to get under way in 1963. Five dams, each over 200 feet high, will highlight the development, which also includes two tunnels, one of them 51 miles long. First-stage construction includes the two largest dams, one of which, Ruitge Dam, will be 390 feet high and impound a 32 million-acre-foot reservoir. The main objective of the Orange River program is for irrigation and industrial water supply, but a series of hydroelectric stations will provide a bonus of 177,000 kw. of power.

Preliminary work moved ahead in 1962 on Ghana's big Volta River hydroelectric project which includes Akosombo Dam. This 765,000-kw. installation will feed power in 1967 to a 100,000-ton aluminum smelter also under construction in Ghana. The United States in effect gave the green light to the ambitious undertaking by agreeing in late 1961 to loan Ghana $133 million for the smelter and dam, nearly half of their total cost.

Amid reports that construction was behind schedule on the United Arab Republic's Aswân High Dam on the Nile, in the fall of 1962 the Soviet Union announced that 300 additional Russian technicians were going to Egypt to speed construction, aiming toward first power generation in 1968.

Latin America.—Mexico's largest hydroelectric project, Infiernillo, moved ahead impressively in 1962. The $96 million development on the Balsas River centers around a 492-foot-high, rock-fill dam and a 600,000-kw. underground powerhouse. Also in Mexico, construction proceeded on Raudales Dam, a 426-foot-high dam on the Grijalva River.

(For additional information, see the Index entry, *Dams.*)

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DANCE

International exchange of dance troupes received its ultimate impetus in the autumn of 1962 when the Soviet Union's leading ballet company, the Bolshoi of Moscow, toured the United States at the same time that the New York City Ballet spent eight weeks in Moscow, Leningrad, Kiev, Tbilisi, and Baku. It was the American company's first appearance in the USSR, and artistic director George Balanchine's first visit to his homeland in 40 years.

The Bolshoi Ballet.—The Soviet company did not receive quite the measure of American acclaim that it did during its first visit, in 1959. One reason was the retirement of its great prima ballerina, Galina Ulanova, who was in no way replaced by the current leading dancer, Maya Plisetskaya. The second blow to public and critical response came from the choice of repertoire. Much advance publicity was accorded Leonid Yakobson's evening-long spectacle, *Spartacus*. But audiences at the American premiere (September 12) were either appalled or amused by its overblown mimetic style, reminiscent of silent films. *Spartacus* had to be withdrawn from the New York repertoire, and it was not taken on tour.

The public was, on the other hand, captivated by *Ballet School*, an unpretentious work assembled by the ballet master, Asaf Messerer, and designed to display the elements of training to which a Bolshoi dancer is exposed. It had its world premiere on September 17.

Other Cultural Exchanges.—The New York City Ballet was not the only American group to be introduced to foreign audiences via the Cultural Presentations Program of the Department of State. In February, the Alvin Ailey Company, which specializes to a large degree in themes related to Negro folklore, embarked on a 15-week tour of the Far East. George Tapps and his company of tap dancers captivated African audiences. And Martha Graham, America's greatest dance innovator, took her company to Israel and Europe. The Israeli journey was highlighted by the premiere of a new composition based on the legend of Judith and Holofernes, with settings and music by Israeli artists.

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Leading dancer of Bolshoi Ballet of the Soviet Union, on tour of United States in 1962, was Maya Plisetskaya, shown in *Swan Lake*.

Overseas visitors to the United States included troupes from Thailand, India, Rumania, Mexico, Haiti, Morocco, Poland, the Philippines, Ceylon, China, Bali, Spain, France, and the Ukraine. The most stimulating contribution was that of Hindu performer-choreographer, Uday Shankar, whose evening-long *Samanya Kshati* was an original combining of traditional gesture and contemporary motivation.

American Modern Dance.—Despite a chronically unsteady economic picture, there were some new works of major stature in 1962. On April 30, in New York, Pauline Koner premiered an extended three-part solo called *The Farewell*, accompanied by the Mahler *Kindertotenlieder*. Dedicated to the memory of her former teacher, Doris Humphrey, Miss Koner's dance presented the artist at a new level of her development. Pearl Lang's *Apasionada* had its premiere in New York on January 5, with Miss Lang monumental in the central role of a gypsy, symbol of endurance.

The most distinguished full concert was that of Donald McKayle and Company, on April 22, in New York. Whether his themes were those of chain gang victims or the antics of New Orleans

jazz musicians, McKayle imbued all of his subjects with vitality and deep humanity.

Classic Dance.—The New York City Ballet forsook its usually austere approach to decor and costumes in the January 17 premiere of George Balanchine's evening-long *A Midsummer Night's Dream.* No visual effect was omitted, from a delicate shell-shaped divan for Titania, to fog blowing across the stage as the lovers slept; from dozens of tiny golden-wigged sprites, to Puck flying upward and out of sight at the end of the ballet. But more important than David Hays' luminous scenic effects and Barbara Karinska's beautifully detailed costumes was Balanchine's choreographic concept, especially in the first act. There he devised a style of movement that cleverly combined the descriptiveness of mime with the fleetness of dance.

No similar wit and fantasy entered the season's most heralded television "special," Balanchine's *Noah and the Flood,* with a score by Igor Stravinsky. This CBS-TV production (June 14) was stodgy, heavy-handed, and pretentious. The music, too, was singularly uninspired. The profusion of masks, costumes, and elaborate special effects were designed by Rouben Ter-Arutunian.

While the New York City Ballet continued to attract wide and enthusiastic audiences, the nation's other leading companies, the Ballet Russe de Monte Carlo and the American Ballet Theatre, suffered devastating financial difficulties. After a 25th anniversary tour ending in the spring of 1962 and featuring three new works (James Starbuck's *The Comedians,* Frederic Franklin's *Tribute,* and Leon Danielian's *España*), the Ballet Russe disbanded its dancers and made no plans for the September 1962 season. The American Ballet Theatre, heavily in debt, was more fortunate. Invited to make its permanent home at the spacious quarters of the Washington (D.C.) School of Ballet, it was placed under the sponsorship of the Washington Ballet Guild. The plan was for the company to have a season in the capital and a brief series of tours.

Another stroke of good fortune came for the American Ballet Theatre when it was invited to dance Eugene Loring's *Billy the Kid* on May 22 at the White House before President and Mrs. John F. Kennedy and their guests, President and Mrs. Félix Houphouët-Boigny of the Ivory Coast. (The month before, Jerome Robbins' company, Ballets: U.S.A., also appeared at the White House to entertain the shah and queen of Iran.)

In addition to the Washington Ballet Guild (backing the American Ballet Theatre), the Washington National Ballet Foundation was organized to support the Washington Ballet, and the National Ballet Society was formed to back the new National Ballet Company under the artistic direction of Frederic Franklin.

Musical Comedy.—Broadway produced no major dance efforts in 1962. On a minor level, one could mention the dances and direction of Joe Layton for the Richard Rodgers musical, *No Strings,* and the choreography by Herbert Ross, assisted by his wife, former ballerina Nora Kaye, for *I Can Get It for You Wholesale.* Layton attempted to give a "dance feeling" to the entire action of *No Strings.* In so doing, he had the imaginative collaboration of designer David Hays, who devised several mobile elements of decor. *I Can Get It for You Wholesale,* a second-rate musical about a cad in the garment industry, came alive principally in its dance episodes: a sinuous duet for Harold Lang and Sheree North, a tender waltz for Bambi Linn and Ken LeRoy, and an amusing group *hora.*

Jerome Robbins, America's most gifted theater choreographer, was represented by his direction of off-Broadway's *Oh Dad, Poor Dad, Mama's Hung You in the Closet, and I'm Feelin' So Sad,* and by some final touches on the Jack Cole choreography for *A Funny Thing Happened on the Way to the Forum.* In general, however, musical comedy seemed to be momentarily at a standstill, as far as dance was concerned.

DORIS HERING,
Associate Editor, "Dance" Magazine.

DATES. See FRUITS.

DAY, J(ames) Edward. See biographical sketch under UNITED STATES.

DEATH, Causes of

Slightly lower mortality in the United States in 1961 brought the crude death rate to 9.3 deaths per 1,000 population, close to the record low of 9.2 in 1954. Adjustment for the changed age composition of the population brings the 1961 age adjusted rate to 7.3 and the same rate for 1954 to 7.7 per 1,000 population, using 1940 population as a standard. These circumstances have brought the expectancy of life at birth to 70.2 years, the first time the figure has exceeded 70 years.

(A table showing estimated number of deaths and death rates in 1961, compared with final data for 1960, appears at the top of page 199. Selected death rate figures for 1961 which appear below in the text of this article are final, and therefore will not correspond precisely with those in the table on page 199.)

Heart disease, cancer, strokes, and accidents continue as the four leading causes of death. Deaths per 100,000 population from these causes in 1961 were 362.6, 149.5, 105.5, and 50.4, respectively. These four causes alone accounted for 72% of all deaths in 1961.

Pneumonia and influenza together rank 6th among the leading causes and account for over two and one-half times as many deaths as all other infectious and parasitic diseases combined. Generalized outbreaks of upper respiratory disease also tend to hasten death from other underlying causes, and the absence of such outbreaks in 1961 accounts for most of the general improvement over the 1960 mortality.

Mortality from maternal causes in 1961 gave a rate of 3.7 deaths per 10,000 live births, equal to the rate for 1960. The decrease in maternal mortality is shown by the following past rates: 68.9 in 1920–24, 63.6 in 1930–34, 28.1 in 1940–44, and 8.3 in 1950.

Mortality of infants under 1 year for 1961 was at the rate of 25.3 deaths per 1,000 live births, a new low. The declining rate of infant mortality is also noteworthy: 76.7 in 1920–24, 60.4 in 1930–34, 42.4 in 1940–44, 29.2 in 1950, and 26.0 in 1960. The first year of life continues to be the most hazardous of any single year until the late sixties, however. Accordingly, mortality from the groups of diseases that are characteristic of early infancy ranked fifth and accounted for nearly 4% of all deaths in 1961.

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DEATHS (OBITUARIES). For a list of prominent persons who died in 1962, see the NECROLOGY at the back of this volume. See also the articles on important persons who died during the year.

DEBT, Public. See CENSUS DATA, U.S.; TREASURY DEPARTMENT, U.S.

DEFENSE. See CIVIL DEFENSE; NATIONAL SECURITY; and the Index entry, *Military.*

DEATHS AND DEATH RATES FOR SELECTED CAUSES: UNITED STATES, 1960 AND 1961

(Data refer only to deaths occurring within the United States, including Alaska and Hawaii. Rates per 100,000 population residing in area, enumerated as of April 1 for 1960 and estimated as of July 1 for 1961. Numbers after causes of death are category numbers of the Seventh Revision of the International Lists, 1955)

Cause of death	Category	Number		Rate	
		1961*	1960	1961*	1960
All causes		1,702,000	1,711,982	930.3	954.7
Tuberculosis, all forms	001–019	10,470	10,866	5.7	6.1
Syphilis and its sequelae	020–029	3,330	2,945	1.8	1.6
Dysentery, all forms	045–048	250	355	0.1	0.2
Diphtheria	055	40	69	0.0	0.0
Whooping cough	056	80	118	0.0	0.1
Meningococcal infections	057	680	644	0.4	0.4
Acute poliomyelitis	080	120	230	0.1	0.1
Measles	085	510	380	0.3	0.2
Other infective and parasitic diseases	030–039, 041–044, 049–054, 058–074, 081–084, 086–138	5,670	5,780	3.1	3.2
Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues (cancer)	140–205	269,820	267,627	147.5	149.2
Diabetes mellitus	260	28,850	29,971	15.8	16.7
Major cardiovascular-renal diseases	330–334, 400–468, 592–594	940,440	935,668	514.0	521.8
Diseases of cardiovascular system	330–334, 400–468	928,670	923,635	507.6	515.1
Vascular lesions affecting central nervous system (strokes)	330–334	192,350	193,588	105.1	108.0
Diseases of heart	400–402, 410–443	668,170	661,712	365.2	369.0
Other hypertensive disease	444–447	12,490	12,662	6.8	7.1
General arteriosclerosis	450	34,840	35,876	19.0	20.0
Other diseases of circulatory system	451–468	20,820	19,797	11.4	11.0
Chronic and unspecified nephritis and other renal sclerosis	592–594	11,770	12,033	6.4	6.7
Influenza and pneumonia, except pneumonia of newborn	480–493	54,510	66,803	29.8	37.3
Ulcer of stomach and duodenum	540, 541	11,080	11,360	6.1	6.3
Gastritis, duodenitis, enteritis, and colitis, except diarrhea of newborn	543, 571, 572	8,470	7,932	4.6	4.4
Cirrhosis of liver	581	20,570	20,296	11.2	11.3
Acute nephritis, and nephritis with edema including nephrosis	590, 591	1,550	1,651	0.8	0.9
Deliveries and complications of pregnancy, childbirth, and the puerperium	640–689	1,380	1,579	0.8	0.9
Congenital malformations	750–759	21,030	21,860	11.5	12.2
Certain diseases of early infancy	760–776	66,890	67,094	36.6	37.4
Symptoms, senility, and ill-defined conditions	780–795	20,500	20,385	11.2	11.4
Motor vehicle accidents	E810–E835	37,520	38,137	20.5	21.3
All other accidents	E800–E802, E840–E962	55,240	55,669	30.2	31.0
Suicide	E963, E970–E979	19,170	19,041	10.5	10.6
Homicide	E964, E980–E985	7,640	8,464	4.2	4.7
All other causes	Residual	116,190	117,058	63.5	65.3

* Estimates are based on a 10% sample of death certificates. The sampling error varies with the number of deaths; for example, the sampling error is 47% for the estimate of 40 deaths from diphtheria; 5% for 3,330 deaths from syphilis; and 0.3% for the 668,170 deaths from diseases of the heart. (Source: U.S. Department of Health, Education, and Welfare, Public Health Service; *Vital Statistics of the United States, 1960* and *Monthly Vital Statistics Report, Annual Summary for 1961*, Part 2.)

DE GAULLE, Charles André Joseph Marie

President of France: b. Lille, France, Nov. 22, 1890.

De Gaulle in 1962 succeeded in ending the seven-year Algerian war, one of the crises that had brought him to power in 1958. He then turned to his grand projects: leading France back to the status of a first-rate power, with her own nuclear striking force; and uniting western Europe into a third force in world politics. In his mystical conception of France's role in the world he often clashed sharply with other Western leaders. He also faced strong opposition at home; but he retained his hold on the people, who had given him his power, and to whom he remained a symbol of French glory.

In the decades preceding World War II, de Gaulle became an authority on mechanized warfare, and in June 1940 was appointed undersecretary for war and national defense. After the fall of France, he became leader of the Free French resistance movement, and on June 2, 1943, organized and assumed direction of the French Committee for National Liberation. When the Allies recaptured Paris, the general returned to the city on Aug. 25, 1944, and five days later he became head of the provisional government of the French Republic. Resigning on Jan. 20, 1946, he remained in the background until the threat of civil war in May 1958 brought his return to power. The National Assembly endorsed him as premier on June 1, 1958, and, after the constitution creating the Fifth Republic was promulgated on October 4, he was elected president on December 21 and installed on Jan. 8, 1959.

Hailing the March 18 agreement at Évian-les-Bains, which tentatively ended the rebellion of the Moslem National Liberation Front (FLN) against French rule in Algeria, de Gaulle announced that a referendum would be held on April 8 in France and one on July 1 in Algeria to ratify the Évian accords. But before the voting was held, de Gaulle, angered by bitter, last-ditch resistance by ultra-nationalistic French *colons* both in Algeria and in France, called on March 23 for the crushing of "the terrorist bands in Algiers and Oran." Gradually the revolt was smashed, and on June 28 the right-wing Secret Army Organization (OAS) accepted a truce with Muslim authorities. The results of the referendums were a victory for de Gaulle: 90 per cent of the French voters and 99.75 per cent of those in Algeria approved the Évian agreements. The future of an independent Algeria was still to be settled; but de Gaulle had freed France of her heaviest burden.

Throughout the year de Gaulle continued to try to obtain support for his idea of a western European confederation within existing organizations such as the European Coal and Steel Community, the European Atomic Energy Community (Euratom), and the European Economic Community (Common Market). De Gaulle's idea of a

President Charles de Gaulle responds to greeting of crowd in Munich on September 8 during his visit to West Germany.

WIDE WORLD

united Europe was of a loosely knit organization of fully sovereign states. In February he and West German Chancellor Adenauer announced that they had resolved their differences on the future political construction of Europe. On June 3, following a week of talks with British Prime Minister Macmillan, a communiqué was issued declaring the community of interests between France and Great Britain on major issues. (See also EUROPE.)

De Gaulle was host to Adenauer's state visit on July 2–8, an event designed to demonstrate the reconciliation between the two countries. (Adenauer met with a cool reception from the French.) As he had many times previously, de Gaulle once more stated that solidarity between France and West Germany was the principal factor in the mutual safety of the two nations and the hopes for a European confederation. The two leaders said that the goal of European unity would be pursued before the end of Britain's negotiations for entry into the Common Market, but stressed that they had no desire to prevent British participation in European organizations. They also discussed the need (in their view) for the reunification of Germany and for a review of the North Atlantic Treaty Organization (NATO) which would recognize the change in Europe's favor of the balance of Western forces. De Gaulle paid a return visit to Germany on September 4–9, and was enthusiastically received by the German people. No major political or economic decisions were made, but the two aging leaders solidified their new informal alliance.

De Gaulle's attitude toward NATO continued to irritate the United States. At a press conference on May 15, the French president challenged the dominance of the United States in the defense plans and forces of western Europe. He again called for a re-examination of NATO, and insisted that France should control her own defense, including nuclear weapons. De Gaulle and U.S. Secretary of State Dean Rusk conferred on June 19 in Paris about misunderstandings between the two countries; their talks, officially described as "friendly, animated, and searching," reportedly solved no problems.

With regard to the Soviet Union, de Gaulle adhered stanchly to his view that negotiations with Chairman Khrushchev over Allied rights in Berlin were useless until Khrushchev offered some tangible concession to the Western powers. In this, France stood alone among the Allies. De Gaulle on February 18 announced that France would boycott the 18-nation disarmament conference in Geneva, held at the ministerial level. (See DISARMAMENT.)

In 1962, as he had since 1958, de Gaulle relied strongly on great executive powers, which his critics viewed as approaching dictatorial control of the country. Probably the most cohesive force in France was the loyalty of the people to their stern leader. This veneration remained steadfast in the face of strong disapproval of de Gaulle's policies by cabinet ministers (six of whom resigned in May), members of the National Assembly, and journalists. It was generally assumed that the death or retirement of de Gaulle would leave a void almost impossible to fill, possibly leading to the chaos of a succession of weak regimes, unless the next president had a strong mandate from the people.

De Gaulle therefore asked the people to ratify a plan for the popular election of the president. (Under the Constitution of the Fifth Republic, the president is named by 80,000 grand electors—national and local officials.) This move brought much criticism because of de Gaulle's bypassing the National Assembly and thereby violating the Constitution. On October 28, 61% of those voting approved the plan. But 24% of the voters abstained, and the winning margin represented only about 46% of the electorate.

The need for a clear line of succession to the presidency had been emphasized on August 22 when the presidential car, carrying General and Mme. de Gaulle and their son-in-law, was ambushed and sprayed with machine gun bullets near Paris, one of the bullets missing de Gaulle's head by two inches. It was the second assassination attempt on the general in two years. Police later rounded up several right-wing extremists in connection with the plot.

Any thoughts that the people were becoming disenchanted with de Gaulle were dispelled in the November parliamentary elections, in which Gaullist deputies won 233 of the 482 seats in the National Assembly; in addition, 30 other deputies of other parties were pledged to de Gaulle's policies. For the first time in almost a century, one party held a majority of votes in the Assembly. It was de Gaulle's most outstanding victory.

(See also FRANCE; FRENCH COMMUNITY; and the Index entry, *De Gaulle.*)

M. L. L.

DELAWARE

A Middle Atlantic state of the United States, Delaware ranks 49th among the states in area (land, 1,978 square miles; inland water, 79) and 46th in population (469,000 on July 1, 1962, a 5.2% increase from the 1960 census figure of 446,292). Urban places with 1960 populations above 5,000 are: Dover, *the capital* (7,250), Elsmere (7,319), Milford (5,795), Newark (11,404), and Wilmington (95,827).

Government.—Chief executive and judicial officers in 1962 included Elbert N. Carvel (Democrat), governor, serving a four-year term; Eugene Lammot, lieutenant governor; Elisha C. Dukes, secretary of state; Mrs. Belle Everett, treasurer; Ernest E. Killen, auditor; Januar D. Bove, Jr., attorney general; George R. Miller, Jr., superintendent of public instruction; and Clarence A. Southerland, chief justice of the 3-member Supreme Court.

The Delaware General Assembly, which convenes annually, comprised 11 Democrats and 6 Republicans in the Senate in 1962 and 20 Democrats and 15 Republicans in the House of Representatives.

Legislation, 1962.—After voting supplementary appropriations of almost $1 million, of which $500,000 was for disaster relief for the coastal area following the storm of March 6–8, the legislature passed an appropriation of $91.7 million for the new fiscal year. The largest single portion of the measure ($40.9 million) was for education; the next largest ($19.4 million) was for debt service. Bond issues amounting to $15 million were authorized, of which the major part was for school construction.

Action was completed on amendments to the state constitution to permit a larger number of judges of the Superior Court; to provide for the continuity of state and local government in emergencies resulting from enemy attack; and to forbid retroactive increases in the personal income tax. New legislation permitted General Motors stock being distributed to du Pont Company stockholders as a result of a court decision to be considered as capital gains rather than dividends, with a resultant saving to the individual stockholders. Credit for disaster loss due to the March storm was also permitted on income tax returns.

Other laws provided for standardized school construction plans, for a Civil Defense Auxiliary Police, for regulation of psychologists and cosmetologists, and for adoption of an Interstate Compact on Mental Health. First passage was given to a constitutional amendment reallocating seats in the General Assembly, but this measure will not become a part of the constitution until it has been approved by the 1963 legislature. (See also below, *Events, 1962.*)

Finance.—In the 1962 fiscal year, revenue of $93,043,146 included $92,215,002 from state taxes and $72,072 in federal funds. Chief tax yields were individual income taxes ($36,194,464), corporate income taxes ($7,295,209), and motor fuel taxes ($10,316,732). Spending of $87,703,978 included $36,952,001 for education, $10,445,831 for health, welfare, and safety, and $7,625,097 for highways.

Education.—In the 1961–62 school year, public elementary schools staffed by 1,985 teachers enrolled 51,139 pupils; junior and senior high schools with 1,924 teachers enrolled 37,687; and parochial schools with 528 teachers

enrolled 19,103. College enrollment totaled 8,002 in 2 junior colleges and 2 senior colleges and universities.

Estimated public school spending in the 1961–62 school year totaled $55.3 million, including current expenditures of $38.8 million ($475 per pupil) and capital outlay of $15 million. Revenue of $56.2 million was drawn chiefly from state funds ($42 million) and local districts ($8.8 million). The state reported teachers' salaries averaged $5,961 (high school, $6,203; elementary, $5,738). Actual spending for higher education (fiscal 1961) totaled $11,987,000.

Public Assistance.—In the 1962 fiscal year, public assistance payments were made to a monthly average of 13,989 persons. Expenditures included $727,519 for the aged and $2,683,637 for dependent children.

Transportation and Communications.—With 142 miles of highway construction and reconstruction completed in 1961, *highways and roads* as of July 1, 1962, totaled 4,210 miles (3,951 surfaced). These served 218,996 *motor vehicles* (as registered Oct. 1, 1962), including 150,843 automobiles. Operating in the state in 1962 were 3 *railroads* (using 841 line miles of track) and 2 regularly scheduled *airlines*. There were 9 commercial and municipal *airports*.

Communications media included (1962) 8 AM and 3 FM *radio stations;* 3 daily *newspapers* (circulation, 124,521) and 11 other newspapers (36,274); and (January 1) 63,500 business and 162,300 residential *telephones*.

Labor Force.—The state's labor force on June 15, 1962, included 14,900 agricultural workers. Nonagricultural employment totaled 178,100, compared with 175,100 a year earlier and an average of 173,400 for the 12 intervening months. Of nonfarm employees, 31.7% were in manufacturing, 17.1% in trade, and 12.1% in service industries. Unemployment on June 15, 1962, had dropped to 8,900 from the 12,000 reported a year earlier.

Manufacturing.—Manufacturing engaged 58,964 workers in 1960, including 31,645 in production, and provided a payroll of $372,052,000. Adjusted value added by manufacture totaled $516,461,000.

Leading industry groups in 1960 were: chemicals and allied products (5,912 workers; $109,681,000 in adjusted value added by manufacture); food and kindred products (5,691; $51,352,000); and fabricated metals (1,975; $20,795,000).

Mining.—In 1961, Delaware ranked last among the states in the value of its mineral output, with 0.01% of the national total. The 1961 value was $1.053,000 (up 6.5% from 1960), of which $970,000 was for 961,000 short tons of sand and gravel.

Agriculture.—Cash farm income for the first nine months of 1962 (excluding government payments) totaled $73,260,000, compared with $76,327,000 for the corresponding period of 1961. For the full year 1961, income comprised $67,680,000 from livestock, $37,943,000 from crops, and $2,154,000 in government payments. Principal income sources in 1961 were broilers, $49,350,000, and soybeans, $11,293,000.

The state's 5,000 farms in 1959 had an acreage of 763,000 (416,000 in harvested cropland). Livestock on farms on Jan. 1, 1962, included 54,000 cattle, 853,000 chickens, and (1961) 337,969,000 commercial broilers.

DELAWARE CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Apples (1,000 bu.)	306	300	260
Barley (1,000 bu.)	461	630	574
Corn for grain (1,000 bu.)	7,367	7,378	7,497
Potatoes (1,000 cwt.)	1,492	2,250	1,995
Rye (1,000 bu.)	244	220	220
Soybeans (1,000 bu.)	2,465	5,160	4,294
Tomatoes	44	36	32

(Source: U.S. Department of Agriculture.)

Events, 1962—In the November elections the Democrats retained control of the General Assembly, gaining 4 seats in the House of Representatives, where they have 24 of the 35 seats, but losing 1 seat in the Senate, where they have 10 of the 17 seats. In a contest for the state's lone congressional seat, Rep. Harris B. McDowell, Jr., was reelected over Republican Wilmer F. Williams.

Although the Democrats won most of the state and county posts at stake in the election, voters showed a willingness to split the ticket, the chief Republican beneficiary of this development being former Acting Gov. David P. Buckson, who was elected attorney general. The selectivity of the electorate and the effectiveness of newspaper publicity was demonstrated by the defeat, though by a very narrow margin, of Harry S. Smith, the incumbent Democratic insurance commissioner. Smith, who had led his party ticket in the 1958 election, now suffered from criticism of his division of the state's insurance business among various brokers without competitive bidding.

Criticism and investigation of state and local officials were current throughout the year. A Wilmington city councilman was indicted on charges of soliciting a bribe for his vote on a housing project contract. Fault was found with the New Castle County sheriff's office for running up a mileage bill of $14,573 in nine months, largely by charging for some trips that were fictional. In the same county, obscure officials called "fence viewers" presented such large claims for compensation that the county court finally refused further payment. Ticket-fixing charges were leveled at Wilmington city police. Attention was called to loose procedure and conflicts of interest in the letting of school bus contracts. The Wilmington Parking Authority was forced to make a change in personnel and in procedures after criticism of its return on investments in parking facilities.

Magistrates, censured particularly for imposing excessive jail sentences, promised to propose reforms which critics hoped would lead to provision for payment by salaries in lieu of fees. A quarrel, partly political, between successive chairmen of the Youth Services Commission led to a change in its direction. Recommendations for greater support and improved organization of the adult correctional institutions seemed to face a doubtful reception.

The major constitutional reform under way in 1962 concerned reapportionment of seats in the lower house of the legislature. Approved by a special General Assembly session, the measure, as a constitutional amendment, would require approval in the 1963 Assembly before taking effect. Meanwhile a court suit sought to force the issue on behalf of populous but underrepresented northern Delaware. The governor's plea for a constitutional convention came to naught.

In March an Atlantic storm destroyed beaches, boardwalks, and vast amounts of private property at ocean resorts, including Rehoboth Beach, Bethany Beach, and Fenwick Island. Inland, the industrialization of Delaware continued with new factories and plants projected by General Foods at Dover, by Leeds Travelware at Clayton, by Air Products and Chemicals at Delaware City, and, after defeat of legal efforts to obstruct it, by Shell Oil in Blackbird Hundred.

Financing was arranged in February for construction of a 53-mile toll expressway linking the Delaware Memorial Bridge, near Wilmington, with Baltimore, Md. The project, a joint undertaking of the two states involved, is due for completion by the end of 1963.

"Legislation" and "Events" by: JOHN A. MUNROE, *Professor of History, University of Delaware; Author of "Federalist Delaware, 1775–1815."*

DEMOCRATIC PARTY

Democrats retained firm control of both branches of the U.S. Congress after the 1962 elec-

UPI

President Kennedy, campaigning for Democratic Party candidates, addresses Louisville, Ky., audience on October 24.

tions, gaining four seats in the Senate although losing four in the House of Representatives. According to the election results, in the new 88th Congress, to meet in January 1963, the Democrats would have had an advantage of 68–32 over the Republicans in the Senate and 258–176, with 1 vacancy, in the House (compared with 64–36 and 261–174, with 2 vacancies, in the 87th Congress[1]). The death of Sen. Dennis Chavez (D, N. Mex.) on November 18, however, gave the Republicans an additional Senate seat when Republican Gov. Edwin Mechem resigned and was appointed to the vacancy. Thus the alignment in the new Senate became 67 Democrats and 33 Republicans.

In the November 6 elections, Democrats overturned Republican administrations in Hawaii, Iowa, Massachusetts, New Hampshire, New Mexico, and Vermont (winning control of the state administration there for the first time in 108 years). They scored a significant political victory in the reelection of Gov. Edmund G. (Pat) Brown of California over Richard M. Nixon, the 1960 Republican presidential nominee. Democrats lost the governorships of the important industrial states of Pennsylvania, Ohio, and Michigan, and were also defeated in Colorado, Oklahoma, and Wyoming.

Close elections, however, left several governorships open to recount or contest. While the Democratic candidate emerged victorious in Massachusetts, Republicans won in the three other disputed states: Maine, Minnesota, and Rhode Island. As a result, the elections resulted in a net loss to the Democrats of one governorship, leaving the national line-up at 33 Democratic and 17 Republican governors.

The Democrats' gains in the Senate were perhaps their most important victories in the elections, for their majority became so great that it could probably not be endangered before 1968. Democrats gained Senate seats in Connecticut, Maryland, New Hampshire, South Dakota, and Wisconsin, and lost seats only in Colorado and Wyoming. In Alabama, however, Sen. Lister Hill, Democrat, was reelected by a margin only slightly above 6,000 votes. This phenomenal Republican upsurge was attributed to deep-South resentment against the national Democratic administration's policies on racial and states' rights issues.

President John F. Kennedy, firmly in the leadership of the Democratic Party nationally and unchallenged from any quarter for renomination in 1964, campaigned for election of party members to Congress with a midterm activity unprecedented for an American president. An officially nonpolitical speaking trip, August 17–18, brought out large audiences in South Dakota, Colorado, and California. From October 5 to 7 he toured parts of Kentucky, Ohio, Michigan, and Minnesota. In Baltimore on October 10 the president declared that "no Congress in our time" had a record of more "positive and progressive accomplishment than the Democratic 87th Congress I salute tonight." He cited particularly the passage of trade, drug-control, minimum wage, and welfare laws, and the increase of space and defense budgets.

In San Francisco on October 8, Dwight D. Eisenhower, the president's Republican predecessor, accused him of seeking "one-party government" in asking for the election of more Democrats. Republican congressional leaders at the adjournment of Congress on October 13 called the Democratic record in the session one of "mismanagement and inefficiency" and denounced as an "unprecedented collapse of the appropriations process" the procedural controversies between House and Senate. On the same day Clarence Cannon, Democratic chairman of the House Appropriations Committee, called the House leadership "biased and inept."

The president continued to campaign vigorously until October 20. With the announcement, on October 22, of an international crisis over Soviet-supported missile bases in Cuba, further campaigning by the president, vice president, and cabinet members was discontinued because of the emergency.

(See also ELECTIONS, U.S.)

FRANKLIN L. BURDETTE,
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[1] The House was then temporarily increased from 435 to 437 to provide seats for Alaska and Hawaii pending a new apportionment after the 1960 census.

DENMARK

The Kingdom of Denmark consists of the peninsula of Jutland (Jylland) and 496 adjacent islands (109 inhabited), of which the largest are Zealand (Sjaelland), Fyn, Lolland (Laaland), Falster, and Bornholm. The Faeroe (Faroe) Islands (area, 540 square miles; 1960 pop., 34,596), in the Atlantic Ocean between Scotland and Iceland, and Greenland (q.v.), a former dependency, are integral parts of the kingdom, although both have some political autonomy. Excluding the Faeroe Islands and Greenland, the area of the kingdom is 16,975 square miles, and the population (1962 est.) is 4,617,000. The principal cities and their 1962 populations are Copenhagen (København), the capital, 923,974 (Greater Copenhagen, 1,348,454); Aarhus, 117,234; Odense, 129,833, and Aalborg, 96,438.

Government.—Denmark is a constitutional monarchy, ruled under a parliamentary system since 1901. King Frederik IX (b. 1899; acceded 1947) is chief of state, acting through a cabinet responsible to the Folketing, a unicameral legislature. The Folketing elected on Nov. 15, 1960, consists of 76 Social Democrats, 38 Moderate Liberals, 32 Conservatives, 11 Social Liberals, 11 members of the Socialist People's Party, 6 Independents, 2 representatives each from Greenland and the Faeroe Islands, and 1 representative of the German minority. Premier Jens Otto Krag heads a coalition government of Social Democrats and Social Liberals.

Religion.—The Danish Lutheran Church, of which over 97% of the people are members, is the state church, but all religious groups enjoy complete religious freedom, including about 70,000 members of other churches.

Education.—Compulsory education for children between the ages of 7 and 14 has been required by law for a century and a half. Elementary schools enrolled 686,113 pupils in 1961, while 73,520 attended secondary institutions, excluding special technical institutes. Recent changes in the structure of education at these levels increased students in the elementary classes and lowered numbers in the secondary schools. Folk high schools registered 6,975 students in continuation courses; and institutes of higher

education, such as special schools, technical institutes, business schools, etc., had more than 40,000. The enrollment of the universities of Copenhagen and Aarhus was 6,304 and 2,406, respectively.

Social Welfare.—Government social insurance coverage is obligatory for low-income groups, with about 90% of the population under some system of social insurance. Payments are required from all employed persons regardless of whether they have private insurance programs. The national insurance system covers sickness costs, old-age pensions, and disability, unemployment and workmen's compensation. Medical assistance and hospitalization are provided for 80% of the population; and pensions, starting at the age of 67 (62 for women), are graduated according to individual income resources. Low-income families living in subsidized housing are entitled to allowances of 20% to 75% of the rent. Mothers are eligible for household help during vacations and illnesses.

Labor and Management.—The Central Organization of Danish Trade Unions, which has 776,451 members, brings together the majority of laborers. Another 29,363 are in other unions, and 172,597 are in trade or professional organizations. The labor federation maintains strong ties with the Social Democratic Party. The Danish Employer's Confederation, with about 22,218 members, negotiates for industries on collective bargaining; and the Federation of Danish Industries, with 3,000 member firms, serves as an information agency for manufacturing and business concerns and seeks to assist them in marketing products. Local consumer cooperatives have 542,000 members; another 162,000 persons are members of the Danish Union of Cooperative Societies. These organizations help to market farm products, and the former act as retail stores for their members. Nearly 95% of all agricultural exports are processed by farmers' cooperatives.

Finance.—The national budget for the fiscal year 1962–63 planned for income of 9,126 million kroner and expenditures of 8,528 million kroner (1 krone equals U.S.$0.1448). The chief sources of revenue were excise and customs duties (4,997 million kroner), personal taxes on incomes and property (4,150 million), and taxes on corporate income (460 million). The main categories of expenditure were social welfare and welfare (4,375 million), other civil expenditures (1,450 million), education (1,620 million), defense (1,300 million), and investment (1,900 million).

Economic Indicators.—The gross national product in 1961 was valued at 49,150 million kroner, compared with 44,503 million in 1960. The cost-of-living index (1958 = 100) rose gradually during 1961, starting at 104 at the beginning of the year and ending at 109. An inflationary trend was noted because of consumer buying resulting from the imposition of a sales tax of nearly 10% and from larger production and better wages.

Production.—The occupational distribution of population remains fairly constant, with approximately 20% in agriculture, 30% in industry, 8% in construction, 7% in transport and communication, and 13% in commerce. As of June 1962, 0.7% of the labor force was unemployed, the lowest figure on record. Inflation troubles and demands for wage increases in 1961 caused 34 industrial conflicts—the greatest number since 1956—with 153,304 workers involved.

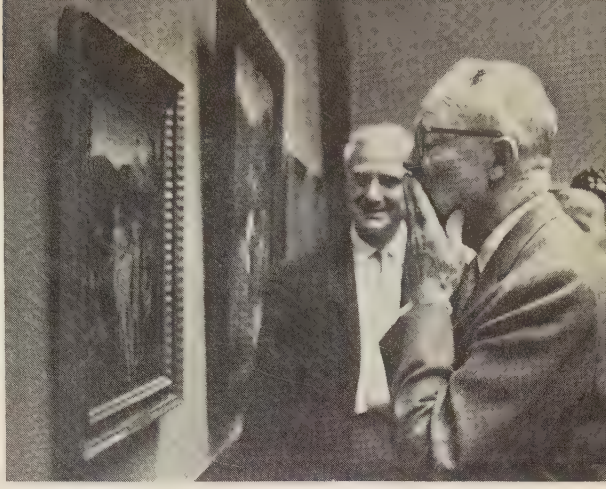
Agricultural products account for more than half of Denmark's export earnings. A slight increase in exports in the first half of 1962 showed a total of 1,947 million kroner, but it was balanced by losses through greater imports of other products. Gross income in agriculture went from 5,500 million kroner in 1960 to 5,372 million in 1961, although net farm profit exceeded 1960.

About 5,529 million tons of milk were produced in 1961, yielding 171,000 tons of butter (120,000 exported) and 122,000 tons of cheese (79,000 exported). Approximately 127,000 tons of eggs entered the market, together with 80,000 tons of poultry (58,000 tons exported). Meat and pork, the latter Denmark's main agricultural export, totaled 921,000 tons, of which 638,000 tons went abroad. Crop output in 1961 included 434,000 tons of wheat, 2,808,000 tons of barley, 684,000 tons of oats, 514,000 tons of rye, 141,000 tons of potatoes, and 18,346,000 tons of root crops.

Denmark, which depends on imports of raw materials to maintain its industries, has steadily increased the share of manufacturing in the gross national product. In 1962, production continued to rise, with strength showing in building, construction, and manufacturing. The value of industrial production totaled 9,350 million kroner in 1961, as compared with 8,350 million in 1960. Production of cement rose to 131,000 tons monthly, and electric power production averaged 391 million kw.-hr. per month in 1961.

Foreign Trade.—The value of exports rose from 10,105 million kroner in 1960 to 10,456 million in 1961, and that of imports climbed from 12,397 million to 12,875 million, for an increase of 479 million. In the first quarter of 1962, foreign trade exports amounted to 2,729 million, and imports 3,519 million, indicating a serious drain on Denmark's reserves. A large part of Denmark's trade is with Britain and West Germany.

Agricultural products ranked highest in the exports in 1961, accounting for 4,514 million kroner; the value of industrial goods amounted to 4,504 million. Imports consisted of raw materials (4,228 million), fuel (1,541 million), chemicals and semimanufactured products (2,548 million). Net holdings of foreign exchange dropped during the first half of 1962 by 243 million kroner to 971 million.



WIDE WORLD

Gen. Dwight D. Eisenhower, on a visit to Europe, appraises a painting in Copenhagen's State Museum of Art on July 27.

Events, 1962.—Debate on Denmark's entry into the European Economic Community, proposed in 1961, continued during 1962. Danish economic ties to England meant that British negotiations for membership in the EEC were watched closely. Proposals for NATO unification led to negotiations with the United States and protests from the USSR. On March 23, Denmark initialed the Treaty of Nordic Cooperation, providing for mutual consultation and agreement on social, cultural, and economic affairs among Sweden, Norway, Finland, Denmark, and Iceland. A sales tax was heatedly debated before its adoption by the Folketing.

An international commission reported on March 30 the results of its inquiry into the shooting incident which had occurred between Danish and British ships on May 31, 1961, in a dispute over fishing grounds off the Faeroe Islands. The commission found both the British trawler and the Danish frigate partially at fault. Denmark demanded on April 28 termination in 1963 of the 1959 agreement regulating the fishing grounds, primarily to establish a 12-mile fishery limit to replace the existing 6-mile limit.

A heart condition forced the resignation of Premier Viggo Kampmann on August 31, and Foreign Minister Jens Otto Krag was named to succeed him. Danish foreign and domestic policy was not affected by the change.

Former President Dwight D. Eisenhower visited Denmark in July during his tour of western European countries.

RAYMOND E. LINDGREN,
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DENTISTRY

The recently published survey of dentistry in the United States[1] has aroused considerable comment among many leaders of the profession. While it emphasized the finding of many highly commendable aspects of the profession, some of its statements have been criticized as not being representative of the true status of the rank-and-file dentist.

Morever, some of its suggestions have been strongly rejected on the basis of experience gained where these recommendations have been tried in other countries. For example, the suggestions that

[1] *Survey of Dentistry; the Final Report,* American Council on Education, Commission on the Survey of Dentistry in the United States (1961).

the profession be fragmented into many divisions and that inadequately trained assistant personnel be employed to execute some of the duties now performed by qualified dentists have been strongly contested. It is the opinion of many dental leaders and educators that it is impossible to train personnel adequately to perform even some of the duties of a graduate dentist in any significantly shorter time than is now considered necessary. Therefore any curtailment of time or curriculum would unavoidably result in the lowering of the standard of dental practice. Fortunately, however, the survey has stimulated an interest in the study and evaluation of the problems facing the profession.

Dental Manpower.—The present shortage of dentists in the United States seems to be largely a matter of regional distribution, according to Dr. B. Duane Moen, director of the American Dental Association's Bureau of Economic Research and Statistics. While the overall national ratio of one dentist for every 1,934 persons would indicate an adequate supply, examination of the regional distribution shows "tremendous geographic variations in the supply of dental services." The dentist-patient ratio among the 50 states ranges from one dentist to 1,180 patients in New York, to one to 4,566 in South Carolina. On a county basis, the disparity is even greater; for example, one county in South Carolina with a population of over 35,000 persons has only one dentist, while in New York, Bronx and New York counties have one dentist for every 760 persons. Thus, assuming the demand for dental treatment to be the same in both localities, South Carolina dentists would have to treat almost 50 times as many patients as the average New York dentist does.

At the present time there are about 94,000 practicing dentists in the United States. That a dentist's productivity is flexible is shown by a recent analysis which showed an increase of approximately 40% in services by the average dentist between 1950 and 1960. These figures notwithstanding, it is believed that the dental profession cannot cope indefinitely with a constantly increasing dentist-population ratio by increasing its productivity alone. Merely to maintain the existing ratio will require the graduation of approximately 5,000 dentists annually by the year 1980.

Electric Toothbrush.—A new aid in the field of oral hygiene has been created with the introduction of the electric toothbrush, currently being manufactured in a number of models. The two most prominent models are somewhat alike in design and function, but differ basically in the type of toothbrushing stroke employed; one uses a reciprocating up-and-down stroke, the other a short but very rapid horizontal stroke through long, flexible bristles. All models employ an electric motor to impart motion to a handle on which removable brushes are attached, thus making it possible for each member of the family to use his own brush with the same holder. Some models operate on ordinary house current through a cord attached to the brush handle. Others operate by batteries, some of which are recharged while the holder rests in its base when the brush is not in use. It is claimed that the average person can accomplish much more in two or three minutes with the electric brush than is possible with the manual toothbrush. The degree of advantage in cleaning and polishing with the electric toothbrush, and in the resultant improvement of periodontal conditions cannot be determined until after further study. There is no doubt, however, about its usefulness for handicapped persons and others unable or unwilling to expend the energy necessary to maintain good daily oral hygiene.

Dental Hearing Aid.—A new type of hearing aid which uses the teeth to transmit impulses for hearing has been granted a United States patent. Invented by a dentist and a physician working together, the new instrument has achieved remarkable results. Although at the present time its size and design make it unsuitable for full-time use, engineers are endeavoring to reduce it ultimately to the size of a single tooth. The device operates through an intra-oral receiver, actuated by a tiny radio transmitter worn externally on the body but not connected by wire to the receiver. A combination of the fifth, seventh, and ninth cranial nerves carries the signals from the receiver to the auditory apparatus. It is believed that a considerable amount of developmental research will be needed before the unit will be made available to the public.

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DEPARTMENT OF DEFENSE. See NATIONAL SECURITY; UNITED STATES.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE. See Index entry.

DEPARTMENT OF STATE. See FOREIGN POLICY OF THE U.S.; UNITED STATES.

DEPARTMENTS AND AGENCIES, Federal. See Index entry, *Government Departments and Agencies.*

DERMATOLOGY. See Index entry.

DESEGREGATION. See CIVIL LIBERTIES; EDUCATION.

DESIGN. See ARCHITECTURE; AUTOMOBILES; FASHIONS; INTERIOR DECORATION.

DETERGENTS. See Index entry.

DETROIT

Although its population dropped from a 1960 census figure of 1,670,144 to an estimated 1,629,000 in November 1962, Detroit, Mich., remained the fifth most populous city in the United States. The city, which fans out from the Detroit River over an area of 139.6 square miles, is the center of a three-county (Wayne, Oakland, Macomb) metropolitan area of 1,965 square miles (1962 est. pop., 3,836,000).

The city is governed by a mayor (in 1962, Jerome P. Cavanagh) and a 9-member City Council, all elected for 4-year terms.

Net city tax budget (1962–63 fiscal year): $116,143,989. Gross city budget (actual appropriations): $280,310,106. Total city budget, including self-sustaining agencies: $351,718,969. Net bonded debt (Dec. 31, 1961): $400,950,337. City tax rate (1962): $25.212 per $1,000 assessed valuation. School tax rate: $18.812. School budget: $151,360,005. Public school enrollment (September 1962): 292,119.

Employment in the metropolitan area in the first 10 months of 1962 averaged 463,700 in manufacturing (down 6,700 from 1961); 539,000 in nonmanufacturing (down 9,200 from 1961); and 140,100 in government (up 7,900 from 1961).

Retail sales in the metropolitan area in 1961 were estimated at $4,534,204,775, down $410,677,024 from 1960. On Aug. 15, 1962, the city cost-of-living index stood at 102.3 (1957–59 = 100), or 3.1 points below the national city average.

For Detroit, 1962 was a year of building, as some $80 million in major downtown business and apartment construction was either started or nearing completion. Of major significance was the groundbreaking (October 15) for a 435-room hotel in the civic center, the first major Detroit hotel building in 35 years. Located across from the giant Cobo Hall and Convention Arena, the hotel was expected to encourage tourist and convention business. Other major building projects included the $16 million, 28-story Detroit Bank & Trust Company main office; the $20 million, 32-

story Michigan Consolidated Gas Company building; the $10 million, 23-story First Federal Savings & Loan Company main office; Lafayette Towers, a $14 million apartment complex; and 1300 Lafayette East, a $9 million apartment project.

A 1% income tax on residents and nonresidents was placed in effect on July 1 in an effort to ease the city's fiscal problems. The new levy, which affects some 165,000 suburban residents who work in Detroit, as well as local wage-earners, precipitated a heated controversy.

The city's economy was stimulated in late 1962 as its automotive plants increased production schedules and added workers to meet high demand for 1963 models.

In an effort to obtain more defense contracts for Detroit and Michigan manufacturers, the nation's first Defense Contract Information Center was opened in Detroit on August 31. The center will work closely with the new U.S. Army Mobility Command, which set up its main headquarters in Detroit in June.

A major news event was the sinking in the Detroit River on July 30 of the 444-foot British freighter *Montrose,* following a collision with a cement-loaded barge. The vessel, awash in 45 feet of water, was raised after a difficult salvage operation.

A series of strikes against Detroit's two daily newspapers, the *News* and the *Free Press,* caused suspension of publication for 29 days in April and May.

BURT STODDARD,
Staff Writer, "The Detroit News."

DIAMONDS. See ABRASIVES; GEM STONES; JEWELRY AND WATCHES.

DIEFENBAKER, John George

Prime minister of Canada: b. Neustadt, Grey County, Ontario, Sept. 18, 1895.

A noted criminal lawyer in Saskatchewan, John Diefenbaker was elected to the federal House of Commons in 1940 as a Progressive Conservative, from a province that traditionally elected Liberals and Socialists; it was his first success in six attempts to win public office. Named leader of his party on Dec. 10, 1956, he became prime minister after the elections of June 10, 1957, when the Conservatives won 113 seats in the 265-member House, a plurality but not a majority. The elections of March 31, 1958, gave him an absolute majority, 208 seats; in April 1962 the Conservatives controlled 203 seats, the Liberals 51.

In the face of serious economic problems and a decline of popular support, Prime Minister Diefenbaker called for elections to take place on June 18, 1962. The voters sent 116 Conservatives and 99 Liberals to the House of Commons, thus depriving the Conservatives of their majority and leaving them dependent on the support of the Social Credit Party, whose 30 representatives controlled the balance of legislative power.

On June 24 the prime minister announced a plan that included the borrowing of $1 billion to bolster the currency, and austerity measures to correct the imbalance of international payments and the budgetary deficit ($575 million for 1962–63). When the new Parliament met, the Liberals introduced two motions of no-confidence, but both were defeated on October 4 by a coalition of Conservative and Social Credit votes.

In foreign affairs, Diefenbaker continued to lead the Commonwealth bloc opposed to Great Britain's entry into the European Economic Community (Common Market). In spite of reassurances of trade guarantees by British Prime Minister Harold Macmillan on a visit to Ottawa (April 30–May 1), Diefenbaker expressed dissatisfaction with Macmillan's proposals during British negotiations

WIDE WORLD

Prime Ministers Diefenbaker of Canada (left) and Holyoake of New Zealand (center) and President Ayub Khan of Pakistan at Commonwealth meeting in London on September 11.

with the Common Market, at a meeting of Commonwealth prime ministers in London on September 10–19.

Although he had earlier pledged an independent policy for Canada in regard to Cuba, during the Cuban crisis in October, Diefenbaker pledged full Canadian support to the United States and denied the use of Canadian airfields to Russian military aircraft bound for Cuba. (See also CANADA.)

DIETETICS. See FOOD RESEARCH; NUTRITION.

DILLON, (Clarence) Douglas

U.S. secretary of the treasury: b. Geneva, Switzerland, Aug. 21, 1909.

After attending Groton School and Harvard University, from which he received his B.A. degree in 1931, he joined his father's Wall Street firm of Dillon, Read & Company, Inc., where he became active in the foreign investment field. Following duty during World War II as a naval officer, he was board chairman of the company from 1946 to 1953. In 1949–52 he served as chairman of the Executive Committee of the New Jersey Republican State Committee. From 1953 until 1957 he served as ambassador to France, returning to the United States to become deputy under secretary of state for economic affairs and, in 1958, under secretary. Named secretary of the treasury by President-elect Kennedy, his appointment was confirmed by the Senate on Jan. 21, 1961.

During 1962, Dillon worked toward freer trade relations and the expansion of United States exports. He led the United States delegation to the seventh annual meeting of the United States–Canadian Committee on Trade and Economic Affairs on January 12–13 in Ottawa, which stressed the support of freer trade by both countries and reviewed problems arising from Britain's proposed entry into the European Economic Community. His report on the balance of international payments of the United States, in which he urged further cuts in government spending overseas and the promotion of trade expansion, was sent to Congress by President Kennedy on March 28.

In a speech on June 4 before the New York Financial Writers Association, Secretary Dillon indicated that the administration was planning a broad reduction in income tax rates as a part of its overall tax reform bill to be presented to Congress in 1963. He reiterated this expectation on November 15 in Washington, D.C., at the Conference on Fiscal and Monetary Policy sponsored by the President's Advisory Committee on Labor-Management Policy.

Secretary Dillon headed the United States delegation to the first annual Conference of the

Alliance for Progress, which met in Mexico City from September 30 to October 27. Named second vice president of the conference, he stated on October 23 that the alliance was achieving its purpose of integrating Latin America's economy and pledged continued United States support of the program in 1963.

DIPLOMATIC LIST. See AMBASSADORS AND ENVOYS.

DISARMAMENT

"No progress"—a phrase used by the United Nations Disarmament Committee to describe its negotiations during the year—aptly described developments in the disarmament field in 1962. Negotiations on disarmament among the major nuclear powers again failed to produce an agreement for mutual arms control. The postwar arms race between the Communist and Western nations brought the world perilously close to thermonuclear war during the Cuban crisis in late October, but this dangerous development apparently had little effect in making any of the great powers anxious to disarm. In 1962 the nonaligned nations played a prominent role at an international disarmament conference for the first time; their participation, however, failed to bridge the gap between the East and West on the crucial disarmament question.

A principal stumbling block to reaching agreement on disarmament has been the much-discussed issue of international controls for enforcing arms reduction measures. The Soviet Union has repeatedly rejected Western proposals for international verification of a disarmament accord, allegedly because such controls might be used for espionage purposes. The United States, on the other hand, has refused to endorse disarmament proposals which did not include adequate international safeguards. Neither nation compromised its basic position on the issue in the disarmament negotiations discussed below.

Seventeen-Nation Disarmament Conference.—The UN Disarmament Committee held negotiations in Geneva during 1962 (from March 14 to June 14, July 16 to September 7, and November 26 to December 20), but failed to break the East-West deadlock on ways and means to achieve world disarmament and arms control. The committee is composed of five Western nations (Canada, France, Great Britain, Italy, and the United States); five Soviet-bloc countries (Bulgaria, Czechoslovakia, Poland, Rumania, and the Soviet Union); and eight nonaligned nations (Brazil, Burma, Ethiopia, India, Mexico, Nigeria, Sweden, and the United Arab Republic). France alone refused to take part in the Geneva disarmament conference.

A principal reason for the failure of the conference was the Soviet Union's refusal to permit international inspection of proposed disarmament measures on its territory, and the rejection by the United States of disarmament plans that did not allow for inspection safeguards or adequate controls. Proposals considered at the conference were eventually rejected by either the Eastern or Western powers chiefly for this reason.

Soviet Delegate Semyon K. Tsarapkin, on March 15, submitted a plan for "general and complete disarmament" without specific control measures. He later rejected Western demands for the establishment on Soviet territory of international control posts to be manned by foreign inspectors, offering instead to set up national control posts operated by Soviet citizens, with foreign inspectors to be allowed into the Soviet Union only by invitation of the Soviet government.

Arthur H. Dean, chief United States delegate (who resigned on Jan. 4, 1963), submitted another plan for reduction of armaments that required thorough verification by means of international inspection. (The proposal was a detailed version of a comprehensive plan first presented by President Kennedy to the UN General Assembly on Sept. 25, 1961.) Subsequent United States proposals also insisted on adequate controls to make certain that disarmament would actually be carried out.

Although the Soviet Union and the United States later submitted so-called compromise proposals allegedly intended to bring their respective positions on disarmament closer together, none of the proposals was deemed acceptable by the other. Soviet proposals for an uncontrolled moratorium on underground nuclear tests, an unpoliced ban on atmospheric nuclear testing, the withdrawal of foreign military bases in the first stage of disarmament, and the abolishment of joint national military exercises, were rejected by the Western nations. Western proposals turned down by the Soviets included a plan providing for progressive inspections by territorial zones to verify disarmament measures, a reduction from 180 to about 80 in the number of proposed control posts comprising an international monitoring network under a nuclear test-ban treaty, a system of national control posts under international inspection, and alternative suggestions for either a total ban on nuclear testing with international on-site inspections, or an uninspected limited ban on atmospheric and underwater nuclear tests.

The only agreement announced at the conference was the committee's approval on May 25 of a joint six-point declaration condemning war propaganda, but even this peripheral agreement was later renounced by the Soviet, who, five days after apparently accepting the declaration, proposed amendments which were unacceptable to the Western delegates.

Efforts by the nonaligned nations at the conference to offer disarmament proposals acceptable to both East and West also failed. A nuclear test-ban proposal presented (April 16) by Brazil on behalf of the eight neutral members was judged by the West to be inadequate in providing for enforceable controls. Suggestions by India, Mexico, and Sweden for the temporary cessation of underground nuclear tests was rejected by the Soviet Union on December 3. Another neutralist proposal for an immediate ban on atmospheric and underwater nuclear testing was supported only by Italy among the Western members.

The conference on September 7 adopted a report which described the negotiations as having made "no progress." The Disarmament Committee adjourned its meetings on Dec. 20, 1962. Negotiations were scheduled to be resumed in Geneva in early 1963. (See also UNITED NATIONS.)

Three-Power Talks to Ban Nuclear Testing.—The three-power Conference on the Discontinuance of Nuclear Weapons Tests ended in failure on Jan. 29, 1962, after 353 meetings were held in Geneva over a 39-month period (begun Oct. 31, 1958). Great Britain and the United States withdrew from the conference as a result of the Soviet Union's persistent refusal to accept the monitoring of a nuclear test-ban treaty by means of an international control system. The Soviet Union accused the Western powers of "wrecking" the conference and of wanting international controls for the sole purpose of conducting espionage.

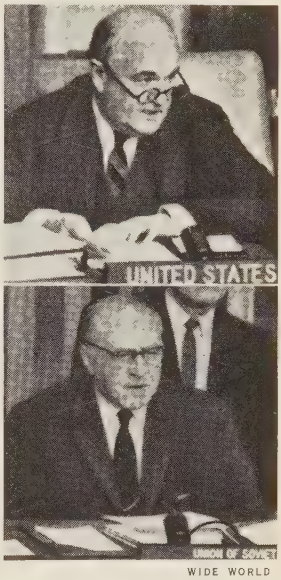
Negotiations on banning nuclear tests were re-

sumed at Geneva on September 14 by the three powers, who met as a subcommittee of the UN Disarmament Committee while the 17-nation conference was in recess. The conferees again failed to agree on the question of international verification for a test-ban treaty. Further three-power negotiations held late in the year during a session of the parent conference also remained deadlocked. Among proposals discussed was the possible use of robot seismic stations to detect underground nuclear explosions.

U.S. Arms Control and Disarmament Agency.—The agency completed its first year of operation on Sept. 26, 1962, as a policymaking body empowered to conduct technical studies on disarmament, recommend disarmament policies to the president, and hold negotiations on disarmament with other nations. William C. Foster has served as director of the agency since its formation. Jacob D. Beam, a career Foreign Service officer, was named assistant director on January 29. The agency's General Advisory Committee, consisting of 15 prominent citizens, was appointed by President Kennedy and was sworn in on April 2. Henry A. Byroade, former Army brigadier general and United States diplomat, was named chairman of the committee.

W. R. F.

NEW YORK HERALD TRIBUNE SYNDICATE



WIDE WORLD

(Cartoon) **"They Held Their Peace Conferences Over There!" by Amsterdam cartoonist Fritz Behrendt. *(Right)* Arthur Dean of the United States *(top)* and Valerian Zorin of the USSR speak at United Nations debate on disarmament, November 6.**

DISASTERS. See the CHRONOLOGY at the front of this volume; METEOROLOGY AND CLIMATOLOGY; and the Index entry, *Disasters.*

DISCIPLES OF CHRIST

This faith in 1962 had a world total of 2,011,352 members, of whom 1,797,466 were in the United States. Worldwide membership was organized in 8,915 congregations. There were 222 missionaries and over 2,000 national leaders serving in 13 fields. Church contributions for missionary, educational, and benevolent causes totaled $13,834,129. The amount contributed in 1962 for all work, local and overseas, was $86,117,222. Unified Promotion, the central receiving agency for missionary funds, received $8,418,999.91. The Pension Fund reported total assets of $39,866,645.31.

The 1962 Assembly of the International Convention of Christian Churches (Disciples of Christ) was held in Los Angeles, Calif., September 30–October 4. The 1963 assembly will be held in Miami Beach, Fla., with President Robert W. Burns of Atlanta, Ga., presiding.

Baptisms in the United States and Canada totaled 46,314, with transfers of 55,399, bringing the total additions to 101,713.

Ecumenical concerns were expressed through the annual offering of the Week of Compassion, which in 1962 totaled $577,321.81. This fund was distributed for relief, rehabilitation and educational services of the World Council of Churches and the National Council of Churches.

The Disciples of Christ, with headquarters at 221 Ohmer Avenue, Indianapolis, Ind., publish *World Call,* a monthly, and *The Christian,* a weekly.

GAINES M. COOK,
Executive Secretary.

DISEASES. See MEDICINE; PUBLIC HEALTH; and articles on specific diseases.

DISPLACED PERSONS. See REFUGEES AND DISPLACED PERSONS.

DISTILLING INDUSTRY

The production of distilled spirits at distilled spirits plants in the United States during the fiscal year ended June 30, 1962, as compared with audited figures for the fiscal year 1961, was as follows, in tax gallons:[1]

	July 1, 1961—June 30, 1962	July 1, 1960—June 30, 1961
Whiskey	136,000,404	138,731,346
Brandy	7,548,382	8,102,784
Rum	1,743,779	1,706,406
Gin	20,667,009	18,329,309
Vodka	9,940,095	9,422,868
Alcohol and spirits:		
190° and over	604,254,667	603,674,220
Under 190°	29,363,249	21,831,943
Total	809,517,585	801,798,876

[1] As used herein, a tax or proof gallon is a standard United States gallon of 231 cubic inches containing 50% of ethyl alcohol by volume; a wine gallon is a standard United States gallon regardless of proof.

Rectified Spirits.—In the fiscal year 1962 (1961 figures in parentheses), rectifying plants used 86,638,547 proof gallons (85,825,420) of domestic and imported liquors, and production by rectification amounted to 85,238,609 proof gallons (84,312,251). Whiskey accounted for 63,717,970 gallons of the total production by rectification (64,517,787).

Output for Consumption.—During the calendar year 1961 the bottled output of domestic distilled spirits, plus imported spirits bottled after withdrawal from customs warehouses, totaled 211,019,255 wine gallons, as compared with 203,301,932 during 1960, an increase of 3.8%. Whiskey bottled during 1961 amounted to 147,280,297 wine gallons, accounting for 69.7% of total distilled spirits bottled, as against 145,113,629 gallons during 1960, or 71.3% of total spirits. Of the total whiskey bottled during 1961, spirit blends amounted to 73,059,961 gallons; bonded, 8,910,587; straight, 64,412,283; and blended straights, 897,466. The remainder of the bottled output consisted of gin, 23,599,827 gallons; rum (bottled in continental United States and not including rum imported from Puerto Rico), 903,906; brandy, 5,754,379; vodka, 20,964,980; cordials, liqueurs, and similar products, 10,080,736; and miscellaneous (including products bottled for exportation), 2,435,130.

Withdrawals.—Tax-paid and tax-free withdrawals (in tax gallons) during the fiscal year 1962, compared with 1961, were as follows:

	July 1, 1961—June 30, 1962	July 1, 1960—June 30, 1961
Tax-paid withdrawals:		
Whiskey, total	85,185,145	83,373,506
Whiskey, bottled in bond[1]	8,776,583	8,966,232
Brandy	5,651,462	5,135,820
Rum	209,839	190,748
Gin	20,847,774	18,362,971
Vodka	9,978,268	9,463,435
Alcohol and spirits:		
190° and over	50,901,790	56,804,726
Under 190°	11,221,609	4,260,984
Total	183,995,887	177,592,190
Tax-free withdrawals:		
For addition to wines:		
Brandy	1,026,596	1,155,985
Spirits	31,821,199	31,538,917
For export:		
Whiskey only	930,311	995,165
Other distilled spirits	367,840	11,641,060
Transfers to customs manufacturing bonded warehouses:		
Whiskey only	308,137	222,928
Other distilled spirits	491,106	361,451
For vessels and aircraft	4,439	2,751
To foreign-trade zones	20,277	1,615
For use of the United States	1,155,076	853,365
Alcohol for hospital, scientific, and educational use	2,942,055	2,892,462
Alcohol for medical, beverage, and other purposes in Puerto Rico	56,249	76,688
Used for denaturation:		
Alcohol	511,890,385	537,709,024
Rum	1,512,364	1,436,199
Total tax-free withdrawals	552,526,034	588,887,610

[1] Included in "Whiskey, total."

Apparent Consumption.—The apparent consumption of distilled spirits in the United States during the calendar year 1961, as compiled by the Distilled Spirits Institute, amounted to 241,449,065 wine gallons, an increase of 2.9% compared with 1960. These figures are based on actual wholesale and retail sales in the control states, and on tax collections or gallonage shipments to wholesalers in the license states. Consumption amounted to 182,706,861 gallons in the license states, or 75.7% of the total, and 58,742,204 gallons in the control states, or 24.3% of the total.

Revenues.—Revenues accruing to the federal government from distilled spirits during the calendar year 1961 amounted to $2,422,058,000, an increase of 4.2% compared with 1960. This amount accounted for 72.5% of federal collections from alcoholic beverages, which totaled $3,339,282,000. Taxes on beer accounted for 24.3% of the total alcoholic beverage receipts, and wine accounted for 3.2%. The federal excise tax rate on distilled spirits was $10.50 per proof gallon.

Imports.—United States dutiable imports of distilled spirits during the calendar year 1961 amounted to 39,101,246 tax gallons, with whiskey comprising 34,454,065 gallons of the total. In addition, 3,378,525 gallons of spirits were received from Puerto Rico and the Virgin Islands.

Exports.—In 1961, exports of distilled spirits from the United States to foreign destinations (exclusive of military shipments) amounted to 1,518,068 proof gallons. In addition, 279,277 gallons were shipped to Puerto Rico, the Virgin Islands, and Guam.

Distillers' Dried Grains.—Production of distillers' dried grains at all distilled spirits plants during 1961 consisted of 290,000 tons of dark grains, 30,600 tons of light grains, and 61,000 tons of dried solubles, or a total of 381,600 tons.

ROBERT W. COYNE,
President, Distilled Spirits Institute, Inc.

DISTRICT OF COLUMBIA

This Federal District of the United States, comprising an urban area of 69 square miles (land, 61; water, 8), is coextensive with the city of Washington, the national capital. Population of the District proper on July 1, 1962, totaled 784,000, a rise of 2.6% from the 1960 census figure of 763,956. For the metropolitan area of which the District is the center, the population (1960 census) was 2,001,897.

Government.—Administration is conducted by a three-member Board of Commissioners, two of whom are civilians appointed by the president of the United States with the consent of the Senate, and the third, a member of the U.S. Army Corps of Engineers. Commissioners in 1962 were: Walter N. Tobriner, president; John B. Duncan; and Brig. Gen. Frederick J. Clarke. Secretary of the board was G. M. Thornett, and superintendent of schools, Dr. Carl F. Hansen.

The U.S. Congress enacts District legislation, usually after consultation with the commissioners. Judicial functions are under a federal Court of Appeals, a federal District Court, a municipal Court of Appeals, a Municipal Court (after Dec. 31, 1962, the Court of General Sessions), and a Juvenile Court.

Finance.—In the 1962 fiscal year, revenue of $289,394,678 included $183,776,007 from District taxes and $66,899,530 in federal funds. Chief tax yields were general sales tax ($25,695,097), individual income taxes ($27,888,036), and motor fuel taxes ($12,016,710). Spending of $324,402,414 included $64,059,688 for education, $133,297,823 for health, welfare, and safety, and $57,421,363 for highways.

Transportation and Communications.—With 64.94 miles of District highway construction and reconstruction completed in the fiscal year 1962, *highways and roads* on June 30, 1962, totaled 1,295 miles (1,284 surfaced). These served 216,454 *motor vehicles* (as registered on March 1, 1962), including 162,794 automobiles. Operating in the District in 1962 were 8 *railroads* (using 41 line miles of track) and 12 regularly scheduled *airlines*. There was one commercial *airport*.

Communications media included (1962) 17 AM and 12 FM *radio stations;* 4 VHF and 2 UHF *television stations;* 3 daily *newspapers* (circulation, 663,422) and 11 other newspapers (75,000); and (January 1) 315,500 business and 346,400 residential *telephones*.

Education.—In the 1961–62 school year, public elementary schools staffed by 2,649 teachers enrolled 83,733 pupils; junior high schools with 1,106 teachers enrolled 26,866; senior high schools with 606 teachers enrolled 12,973; private and parochial schools enrolled 16,450. Enrollment in the District's colleges and universities totaled 46,895.

Public school spending in the 1961–62 school year for current operations totaled $54,189,756 ($461.53 per pupil), including capital outlay of $5,795,400. Revenue comprised $53,758,412 from school districts and $431,344 in federal funds. Teachers' salaries averaged $6,390 (senior high, $7,036; vocational, $6,874; junior high, $6,353; elementary, $6,203).

Public Assistance.—In the 1962 fiscal year, public assistance payments to a monthly average of 32,864 persons totaled $15,809,329. This amount included $9,878,726 for dependent children and $2,015,344 for the aged.

Labor Force.—The Bureau of Labor Statistics reported 257,400 federal employees in the District in August 1962. Nongovernmental employees covered by the District Unemployment Act averaged 235,597 in 1961 and received $1,153,246,000 in wages, an increase of 5.2% over the 1960 total. Covered federal government employees averaged 206,064 and received $1,418,417,207 in 1961, up 6.3% from 1960; and covered District government employees averaged 25,692 and received $149,716,353 in 1961, up 10.3% from 1960. Average covered employment and wages in major nongovernment categories were: trade, 82,958 workers ($367,912,843); service industries, 61,844 ($287,877,365); transportation, communications, utilities, and sanitary services, 22,969 ($137,979,542); and manufacturing, 19,776 ($124,657,424).

Events, 1962.—The capital's dynamic building program made further progress in 1962. On May 24, President Kennedy laid the cornerstone for the $75 million Sam Rayburn House Office Building, one of several new office buildings springing up throughout the city. At midyear, the federal government had $100 million in office building construction under way. In addition, each of the six major universities in the downtown area were adding new facilities, and a number of new hotels and motels were completed or under construction.

The Smithsonian Institution (q.v.) was erecting a unique Museum of History and Technology, a $36 million structure which was scheduled to open in 1963. Elsewhere in the Greater Washington area, a planetarium, a science center, and a space, aviation, and communications center were projected.

The $110 million John Foster Dulles International Airport at Chantilly, Va., built by the Federal Aviation Agency from an Eero Saarinen design, was dedicated by President Kennedy on November 17 and began operations two days later. (See also Aeronautics.) A mass-transit study group established by Congress issued a report in November on a proposed 10-year construction program beginning in 1964. The $1,619,000,000 project would include 2 subway routes, 8 rail lines, 50 miles of new freeway, and increased bus service.

Simplified plans for the National Cultural Center, designed by Edward Stone, were unveiled on September 11. The $30 million white marble structure, to be erected on the east bank of the Potomac, will house a theater, a symphony hall, and an auditorium for opera, ballet, and musical comedy. Announcement was also made of plans for a Washington Gallery of Modern Art.

On February 14, national interest was centered on the District, and the White House in particular, when Mrs. John F. Kennedy conducted a televised tour of the presidential mansion. The first lady commented on the restoration and renovation of many of the rooms. In keeping with the renewed historic awareness in Washington, many original buildings in Lafayette Square, which had been scheduled for demolition, were retained. Intervention by Mrs. Kennedy was credited with preserving the early homes.

The city was host to the first International Jazz Festival from May 31 to June 3. Sponsored by the President's Music Committee of the People-to-People Program, the festival presented artists from Belgium, England, France, Germany, Iceland, New Zealand, and Sweden, as well as many American jazz virtuosos.

WIDE WORLD

Architect Edward Durell Stone examines model of National Cultural Center in Washington, D.C., to cost $30 million.

DIVIDENDS. See Business Data, U.S.
DIVORCE. See Marriage and Divorce.
DODECANESE ISLANDS. See Greece.
DOG SHOWS. See Sports, Games, and Shows.
DOMINICA. See West Indies Federation.

DOMINICAN REPUBLIC

Comprising the eastern two thirds of the Caribbean island of Hispaniola, the Dominican Republic has an area of 18,816 square miles, and a population (July 1, 1961 est.) of 3,098,000, mostly of mixed European, Negro, and Indian descent. The population, about 30% of which is urban, has shown a growth rate of 3.5% over the last decade. Principal cities and populations (1960 census): Santo Domingo (called Ciudad Trujillo from 1936 to 1961), the capital, 367,063; Santiago de los Caballeros, 83,523; and San Francisco de Macorís, 26,000. Spanish is the official language.

Government.—Pending the adoption of a new constitution and the holding of a national election, the government was in the hands of a 7-member Council of State, headed by a president. On Jan. 18, 1962, Rafael Bonnelly, the vice president, replaced Joaquin Balaguer, who had been elected president on Aug. 4, 1960. National elections were held on Dec. 20, 1962, and Juan Bosch (Revolutionary Party) was elected president. (See below, *Events, 1962.*)

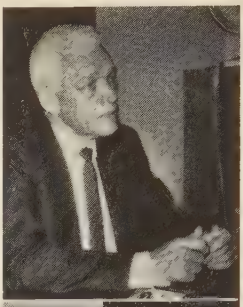
Education and Religion.—School enrollment, 1960: 816,813 (about 56% of the school-age population). Number of schools: 4,463 primary; 76 secondary; 487 normal, vocational, and special; 1 higher. Illiteracy among persons over 15 years of age dropped from 43.5% in 1935 to 30% in 1960. State religion: Roman Catholicism; other forms of religion are permitted.

Finance.—Government revenue, 1962 est.: 126,990,087 pesos (129,225,845 in 1961); expenditure, 125,990,087 (128,258,494 in 1961). The Dominican peso is equal to the United States dollar. In February 1962 the United States granted a $25 million loan to the Dominican Republic through the Agency for International Development, under the Alliance for Progress.

Transportation and Communications.—Transport networks (miles, 1960): roads, 2,990 (about one half paved); railroads, 1,100 (privately owned, serving mainly the sugar plantations). Air services are provided by Compañia Dominicana de Aviacion (CDA) and four foreign airlines. Other communications data (1960): passenger cars, 11,000; commercial vehicles, 6,300; telephones, 20,315; radios, 98,000 (1959); television sets, 15,000; radio stations, 63; television stations, 4; newspapers, 4 (1962).

Agriculture.—About 56% of the labor force is engaged in agriculture. The principal cash crops are sugar, coffee, cacao, and tobacco. Agricultural yield (metric tons, 1960); sugar, 1,112,000; rice, 119,500; corn, 100,600; tapioca, 105,776; sweet potatoes, 75,500; peanuts, 61,683; coffee, 35,400; cacao, 34,300; tobacco, 22,500. In 1961 the income from sugar exports declined, with indications of graver difficulties in 1962 (see below *Events, 1962*).

Manufactures and Minerals.—Chief industrial products, 1960: cement, 170,000 metric tons; cigars, 30 million; cigarettes, 826 million; lumber (sawn), 10,000 cubic meters; footwear, 475,000 pairs. Chief minerals (metric tons, 1960): iron ore, 82,000; salt, 85,800; bauxite, 668,621. Output of electrical power in 1960 reached 348,511,000 kw.-hr. Manufacturing establishments numbered 2,801 in 1960 and employed 81,785 persons; total sales in 1960 were 262,839,422 pesos.



UPI

(Far left) **Joaquin Balaguer, president of the Dominican Republic (r.), greets Vice President Rafael Bonnelly as provisional ruling junta is inaugurated on Jan. 1, 1962.**

(Near left) **Juan Bosch *(top)* of the Revolutionary Party, elected president on December 20. The closest contender was Viriato Fiallo of National Civic Union *(bottom)*.**

Foreign Trade.—Total exports, 1961: $143.1 million ($180.4 million in 1960); imports, $69.5 million ($87 million in 1960). Principal exports, 1961: sugar, $69.6 million; cacao, $14.7 million; coffee, $13.8 million; tobacco, $9.5 million. Principal imports: textiles, chemicals and pharmaceuticals, fuels and petroleum products, foodstuffs. Exports to the United States totaled $90.1 million, down about 17% from 1960; imports totaled $29.4 million, about 27% below 1960. Other major trading partners were West Germany, Japan, Netherlands, and Great Britain.

Events, 1962.—The Dominican people moved shakily into 1962 after a chaotic 1961. The assassination of the long-time dictator, Rafael Leonidas Trujillo Molina on May 30, 1961, set off a continuous series of political plots, coups, and countercoups as the Trujillo family battled hostile internal groups which in turn fought each other. The United States had made it clear that return of the Trujillos to power would not be acceptable, and backed up its stand by sending a naval task force to Dominican waters in November 1961.

By the middle of January 1962 it seemed unlikely that the Trujillo family would return as a dominant force in Dominican politics. The political party organization of the Trujillos had been dissolved, and a Council of State, including among its members persons from the Trujillo opposition, the National Civic Union, had been created to make the key legislative and executive decisions. Dates for election of a constituent assembly and general elections had been set for August and December, 1962.

One of the first actions of the Council of State, after being sworn in on Jan. 1, 1962, was to decree seizure of all property of the Trujillo family as of January 5. An autonomous National Industrial Development Corporation was formed to administer and dispose of the confiscated properties. Meanwhile, on January 4 the Organization of American States voted to lift the economic and diplomatic sanctions in force against the Dominican Republic since August 1960. On January 6 the United States resumed diplomatic relations (severed in August 1960); Haiti followed suit, as did other Latin American countries.

President Joaquin Balaguer, who had weathered a number of political storms to become temporary head of the Council of State in December 1961, was removed by an army coup on January 16, led by Gen. Pedro Rodriguez y Echavarria, who attempted to install a new military-civilian government. Fearing an effort to create a military dictatorship, the United States quickly opposed the coup and implied that it would impose diplomatic and economic sanctions. On January 18 a countercoup by the air force overthrew the Rodriguez y Echavarria junta and the Council of State was restored, with Vice President Rafael Bonnelly as president.

The new governing arrangement looked promising enough from the United States point of view to warrant a favorable statement from President Kennedy and a $25 million credit, effective February 16, for the dual purpose of alleviating Dominican balance of payments difficulties and promoting economic development. Moreover, on January 29, the United States lifted import restrictions on Dominican goods that were imposed during 1960–61 and proposed returning to the Dominican Republic $22,755,153 that had been collected in import fees on sugar as an economic sanction against the Trujillo regime. President Kennedy named John B. Martin as United States ambassador on February 17, and Rafael Pico on February 21 to assist the Dominican government in economic planning. On March 8 a military pact was signed to provide United States assistance in the reorganization of the Dominican armed forces.

Political unrest continued, however. The Council of State decreed a "state of emergency" in February to combat activities of conspirators and agitators at both extremes of the political spectrum. Arson and other destructive activities increased, bringing the arrest of five leftist leaders. Rightist influence was evident in the rioting of March 8, the day before Ambassador Martin presented his credentials to President Bonnelly and the Council of State. About 1,000 persons demonstrated against the forced exile of ex-President Balaguer and ex-armed forces chief Rodriguez y Echavarria. Shops were looted, the United States embassy was attacked, and the car of the United States ambassador was burned. Police arrested 100 persons.

Early in the year, a National Planning Board was created to prepare and supervise economic and social development programs. By May the government had legislated to provide for an agrarian reform program involving redistribution of land, along with related programs for housing, loans to farmers, and technical assistance to promote a higher level of productivity in agriculture. These programs were to be accompanied by a

general effort toward greater crop diversification and correspondingly less dependence on sugar as the key export crop and principal source of convertible foreign currency. On July 6, President Kennedy announced that the United States would establish a fund to help diversify the economy of the Dominican Republic.

Difficulties arose in June and July when proposed retroactive payments of premium prices for nonquota Dominican sugar which had entered the United States between September 1960 and March 1961 were nullified by action of a U.S. Senate-House conference committee on June 28–29. Moreover, the Congress took action to cut the existing Dominican quota at premium prices to about one fourth of the existing amount. (The premium price was about $108 a ton against the world market price of about $56 a ton.) Under the Sugar Act, the Dominican Republic received a quota of 95,000 tons for the period July–December 1962, as opposed to 476,000 for the first half of the year. Realizing that the new quota would cancel out the $25 million credit allowed under the Alliance for Progress in February, the Council of State announced that it would suspend all development programs begun in connection with commitments from the Alliance for Progress. On July 12, President Kennedy allotted to the Dominican Republic an additional sugar quota of 130,000 tons from the Cuban quota.

Rioting occurred in Santo Domingo on July 6, and the Council of State announced that the elections scheduled for August 15 for the constituent assembly to frame a new constitution would be delayed indefinitely. Instead, on September 16 a new constitution was proclaimed by President Bonnelly. The new constitution is basically the one used during the Trujillo regime, with several amendments on procedures for the election of the president and Congress.

The first free elections to be held in the Dominican Republic since 1924 took place on December 20. Voters turned out in large numbers and balloting was surprising orderly. Juan Bosch, candidate of the Revolutionary Party, was elected president for a four-year term, defeating Viriato D. Fiallo of the National Civic Union. Both men were considered pro-United States, and both advocated land reform measures, but Bosch's reform proposals were regarded as the more liberal.

Efforts to aid the Dominican Republic continued as the United States government sought Peace Corps volunteers for assignments on the island, and a private American development firm contracted with the Dominican government to aid in administration and distribution of the land which the government had taken from the Trujillos.

(See also INTER-AMERICAN AFFAIRS.)

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DONATIONS AND BEQUESTS. See PHILANTHROPY.
DRAMA. See THEATER.
DRESS. See FASHIONS.
DRUG TRAFFIC. See NARCOTICS.

DRUGS

The United States drug industry's outlay for research and development increased by 13% in 1961 to a record $245.3 million. For 1962, the Pharmaceutical Manufacturers Association expected research expenditures to reach another new high of about $268 million. Funds allocated for this purpose by drug manufacturers constituted 8% of 1961 sales, while industry in general spends about 3% of its sales income for research.

Pharmaceutical sales at the manufacturer's level increased to $2.643 billion in 1961 from $2.501 billion in 1959 and $2.588 in 1960, according to the *1961 Annual Survey of Manufactures*, U.S. Department of Commerce. Over three fourths of sales was accounted for by prescription or ethical products, and the remainder by proprietary products.

The pace of new drug product introductions slackened in 1961, falling to 265 from 311 a year earlier. Declining more moderately, however, was the introduction of new chemical entities. These totaled 41 in 1961 and 45 in 1960.

The production of synthetic medicinal chemicals continued to rise. The U.S. Tariff Commission estimated that production amounted to 117.4 million pounds in 1961, up from 113.8 million pounds the previous year. Aspirin production declined, however, to 22.7 million pounds in 1961 from 23.6 million pounds in 1960. Increasing sharply was the production of penicillin salts, from 498.1 trillion international units in 1960 to an estimated 648.6 trillion IU in 1961.

The U.S. Bureau of Labor Statistics reported that as of May 1962, 108,800 persons were engaged in the manufacture of drugs and medicinal agents. During 1961, the drug industry employed 13,500 research scientists and supporting staff members, an increase of 9% over the year before.

Some 58,800 members of the drug industry work force were classified as production or nonsupervisory employees. As of May 1962 the average workweek of the industry's production workers was 40.8 hours, with average weekly gross earnings of $98.33.

Modern Medicine estimates that in 1962, sales of ethical drug products were distributed as follows: pre-

(*Left*) Crowd in Santo Domingo celebrates countercoup on January 18 which overthrew military junta after two-day rule and restored Council of State to power. (*Right*) Car of U.S. Ambassador John B. Martin burns during riots on March 8 protesting exile of ex-President Balaguer and Gen. Pedro Rodriguez y Echavarria, who overthrew Balaguer January 16.

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scriptions, 60.5%; hospitals, 20.9%; and physicians, 18.6%. It also estimates that the following seven categories of drugs were prescribed most often in 1962: antibiotics, 13.9% of all prescriptions; cough and cold preparations, 8.4%; analgesics, 8.2%; ataractics, 7.2%; hormones, 7.1%; sedatives and hypnotics, 6.6%; and cardiovascular preparations, 6.0%. The balance of prescriptions filled were distributed among over 35 other therapeutic classifications.

Drug Topics reports that in 1961, sales of the 54,116 drug stores in the United States amounted to $7,984,000,000, an increase of 3.5% over 1960. The dollar volume of prescriptions in 1961 was $2,208,940,000, as compared with $2,175,360,000 the year before; the retail value of all nonprescription packaged medication sold in all outlets increased by 3.2% to a new high of $1.8 billion in 1961.

The number of prescriptions filled by drugstores in 1961 rose to a new high of 742.7 million from 729.2 million in 1960. (These figures cover 98% of all prescriptions filled in the United States.) Noteworthy was the reduction in 1961 in the average expenditure for a prescription (by 0.3%, to $2.97 from $2.98 the year before) for the first time in over 20 years.

(See also FOOD AND DRUG ADMINISTRATION; NARCOTICS; and the Index entry, *Drugs.*)

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Editor, "Drug Trade News."

DUTCH EAST INDIES. See INDONESIA.
DUTCH GUIANA. See SURINAM.
DUTCH NEW GUINEA. See WEST NEW GUINEA.

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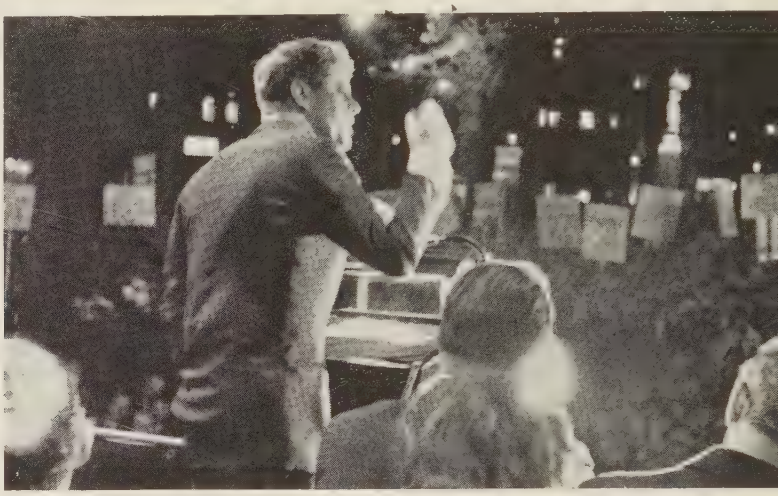

ELECTIONS—President Kennedy exhorts crowd in New Haven, Conn., October 17, to vote for Democratic ticket.

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EARNINGS. See BUSINESS DATA, U.S.; INCOME; STANDARDS OF LIVING.
EARTH SATELLITES. See SPACE FLIGHT and the Index entry, *Satellites, Earth.*
EARTH SCIENCES. See articles on the specific sciences, such as GEOLOGY; METEOROLOGY AND CLIMATOLOGY; OCEANOGRAPHY; SEISMOLOGY.
EARTHQUAKES. See SEISMOLOGY.
EAST INDIES, Dutch. See INDONESIA.
EASTERN ORTHODOX CHURCHES. See RELIGION.
ECLIPSES. See ASTRONOMY.
ECONOMIC AND SOCIAL COUNCIL (U.N.). See UNITED NATIONS.
ECONOMIC COMMUNITY, European. See EUROPE.
ECONOMIC REVIEW. See BUSINESS DATA, U.S.; UNITED STATES; and the Index entry, *Financial and Economic Review.*

ECUADOR

The "Republic of the Equator," situated on the west coast of South America, has an area of approximately 105,000 square miles and a population of 4,650,000 (1962 est.), including 2,020,000 in the coastal region and 2,570,000 in the highlands. The Galápagos Islands, some 600 miles off the coast in the Pacific, have an area of 3,123 square miles and a population of 1,790 (1959). Principal cities and populations (1959 est.): Quito, the capital, 402,000; Guayaquil, 610,000; Cuenca, 62,000; Ambato, 42,000; Riobamba, 40,000; Latacunga, 32,000. Spanish is the official language.

Government.—Ecuador is a unitary state, with a representative government based on a separation of powers. The National Congress consists of a Chamber of Deputies (73 members elected for 2-year terms) and a Senate (47 members elected for 4-year terms, 35 on a territorial basis and 12 on a functional basis, representing public education, Catholic education, the armed forces, journalism and scientific and literary academies, agriculture, business, labor, and industry). (See also below, *Events, 1962.*) The president (Carlos Julio Arosemena Monroy, vice president until Nov. 8, 1961, when Velasco Ibarra was driven into exile by the army) is, according to the 1946 constitution, elected for a 4-year term. There is a Supreme Court, an autonomous Court of Elections, and a Council of State with legislative and judicial powers.

Education and Religion.—School enrollment, 1961: 587,543 (Loja and Manabí provinces not reported). Number of schools (with enrollments), 1961: 101 kindergarten (11,742); 5,748 elementary (596,268); 324 secondary (69,791); 10 institutions of higher learning (9,342). Only 14% of the primary students enrolled were expected to finish 6th grade; some 200,000 children (ages 6–12) were not in school in 1962. Teachers receive typically 800 sucres ($44) monthly. The constitution proclaims religious freedom but Roman Catholicism is the dominant religion.

Finance.—The 1962 budget called for a balance of revenue and expenditure at 2,048 million sucres (1,770 in 1961), including capital expenditures of 420.2 million and 331.5 million for public enterprises. Ordinary expenditures included: servicing the public debt, 292.4 million; education, 276.6 million; armed forces, 267 million. Public debt: 791.8 million sucres at the end of 1961; foreign debt, $111.8 million. The sucre was valued at U.S.$0.055 at the official exchange rate and at U.S.$0.044 on the free market (November 1962). Gold and foreign exchange reserves: $36.9 million as of August 1962.

Transportation and Communications.—Transport networks (miles, 1960): railways, 696; all-weather roads, 3,400 (206 paved). Seaports: Guayaquil (handles 90% of imports and 60% of exports) and 9 others. International jet airports: Quito and Guayaquil. Motor vehicles: 23,000 (1959); telephones, 29,100 (1961), including 10,232 in Guayaquil and 8,000 in Quito; radio receivers, 120,000 (1958); television sets, 5,000 (1962).

Economic Indicators.—Gross national product: 13,627 million sucres in 1960. Cost-of-living index (1958 = 100): 109 as of August 1962. Labor force (1960): 1,654,300, including 878,500 in agriculture and fishing, 320,900 in manufacturing, and 38,000 in transportation.

Manufactures and Minerals.—Chief products (metric tons, 1961): crude petroleum, 387,600 (up 7% from 1960); cement, 219,600 (up 9%); gold, 15,159 fine ounces (1960); silver, 126,419 troy ounces (1960).

Agriculture and Fishing.—Chief crops (metric tons, 1961): bananas, 2,050,425; potatoes, 199,641; cacao, 43,000; rice, 169,150; corn, 159,510; barley, 84,610; wheat, 77,630; coffee, 30,420; beans, 10,297; cotton, 6,436. Total shrimp catch: 14.9 million pounds.

Foreign Trade.—Total exports, 1961: $126.9 million ($144.5 million in 1960); imports, $100.8 million ($100.3 million in 1960). Principal exports (in millions of dollars, 1961): bananas, 80.6; cacao, 15.6; coffee, 14.3; rice, 2.7; shrimp, 1.7. Chief banana customers (with percentage of total exports received, 1961): United States (64%); West Germany (18.7%); Belgium (8.6%); Chile (4.7%). Ecuador's share of the former Cuban preferential sugar quota in the United States market is 30,000 tons.

Events, 1962.—In March, pressure mounted in military circles and from all but extreme-left political parties for a stand against Communist Cuba. President Arosemena proposed a national plebiscite to determine the issue "democratically." Anti-Communist demonstrations turned into riots; the Conservative Party withdrew from the government coalition; and the Christian Social Movement threatened to go over to the opposition. Arosemena charged that his opponents feared the result if the people were actually consulted.

Representatives of the National Democratic Front (FDN), a coalition of the Liberal Party, the Democratic Socialist Party, and the Democratic Union of Independents, offered to join the government if Arosemena would abandon the plebiscite, break relations with countries denying human rights, take military officers out of nonmilitary posts, and place 5 FDN members in his cabinet. The proposition was accepted, ending Arosemena's dream of building new markets in the Soviet bloc. On April 3 the new cabinet voted to break with Cuba, Poland, and Czechoslovakia.

The government was plagued during the year by strikes and violent demonstrations of dissatisfaction. The promised major social and economic reforms (ostensibly the reason for forcing Velasco Ibarra from the presidency) had not taken place. On the far left the Revolutionary Union of Ecuadorian Youth (URJE) denounced the ineffectiveness of the regime, while the Revolutionary Socialist Party called for a Castro-type transformation of Ecuador. On the far right the Catholic Church and the Ecuadorian Nationalist Revolutionary Action (a Falangist-type organization) insisted that communism had virtually taken over. Arosemena defended the members of his administration as moderate leftists and progressive Catholics. A hotly debated motion in Congress for his impeachment was rejected in September by a vote of 64–33.

The complex bill for agrarian reform, proposing, among other things, abolition of the estimated 90,000 *huasipungo* tenancies,[1] was not enacted by Congress. Attempts to take an agrarian census, to serve as a basis for land reform, were suspended in April after Indians reacted with hostility toward school teachers and priests employed in the task. Many rural schools were closed and 13 persons were killed and 50 injured. A well-armed training camp for youthful guerrillas was broken up in March; many of those arrested had been schooled at the University of Havana and had come back to help start "the Revolution." In July, eight paratroopers were imprisoned for providing weapons to the Castro-inspired URJE and for defecting to organize guerrillas.

The congressional and municipal elections of June 3 (with over 15 million voters registered) showed a swing away from the left. Results in the Chamber of Deputies: Conservatives, 24 seats; independents, 18; National Democratic Front, 17; Confederation of Popular Forces, 5; Velasquistas, 3; Christian Social Movement, 3. Conservatives won 7 out of 15 mayorships.

The Central Bank's credit operations, the heavy outflow of foreign exchange, the 1961 currency devaluation, an ambitious public works program, and spending by semiautonomous development agencies contributed to the financial embarrassment of the public treasury in early 1962. The total deficit for 1961 had been 416 million sucres; revelations were made of unauthorized expenditures (56 million sucres in the Office of the Presidency alone) and graft in the previous administration; and scandal broke over corruption and incompetence in the administration of Guayaquil. A number of the austerity steps taken to consolidate and control the fiscal system depressed economic activity until the seasonal upswing in September.

Foreign loans approved in 1962 included $10.6 million for low-cost housing and $3 million toward renovation of the Quito sewerage system from the Inter-American Development Bank (IADB), $5 million for industrial development and $8 million to cover the 1961 budget deficit from the Agency for International Development (AID), and 22.6 million sucres from the Alliance for Progress, chiefly for agricultural development, research, irrigation, and the eradication of disease.

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[1] These require the farmer to pay a "rent" for his small plot of a minimum of 4 days' work for the landlord per week.

EDUCATION

Some progress toward ending racial segregation in public schools continued to be made in 1962 in the South and elsewhere, but the enrollment of the first Negro at the University of Mississippi provoked the gravest conflict between federal and state authority since the Civil War.

Crisis in Mississippi.—James H. Meredith, a 29-year-old Negro and Air Force veteran, had begun his long effort to enter the University of Mississippi as a transfer student in January 1961. After 18 months of legal maneuvers by Mississippi officials, the U.S. Court of Appeals for the Fifth Circuit ruled on June 25, 1962, that Meredith had been denied admission "solely because he was a Negro," and on July 17 ordered the University of Mississippi to enroll him in September. A series of stay orders obtained by Mississippi officials delayed action until the third order was set aside on September 10 by U.S. Supreme Court Justice Hugo L. Black, and a showdown became imminent.

Mississippi Gov. Ross R. Barnett declared that he would go to jail rather than permit Meredith to enter the university. He obtained authority from the state college board to deal personally with the situation, and took over as special registrar of the university. On two occasions, at Oxford on September 20 and at Jackson on September 25, Governor Barnett personally denied admission to the university to Meredith, who was accompanied by Justice Department aides. A third attempt at registration, at Oxford on September 26, was blocked by Lt. Gov. Paul B. Johnson.

On September 28, Governor Barnett declined to appear before the Court of Appeals in New Orleans to answer charges of civil contempt of federal court orders. Trying him *in absentia*, the court found him guilty but gave him four days to "purge" himself of contempt or face arrest and a fine of $10,000 a day.

President Kennedy intervened in the growing crisis on September 30. At 12:01 A.M. he signed a proclamation commanding the people of Mississippi to end their defiance of federal law. At the same time he pressed the Mississippi National Guard into federal service and dispatched Army units to Memphis, Tenn., on a standby basis. On

(*Above*) Mississippi Gov. Ross Barnett (second from right) confronts James Meredith (left) and denies him admission to University of Mississippi on September 25. (*Below*) Federal marshals guard prisoners arrested on university campus during demonstrations against Meredith on October 1.

WIDE WORLD

the evening of September 30—shortly after Barnett indicated that he would yield to Meredith's enrollment—the president addressed the nation by radio and television and appealed to Mississippians to comply with federal authority.

Meredith had been escorted to the campus that afternoon by a force of 500 United States marshals. Even as the president was speaking, a mob of 2,500 persons began assaulting the marshals guarding the Lyceum. The struggle continued into the night until Mississippi National Guardsmen and Army units arrived to restore order. By morning, some 16,000 federal troops had completely occupied the campus and town, and Meredith was duly registered at 7:30 A.M. with no further resistance. Two men, both bystanders, were killed in the rioting. A bodyguard of United States marshals remained with Meredith on the campus as he began attending classes. (See also MISSISSIPPI.)

Other Integration Developments. *Segregation in the South.*—In September 1962, the public and parochial schools in New Orleans admitted 258 Negroes to 46 previously all-white schools, according to the *Southern School News.* There were no major incidents. In their third year of expanding desegregation, the public schools accepted 104 Negroes, most of them first-graders entering 16 schools newly desegregated. Four other schools had been desegregated previously. Under a directive of Archbishop Joseph Francis Rummel in March 1962, protested vigorously at the time by some school patrons, Catholic elementary and secondary schools in the archdiocese of New Orleans were desegregated. City parochial schools received 136 Negroes into 22 elementary schools and 18 of them into four high schools.

In Georgia, unsuccessful efforts were made by 19 Negro pupils to enroll, on September 4, in the white schools of Albany, scene of much racial tension and mass jailing of demonstrators. In Atlanta, now in its second year of desegregation, 44 Negroes were enrolled quietly in 11 predominantly white public schools. Seventeen Negroes were admitted to six previously all-white parochial schools in the Atlanta archdiocese without major incident.

A total of 1,230 Negro pupils attended classes with whites in 140 schools as the 1962 fall term opened in Virginia. This was more than double the number (536) enrolled in schools with white pupils in the spring of 1962. Sixty-five schools were desegregated for the first time. In Virginia's Prince Edward County the public schools remained closed. On July 26, 1962, Federal District Judge Oren R. Lewis declared that the public schools of the county cannot be closed to avoid desegregation while schools elsewhere in Virginia remain open. Legal maneuvers have delayed an effective date for the enforcement of the order. As of December 1962, the public schools were still closed. Leading newspapers in the state have urged reopening, and national magazines have portrayed graphically the situation of the approximately 1,400 Negro children without schooling. In the meantime, 1,325 white children were attending classes set up by the Prince Edward School Foundation in churches, public halls, and a newly constructed $256,000 private high school.

In the fall of 1962, 75 additional school districts in the South were desegregated, making a total of 972 out of 3,058 districts containing both Negro and white pupils. In the 1962–63 school year, a total of 255,367 Negroes (7.8 percent) were attending schools with whites in 17 Southern and border states plus the District of Columbia. Except in the border states and the District of Columbia, however, the number of Negroes actually attending classes with white pupils remains relatively small. The public schools of Alabama, Mississippi, and South Carolina were still completely segregated. So also were the public schools of Georgia and Louisiana, except in Atlanta and New Orleans.

Segregation Outside of the South.—Eight public school districts in Northern and Western states opened the new school session in the fall of 1962 with announced plans to end segregation practices in their classrooms, according to the *Southern School News.* Voluntary desegregation plans were reported by school officials in Eloy, Ariz.; Stamford, Conn.; Mount Vernon, Ill.; Jersey City, Montclair, Morristown, and Newark, N.J.; and Coatesville, Pa.

Negroes in 62 communities in 15 states outside the Southern and border states have filed protests or are investigating discriminatory practices in public schools, according to records kept by the Southern Education Reporting Service. Nineteen court suits have been filed in connection with these protests, and six petitions have been presented to state commissioners of education for quasijudicial proceedings.

School Prayer.—On June 25, 1962, the U.S. Supreme Court, by a vote of 6 to 1, ruled the saying of an official prayer in public schools to be unconstitutional. The historic decision grew out of legal action brought by a group of parents in New Hyde Park, N.Y., where the local school board had "directed the School District's principal to cause the following prayer to be said aloud by each class in the presence of a teacher at the beginning of each school day:

" 'Almighty God, we acknowledge our dependence upon Thee, and we beg Thy blessings upon us, our parents, our teachers, and our country.' " (Quoted from Supreme Court decision, No. 468.)

This daily procedure had been adopted on the recommendation of the State Board of Regents, the governing body of the public schools of New York State. While its use was optional, it was a prescribed prayer, and it was on the latter ground that the Supreme Court based its ruling.

Justice Black, delivering the opinion of the court, maintained that the prayer program officially establishes the beliefs contained in the prayer. "When the power, prestige, and financial support of government is placed behind a particular religious belief," he declared, "the indirect coercive pressure upon religious minorities to conform to the prevailing officially approved religion is plain."

The decision was followed immediately by a wave of protest. Members of Congress proposed constitutional amendments to overturn the ruling; Southern congressmen criticized the Supreme Court; church leaders from various parts of the nation denounced the ruling in terms ranging from "disappointing" to "scandalous." Subsequently, a number of leading Protestant clergymen released an endorsement of the decision. The Washington *Post*, in a strong editorial, hailed the decision as an "act of liberation."

Undoubtedly the decision will have a broad impact on practices in the nation's schools. Some states require that each day's session begin with a recitation of the Lord's Prayer. This would now seem to be unconstitutional; however, the Supreme Court was scheduled to rule specifically on this practice. Also subject to further interpretation is the requirement in many states of the reading of the Bible as a part of the opening exercises.

Teachers' Strike.—On April 11, 1962, a strike of the New York City teachers attracted national attention. On that day, 20,558 public school teachers, or 51.8% of the nearly 40,000 teachers, did not report for duty. An estimated 10,000 teachers picketed some 600 of the city's 850 schools.

The president of the Board of Education warned that the striking teachers were themselves terminating their employment. However, they were back in their classrooms the next morning, for during the early morning hours the executive board of the United Federation of Teachers had called off the strike in the face of a court restraining order obtained by the school board.

While salaries were the chief issue, there were other complaints, particularly about working conditions. The federation, selected by the teachers as their agent in December 1961, had attempted collective bargaining negotiations with the school board. The latter could not act until it had received its budget allocation from the city, which, in turn, was waiting to find out how much it would receive under the state aid program, then being revised. Later in the day, the issue was settled by granting the city the right to borrow $48,600,000 against the following year's state aid.

Editorial opinion in newspapers around the country was generally unfavorable to the strike. Many school leaders characterized it as "unprofessional" and illegal. However, some observers felt that the strike demonstrated that funds for schools could be found if necessary.

Educational Television.—On May 1, 1962, President Kennedy signed Public Law 87–447 to expedite the construction of new educational television broadcast facilities for schools, colleges, and nonprofit community organizations. Congress authorized the appropriation, on a matching basis, of $32 million for a five-year program, beginning July 1, 1962. Under the measure, funds can be used only for equipment, not for studios or housing. The intent of the law is to put new educational TV stations on the air. No state may receive more than $1 million. In the final hours of the 87th Congress a $550 million supplemental bill actually appropriating funds for educational television and other government programs was abandoned because of a Senate-House feud.

SANDERS IN THE GREENSBORO DAILY NEWS

"The Following Prayer Is Extemporaneous . . .!"

In December 1961 the Educational Media Study Panel, an official advisory group to the U.S. Office of Education, estimated a minimum of 1,197 educational TV stations as the nation's need. It reported that about 60 stations were on the air, with an additional 40 in various stages of planning or completion. Between 200 and 300 closed-circuit systems were in use in schools and colleges. A nationwide survey of educational television needs, published by the U.S. Office of Education in August 1962, indicated a need in the next decade for more than three times the 309 channels already allocated to educational TV.

National Defense Education Act.—As of June 30, 1962, nearly $300 million had been made available, under the National Defense Education Act of 1958, to elementary and high schools for strengthening instruction in science, mathematics, and modern languages. These funds were supplied on a 50–50 matching basis by the federal government and the states. More than 15,000 public classrooms have been remodeled to improve the teaching of these subjects, and over 4,000 new electronic language laboratories have been constructed.

Under the language-development program, more than 11,000 elementary and high school language teachers have attended summer sessions at 218 institutes to learn new methods and materials, for which purpose over $18.5 million has been expended. Fifty-three university language and area centers are offering instruction in unusual languages; more than 1,600 graduate students have been awarded fellowships for the study of 62 languages, most of them of critical importance to national purposes.

Accomplishments in other phases of the NDEA program are also impressive. Over 150,000 persons are enrolled in the various technical training programs. A total of $47.8 million has been made available to schools for guidance, counseling, and testing programs.

Student Loans.—Under the student loan program of the National Defense Education act, ap-

proximately 350,000 undergraduate and graduate students in 1,450 colleges and universities have borrowed $225 million to continue their education. About one fourth of the borrowers now paying off their loans have become elementary or secondary school teachers.

Grants have been made to 5,500 students under the graduate fellowship program, designed to train college teachers to help meet the current shortage. A total of 1,524 colleges and universities are participating in the student loan program in 1962–63, an increase of 74 over the 1961–62 total. Applications filed for federal contributions by 1,446 of these institutions totaled nearly $100 million for the 1962–63 session.

Among the institutions applying for 1962–63 funds are 22 colleges and universities which have filed provisional applications for a total of $2,990,608, stipulating that their participation would be contingent on the removal of the disclaimer affidavit. In its closing days the 87th Congress eliminated this feature of the act. Applicants for loans are still required to take an oath of allegiance to the United States.

School and College Enrollments.—For the 18th consecutive year, school and college enrollments in the United States increased, reaching an all-time high of 51,300,000 for the session of 1962–63, the U.S. Office of Education estimates. This is an increase of 2 million over the 1961–62 enrollment.

Enrollments in public and nonpublic elementary schools, kindergarten through grade 8, are expected to total 35 million pupils in 1962–63, an increase of 800,000 over the previous session. Secondary school enrollments are estimated at 11.7 million, an increase of 900,000 over the 1961–62 total. The larger increase in the number of high school pupils reflects the surge in births since 1945, an increase that up to now has been affecting mainly elementary school enrollments.

Included in these statistics are the schools operated by the Roman Catholic Church, in which the estimated total elementary and secondary enrollment for 1962–63 is 5,562,000 (elementary, 4,560,000; high school, 1,002,000). Parochial schools enroll approximately 11 per cent of the elementary and secondary school attendance in the United States.

The total number of students enrolled in public and private colleges and universities reached 4,600,000 in the session of 1962–63, an increase of 300,000 over the previous year. Statisticians point out that the really great increases in college enrollments will begin in 1965–66, when high school graduates born in the middle 1940's will be applying for admission. Between 1945 and 1947 there was an annual increase in the number of births of 1 million.

At present, the steadily mounting college enrollments are an indication of a growing interest in attending college rather than the result of higher birth rates, the Office of Education reports. The proportion of youth of college age actually attending college has been increasing since 1945.

Population Trends.—School enrollments are destined to continue to increase as the population grows. Population projections vary according to the assumptions on which they are based. The Bureau of the Census predicts a nation of from 209,000,000 (lower estimate) to 215,000,000 people by 1970, compared with an official total of 179,323,175 in the 50 states and the District of Columbia as of April 1, 1960.

If the population and school enrollment rates continue to increase as anticipated, the Bureau of the Census estimates educational enrollments as shown in the accompanying table.

U.S. EDUCATIONAL ENROLLMENT PROJECTIONS
(In thousands)

Total	Elementary (kindergarten-Grade 8)	High school (Grades 9–12)	College and university
1960....46,259	32,441	10,249	3,570
1965....54,360	35,755	13,226	5,379
1970....60,344	38,430	14,894	7,020
1975....66,721	42,411	15,985	8,325
1980....75,102	48,696	17,388	9,018

If these projections materialize, in the 20 years between 1950 and 1970 the school and college enrollment in the United States will have doubled, from 30 million to 60 million.

Classroom Shortage.—In spite of the record construction of 72,200 new classrooms in the year ending September 1961, the shortage of space still continues. The U.S. Office of Education estimated in January 1962 that 60,200 additional classrooms were needed to relieve overcrowding, and 67,000 to replace unsatisfactory facilities. An average of 69,100 new classrooms have been built annually for the last six years, only slightly more than the number needed to accommodate increased enrollments and to replace abandoned classrooms. The backlog of the shortage has remained at about 137,000 classrooms.

Teaching Staff.—In 1961–62 the public school instructional staff totaled 1,577,653, according to the National Education Association's Research Bureau. Of this number, 1,454,362 were classroom teachers (elementary, 875,959; secondary, 578,403). The number of teachers lacking full qualification for their state certification remained at approximately 97,000, or 6.7 per cent of the teachers employed.

Teachers' Salaries.—The National Education Association (NEA) reports that the average annual salary of classroom teachers in 1961–62 was $5,527, an increase of $252 over the previous year. Single salary schedules, now so prevalent, are reducing the gap between the average salary for elementary school teachers ($5,327) and high school teachers ($5,800).

Supplementary Employment.—A report made by the U.S. Department of Labor on multiple jobholders as of December 1960 showed that about 4.6 per cent of the 66 million persons then employed held two or more jobs. Nearly twice as many teachers (8.9 per cent) held a second job. Most of these were men: 23.5 per cent of all men teachers below the college level hold a second job, but only 2.5 per cent of the women. In no other primary occupational group did more than 8.9 per cent of the men have supplementary employment (*School Life,* January–February 1962).

Expenditures for Education.—In 1961–62, revenue receipts for public schools reached a total of $16.6 billion, an increase of 8.7 per cent over the previous year. Approximately 4 per cent was received from federal sources, 40 per cent from state funds, and 56 per cent from local and other sources, according to NEA reports. Current expenditures per pupil in average daily attendance averaged $414 in 1961–62, ranging from $220 in Mississippi to $615 in New York.

Federal Aid for Colleges.—In January 1962, President Kennedy, in his addresses on the State of the Union and on the 1963 budget, recommended increased federal aid for higher education, including loans for the construction of college academic facilities and funds for college scholarships. Bills to accomplish these goals met with difficulties concerning aid to church-affiliated colleges, as well as provision of federal funds for scholarships. After a stalemate of many months, House and Senate conferees on September 17

agreed on a compromise bill providing $2,345,000,000 for higher education, as follows:

Classroom construction—$1.5 billion authorized over five years, 60% for matching grants and 40% for loans. Funds could not be used to build facilities for divinity schools, sectarian instruction, or religious worship, or sports facilities to whch admission would be charged. Colleges supported by religious institutions, however, would be eligible.

Student aid—$595 million in loan funds over five years. Twenty per cent could be used for grants to needy and talented students. Divinity schools and seminaries would not be eligible.

Junior colleges—$250 million in grants authorized over five years.

This bill (HR 8900) simply authorized the program. Congress would still have to appropriate funds. On September 20, however, by a vote of 214 to 186, the House sent the bill back to the conference committee with instructions to remove all provisions for student assistance. The 87th Congress took no further action before adjournment.

Some supporters believed that the feature providing 20 per cent in scholarships had defeated the measure. Another factor was opposition to grants for schools with religious affiliations.

Faculty Salaries.—The U.S. Office of Education reports that average salaries for full-time faculty members in four-year undergraduate colleges rose to $7,680 in 1961–62, up about 4.8 per cent from the $7,330 average of the previous session and a 12.3 per cent increase from the $6,840 average of 1959–60.

In 1961–62, professors earned an average of $10,310; associate professors, $7,980; assistant professors, $6,750; and instructors, $5,520. The average salary in two-year institutions, all ranks combined, was $6,840.

College Charges.—The Office of Education reports a decided increase in costs for full-time students in both public and private institutions. Average tuition and fees for resident students in private institutions increased 8.1 per cent, from $676 in 1960–61 to $731 in 1961–62. In public institutions the increase was 3.4 per cent, from $179 to $185.

In the two-year period between 1959–60 and 1961–62 the average annual tuition and fees in private institutions increased 18.9 per cent in public institutions the increase was 10.1 per cent for resident students and 14.6 per cent for nonresidents. In 1961–62, average charges for dormitory rooms were: in public institutions, $189 for men and $193 for women; in private institutions, $231 for men and $249 for women.

Aid for College Students.—In May 1962 the U.S. Office of Education issued *Financial Assistance for College Students: Undergraduate*, a 360-page bulletin listing, by colleges, the number and amount of scholarships, loans, and work opportunities available, along with average amounts paid and closing date of application.[1] In 1959–60, the 1,677 institutions furnishing data for this bulletin aided 287,589 undergraduate students with scholarships totaling $98,157,544; they extended loans (exclusive of National Defense Education Act funds) totaling $14,362,182 to 52,322 students; and they employed 341,381 students for a total compensation of $98,491,619.

In addition to these institutional programs, 115,450 students were loaned $50,151,908 under the National Defense Student Loan Program in 1959–60. The NDEA figures include graduate students.

[1] The publication is available from the Superintendent of Documents (Bulletin 1962, No. 11; $1.25).

UPI

Francis Keppel, dean of Harvard School of Education, was named U.S. commissioner of education by President Kennedy on November 24.

Morrill Act Centennial.—On July 2, 1862, President Lincoln signed the first Morrill Act, granting public lands to states and territories in support of colleges to promote "liberal and practical education . . . in the several pursuits and professions of life." In a proclamation recognizing the centennial, President Kennedy hailed the land-grant colleges as "the nation's largest single source of trained and educated manpower." Over half of the country's trained scientists and nearly one half of all regular and reserve officers of the armed forces trained in civilian programs have come from the land-grant institutions.

Originally the income from the public lands was expected to constitute the federal support of the land-grant colleges, with the states contributing the remainder. However, through the Hatch, Second Morrill, Smith-Lever, and other federal acts, the services and support of these institutions have been greatly expanded and increased.

Now, in addition to the income from the original land grants, federal funds to aid the states in the maintenance of land-grant institutions amount to more than $100 million annually. For the year ending June 30, 1962, a total of $34,725,021 was appropriated for experiment stations, $10,744,000 for campus instruction, and $59,590,000 for extension education. In addition, these institutions received many millions in federal funds for contract research and services, both in the United States and abroad.

There are currently 68 land-grant institutions. Some are one with the state university, as in Minnesota, Missouri, and Tennessee; some are separate, as in Kansas, Oklahoma, and Virginia; and two, Cornell and Massachusetts Institute of Technology, function as a part of a private institution.

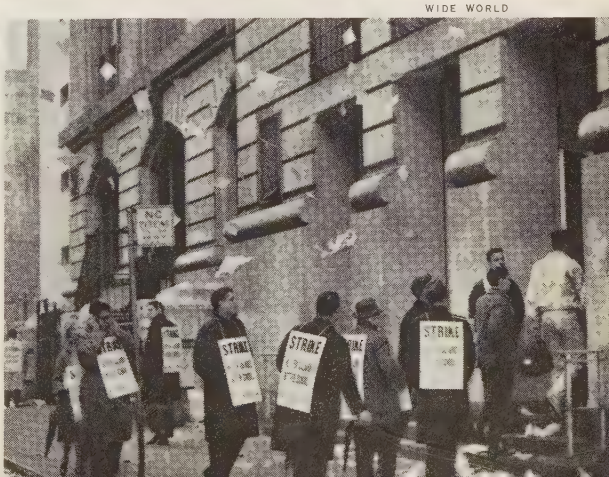
The Nongraded Primary Unit.—Like team teaching, the ungraded primary unit is a relatively new practice in elementary education. Milwaukee, the first large city to establish the plan, began its use in 1942. Interest in the plan has mounted rapidly. During the 1950's some 40 to 50 communities adopted it. By 1961 there were some 500 schools with ungraded primary units, and in 1962 the number was at least 1,000.

Briefly, the plan provides for grouping children beyond the kindergarten but below the fourth grade in what is called a primary grade. The classification of first, second, or third grade is eliminated. A child may complete the primary grade in two, three, or if necessary, four years. In some instances, the same teacher teaches the group; in others, the teacher changes yearly.

The lessons and experiences are those usually provided in first, second, and third grades, with the important difference that groupings are flexible. The child can progress in accordance with his potential and rate of growth.

New York City teachers, on brief strike for higher wages, picket outside Stuyvesant High School on April 11. Some students enter building as others toss paper from windows.

WIDE WORLD



He may work with one group in one subject, and in an entirely different group in another. He may even work individually in such subjects as reading. Nonpromotion is no longer a problem. The maximum development of each child is encouraged through flexible and appropriate groupings. It is not an "easy school," nor does it ignore the importance of challenging and difficult work.

School systems adopting the plan have cited as reasons: (1) the extensive research on the ineffectiveness of nonpromotion in stimulating achievement; and (2) the difficulty of providing adequately for individual differences.

Education and Income.—The relationship between time spent in school and lifetime earnings is confirmed again in a study summarized in *School Life* (June 1962). Eighth-grade graduates receive an average of 40 per cent or $52,000 more in lifetime earnings than men who did not complete the eighth grade. High school graduates earn 42 per cent or $76,000 more than eighth-grade graduates; and college graduates receive 69 per cent or $178,000 more than high school graduates.

Education also affects the differential between early and peak earnings. The average income for the eighth-grade graduate at age 50 is only 18 per cent above that at age 30; for the high school and college graduates the percentages are 28 and 72, respectively.

(See also *Education* section of articles on the individual states, Canadian provinces, and countries; and the Index entry, *Education.*)

EDWARD ALVEY, JR.,
Dean, Mary Washington College of the University of Virginia.

EDUCATION, U.S. Office of. See EDUCATION.
EGGS. See Index entry.
EGYPT. See UNITED ARAB REPUBLIC.
EIRE. See IRELAND.
EISENHOWER, Dwight D. See Index entry.

ELECTIONS, U.S.

In record numbers for a nonpresidential year, 51,462,319 persons, or about 47% of the 109,700,000 Americans of voting age, went to the polls in 50 states on Nov. 6, 1962.

Democrats obtained control of the 88th Congress by 68 to 32 seats in the Senate and by 258 to 176 seats in the House of Representatives; there was 1 vacancy in the House because of the posthumous election of Clem Miller, Democrat of California. (On the eve of the elections the Democratic margin in the 87th Congress was 64 to 36 seats in the Senate and 261 to 174 seats in the House; there were 2 Democratic vacancies in the House. For the new 88th Congress the size of the House was reduced from 437 to its normal 435, with seats added for Hawaii and Alaska on their admission to the Union now included within the regular apportionment.) The death of Democratic Sen. Dennis Chavez on November 18 resulted in the appointment (November 30) of Republican Edwin L. Mechem to the Senate after he had resigned the governorship of New Mexico to permit the lieutenant governor to become governor. The alignment in the Senate was thus revised to 67 Democrats and 33 Republicans.

In races for 39 Senate seats (21 held by Democrats and 18 by Republicans), Democrats won 25 and Republicans 14, for a net Democratic gain of 4. Democrats were elected to replace Republicans in Connecticut, Indiana, Maryland, New Hampshire, South Dakota, and Wisconsin, while Republicans replaced Democrats in Colorado and Wyoming. For the House seats, all of which were subject to election, Democrats received a majority of the votes cast in the nation. (An estimate of 55.3% for the Democrats, made by the Gallup Poll on November 11, was disputed by William E. Miller, chairman of the Republican National Committee, who on November 19 claimed 48.1% for the Republicans. In some cases, returns for unopposed candidates were unavailable.) Republicans won 12 Democratic-held seats, and Democrats gained 7 held by Republicans. Elected to the House were 368 incumbents, 65 newcomers, and 2 former members. Because of reapportionment after the census of 1960, 206 members were elected from districts created or changed since the 1960 election. Reapportionment reduced the number of representatives from Eastern states by 7 and from Southern and Midwestern states by 4, but increased Western representation by 10. The 8 new districts in California went Democratic. In the South, Republicans were elected in 11 districts, for a gain of 4. (See also REAPPORTIONMENT AND REDISTRICTING.)

The Republican senators defeated were Joe H. Bottum, South Dakota, by George McGovern; Homer E. Capehart, Indiana, by Birch E. Bayh; and Alexander Wiley, Wisconsin, by Gov. Gaylord Nelson. The Democratic senators defeated were John A. Carroll, Colorado, by Rep. Peter H. Dominick; and J. J. Hickey, Wyoming, by Milward L. Simpson. Other new Democratic senators were Abraham A. Ribicoff, Connecticut, former secretary of health, education, and welfare; Representatives Daniel K. Inouye and Daniel B. Brewster, Hawaii and Maryland, respectively; Edward M. Kennedy,

COMPARISON OF PARTY STRENGTH BY STATES
(D = Democratic; R = Republican)

State	Governor		Senate				House			
			Before		After		Before[1]		After[2]	
	Before	After	D	R	D	R	D	R	D	R
Ala.	D	D	2	0	2	0	9	0	8	0
Alaska	D	D	2	0	2	0	1	0	1	0
Ariz.	R	R	1	1	1	1	1	1	2	1
Ark.	D	D	2	0	2	0	6	0	4	0
Calif.[3]	D	D	1	1	1	1	15	14	24	13
Colo.	D	R	1	1	0	2	2	2	2	2
Conn.	D	D	1	1	2	0	4	2	5	1
Del.	D	D	0	2	0	2	1	0	1	0
Fla.	D	D	2	0	2	0	7	1	10	2
Ga.	D	D	2	0	2	0	10	0	10	0
Hawaii	R	D	1	1	1	1	1	0	2	0
Idaho	R	R	1	1	1	1	2	0	2	0
Ill.	D	D	1	1	1	1	14	11	12	12
Ind.	D	D	1	1	2	0	4	7	4	7
Iowa	R	D	0	2	0	2	2	6	1	6
Kans.	R	R	0	2	0	2	1	5	0	5
Ky.	D	D	0	2	0	2	7	1	5	2
La.	D	D	2	0	2	0	8	0	8	0
Me.	R	R	1	1	1	1	0	3	0	2
Md.	D	D	0	2	1	1	6	1	6	2
Mass.	R	D	1	1	1	1	8	6	7	5
Mich.	D	R	2	0	2	0	7	11	8	11
Minn.	R	R	2	0	2	0	3	6	4	4
Miss.	D	D	2	0	2	0	6	0	5	0
Mo.	D	D	2	0	2	0	9	2	8	2
Mont.	R	R	2	0	2	0	1	1	1	1
Nebr.	D	D	0	2	0	2	0	4	0	3
Nev.	D	D	2	0	2	0	1	0	1	0
N.H.	R	D	0	2	1	1	0	2	0	2
N.J.[4]	D	D	1	1	1	1	5	8	7	8
N.Mex.[5]	R	D	2	0	2	0	2	0	2	0
N.Y.	R	R	0	2	0	2	22	21	20	21
N.C.	D	D	2	0	2	0	11	1	9	2
N.Dak.	D	D	1	1	1	1	0	2	0	2
Ohio	D	R	2	0	2	0	7	16	6	18
Okla.	D	R	2	0	2	0	5	1	5	1
Oreg.	R	R	2	0	2	0	2	2	3	1
Pa.	D	R	1	1	1	1	14	16	13	14
R.I.	D	R	2	0	2	0	2	0	2	0
S.C.	D	D	2	0	2	0	6	0	6	0
S.Dak.	R	R	0	2	1	1	0	2	0	2
Tenn.	D	D	2	0	2	0	7	2	6	3
Texas	D	D	1	1	1	1	21	1	21	2
Utah	R	R	1	1	1	1	2	0	0	2
Vt.	R	D	0	2	0	2	0	1	0	1
Va.	D	D	2	0	2	0	8	2	8	2
Wash.	D	D	2	0	2	0	2	5	1	6
W. Va.	D	D	2	0	2	0	5	1	4	1
Wis.	D	D	1	1	2	0	4	6	4	6
Wyo.	D	R	2	0	1	1	0	1	0	1
Totals[6]	34D–16R	33D–17R	64	36	68	32	261	174	258	176

[1] Plus 2 vacancies. [2] Plus 1 vacancy. [3] Plus 1 vacancy in House totals before and after elections. [4] Plus 1 vacancy in House total before elections. [5] The appointment of a Republican on November 30 to the Senate vacancy in New Mexico changed the post-election figures to 1 Democrat and 1 Republican, and the Senate total to 67 Democrats and 33 Republicans.

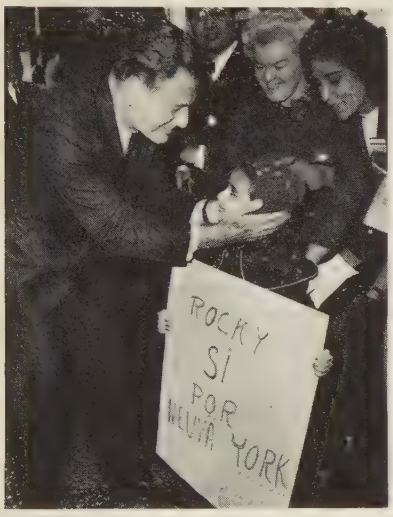
Massachusetts, youngest brother of the president; and Thomas J. McIntyre, New Hampshire. Democratic Sen. Lister Hill, Alabama, was reelected by 50.8% of the vote. Jacob K. Javits, Republican, New York, was reelected by a margin of 971,877, carrying New York City as well as suburban and upstate areas. Democrat Carl Hayden, Arizona, 85, senior member of the Senate in age and service, Everett McKinley Dirksen, Illinois, Republican minority leader, and Thruston B. Morton, Kentucky, former chairman of the Republican National Committee, were reelected, respectively, by 54.9, 52.0, and 52.6% of the votes in their states.

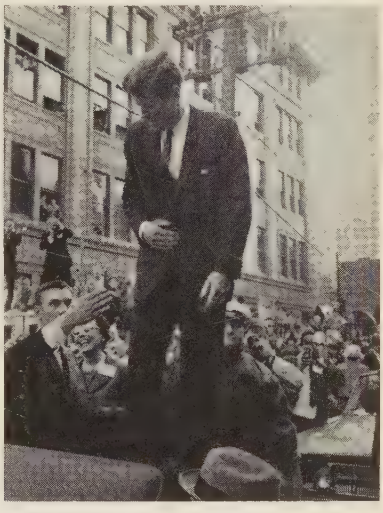
Of 35 contested governorships (21 held by Democrats and 14 by Republicans), Democrats won 20, and Republicans 15. The distribution of governorships in the 50 states became Democratic by 33 to 17, for a net Republican gain of 1. Democrats overturned Republican administrations in Hawaii, Iowa, Massachusetts, New Hampshire, New Mexico, and Vermont. Republican governors were elected to replace Democrats in the industrial states of Pennsylvania, Ohio, and Michigan, each with great electoral significance for 1964, and also in Colorado, Oklahoma, Rhode Island, and Wyoming. The reelection of Nelson A. Rockefeller as governor of New York by 518,218 votes placed him in the first rank among Republican presidential possibilities for 1964. William W. Scranton, elected governor of Pennsylvania by a margin of 470,177 votes over former Philadelphia Mayor Richardson Dilworth, and George W. Romney, who defeated Gov. John B. Swainson by 78,497 votes for the governorship of Michigan, became prominent Republican presidential prospects. Richard M. Nixon, defeated for the governorship of California by incumbent Democrat Edmund G. (Pat) Brown by 301,568 votes, was removed from major consideration as a Republican presidential candidate in 1964. In Nebraska, Fred A. Seaton, former secretary of the interior, was defeated for the governorship by incumbent Democrat Frank B. Morrison. In Texas, John B. Connally, Democrat, was elected by 54.1% of the vote in the closest gubernatorial race since reconstruction times.

A list of the 35 governors elected in 1962 follows:

Ala.....G. C. Wallace (D)	Ga.....C. E. Sanders (D)
Alaska.....W. A. Egan (D)	Hawaii.....J. A. Burns (D)
Ariz.....P. J. Fannin (R)	Idaho.....R. E. Smylie (R)
Ark.....O. E. Faubus (D)	Iowa.....H. E. Hughes (D)
Calif.....E. G. Brown (D)	Kans.....J. Anderson, Jr. (R)
Colo.....J. A. Love (R)	Me.....J. H. Reed (R)
Conn.....J. N. Dempsey (D)	Md.....J. M. Tawes (D)
Mass.....E. Peabody (D)	Oreg.....M. O. Hatfield (R)
Mich.....G. W. Romney (R)	Pa.....W. W. Scranton (R)
Minn.....E. L. Andersen (R)	R.I.....J. H. Chafee (R)
Nebr.....F. B. Morrison (D)	S.C.....D. S. Russell (D)
Nev.....G. Sawyer (D)	S.Dak.....A. M. Gubbrud (R)
N.H.....J. W. King (D)	Tenn.....F. G. Clement (D)
N.Mex.....J. M. Campbell (D)	Texas.....J. B. Connally (D)
N.Y.....N. A. Rockefeller (R)	Vt.....P. H. Hoff (D)
N.Dak.....W. L. Guy (D)	Wis.....J. W. Reynolds (D)
Ohio.....J. A. Rhodes (R)	Wyo.....C. P. Hansen (R)
Okla.....H. Bellmon (R)	

After the 1962 elections, Republicans controlled both houses of the legislatures in 19 states, as compared with 14 before the elections, and had a majority in one house in 4 other states. New York State voters rejected a plan to move low-income families from public to private housing projects with state financing. Constitutional changes to reduce residence requirements for voting were approved in Colorado, Kansas, and North Carolina, but were rejected in Washington. San Francisco Bay area counties voted a $792 million bond issue for a rapid transit system, St. Louis approved $95 million in bonds for pollution control of Mississippi River water, and Cincinnati agreed to a $16 million bond issue for the renewal of blighted waterfront areas. In St. Louis and in Memphis proposals to combine city and county governments were rejected.





UPI

(*Left*) New York's Governor Rockefeller is greeted by young admirer on September 20, after winning nomination for second term. He was reelected on November 6. (*Right*) President Kennedy prepares to speak in Aliquippa, Pa., in October.

On August 27, Congress proposed a constitutional amendment, subject to ratification within seven years by three fourths of the state legislatures, forbidding the use of a poll tax as a requirement (now imposed in five Southern states) for voting in federal elections.

(See also DEMOCRATIC PARTY; REPUBLICAN PARTY; UNITED STATES.)

FRANKLIN L. BURDETTE,
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ELECTRICAL INDUSTRIES

Great strides were made in the electrical field during 1962, mainly in the electronics category. The active satellite Telstar was put into orbit, as a means of telephone and television communication between the United States and Europe, by the American Telephone & Telegraph Company and the United States government (see also SPACE FLIGHT; TELEPHONE); advances were made in the computer field; and increases in power and voltages occurred in power generation.

Communications.—One advance which has far-reaching possibilities was the installation of an all-

electronic telephone system in Etna, N.Y. Connections between subscribers are completed in microseconds, and other advantages for the users are incorporated. When busy signals are heard, the calling party does not have to dial again; the circuitry "remembers" the party called, and when the line is not busy the calling party is notified.

Computers.—Airline seat inventories can now be made in seconds by means of a Univac computer installed at Charlotte, N.C. When a customer talks to a reservations agent, either across a counter or by telephone, the agent may, by pressing the proper buttons on a small desk instrument, determine the availability of seats up to a year in advance. This system coordinates reservations in 42 cities in the United States.

An electronic stock-quotation service that provides split-second information on prices after they are officially quoted on the floor of an exchange has been demonstrated by the Ultronic Systems Corporation. A master computer collects and codifies 40,000 financial facts on 4,000 stocks. Information is sent over leased lines to nearby cities, where a broker can answer questions about the status of a stock or commodity at the touch of a finger on a small desk unit.

Research.—A new electron accelerator at Cambridge, Mass., produces the fastest, most intense beam of electrons in the world. This $12 million instrument spins electrons around a 236-foot track, a ring of magnets keeping them on course. On each circuit a particle receives 32 electrical "kicks," varying from 20,000 to 200,000 volts, which increase its energy by a maximum of 6.4 million electron volts per turn. After 10,000 circuits, taking less than 0.01 second, the electrons have accumulated an energy of 6 billion electron volts. This accelerator is to be used for electron-scattering experiments by which physicists can "see" the internal structure of protons and neutrons. (See also ATOMIC ENERGY; PHYSICS.)

A means of photographing distant planets was being developed, involving sending a special telescopic camera up to 80,000 feet by balloon (Stratoscope II) directing and focusing it by radio, and transmitting the images to the ground by television where monitors are set up. This high-altitude photography renders the atmosphere's influence negligible.

Consumer Developments.—Because consumers have indicated that they prefer electric light bulbs with longer life to those with greater illuminating power, a new bulb has been developed with a rated life of 1,350 hours, as opposed to about 1,000 hours for the regular bulb. The filaments of these new bulbs are 18.4% longer than those used in ordinary lamps and are made of tungsten drawn thinner than a human hair.

A new mercury-vapor lamp produces 78 lumens per watt, as compared with 54 for an ordinary fluorescent lamp and 17 for an incandescent bulb. The latest mercury lamp was developed from the discovery that the rare element thallium could be added to mercury to form a highly efficient transducer for converting electric energy into light. These lamps produce more than 31,000 initial lumens, as compared with 21,500 in present types of lamps of the same wattage.

Various small household appliances which are operated by electric motors are now battery-driven by means of small storage batteries. These batteries can be charged by plugging a special device into the ordinary 110-volt house-lighting circuit.

Tests.—Equipment called the Pulse Echo Fault Locator can locate faults in undersea cables to within 80 yards under normal conditions. The British-designed locator sends a search signal along the cable at a speed of 100,000 miles per second, a fault returning an echo to a double-beam cathode-ray tube, which displays the pip on the upper trace against crystal-controlled markers on the lower trace, representing nautical miles of cable.

An ultrasonic gun aimed at a high-voltage transmission line tests it for corona effects caused by defects. If defects are present, a corona produces ultrasonic waves which are made audible by electronic circuits. A telescopic rifle sight pinpoints the sources of corona with high accuracy.

Industry.—A furnace based on a new heating concept can produce temperatures in excess of 5000°F. within a matter of seconds. It is about the size of a breadboard and plugs into a standard electrical outlet. A strip of graphite cloth is the heating element on which the specimen to be heated rests, and the electrical energy is controlled by an autotransformer. It is claimed that the specimen can be handled 15 seconds after the current is turned off.

ELECTRIC LIGHT AND POWER INDUSTRY

Power Plant Generating Capacity.—The total generating capacity in the United States, excluding Alaska and Hawaii, on Dec. 31, 1961, was 197,923,000 kw. Of this total, 180,119,000 kw. were in plants of the electric utility industry, the remainder in plants not contributing to the public supply. In the electric utility industry, the investor-owned companies had a capacity of 136.4 million kw.; government-owned projects had a capacity of 42.3 million kw.; and cooperatives had nearly 1.4 million kw. Gross additions of 12.53 million kw. in generating capacity in 1961 compared with about 11 million kw. for 1960. Construction expenses for the industry decreased in 1961 to $3.26 billion, compared with the all-time-high figure of $3.76 billion in 1958. It was expected that in 1962, construction would amount to about $3.4 billion for the investor-owned utilities.

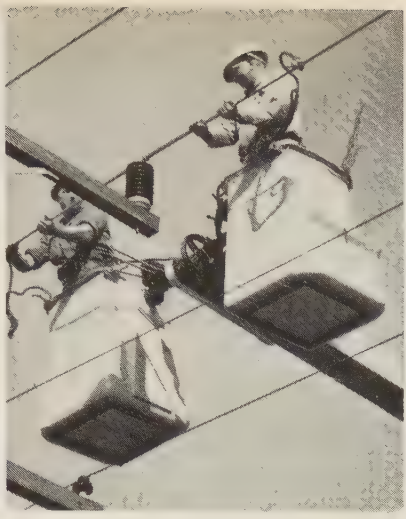
Nuclear Power Plants.—By the end of 1962 there were 26 stationary civilian nuclear power plants in the United States with electric capacities of 4,500 kw. or larger. Twelve were in operation, 10 in design or under negotiation or construction, and 4 in various stages of planning. Electric power companies were participating in 17 of the 24 projects and government cooperatives in 9. The 26 projects will have a combined ultimate capacity of about 3.5 million kw. (See also ATOMIC ENERGY.)

U.S. and World Power Production.—In 1961 the electric power industry in the United States in-

ELECTRIC ENERGY PRODUCTION, BY MAJOR COUNTRIES, 1960

Country	Millions of kw.-hr.	Country	Millions of kw.-hr.
Argentina	7,848[1, 2]	Japan	128,338[6]
Australia	25,464	Mexico	11,748
Austria	13,740[1]	Netherlands	17,496
Belgium	15,144[2]	New Zealand	7,320[1]
Brazil	21,108[3]	Norway	33,420[4]
Canada	113,220[4]	Poland	32,208
Czechoslovakia	26,964	Rumania	7,656[2]
Denmark	4,692[1, 4]	South Africa	24,552[7]
Finland	10,200	Spain	19,860
France	76,200[4]	Sweden	38,376
Germany, East	42,504	Switzerland	21,676[8]
Germany, West	122,460[5]	United Kingdom	127,572[1, 9]
Hungary	8,376	United States	881,655[4, 10]
India	19,020[1]	USSR	326,400
Italy	58,668	Yugoslavia	9,948

[1] Gross production by enterprises generating primarily for public use. Unless noted, data for all other countries include also generation by industrial firms primarily for their own use. [2] Data for 1960. [3] Data for 1959, 75% complete. [4] Net production. [5] Including the Saar. [6] Year beginning April 1, 1961. [7] Data 95% complete. [8] Year ending Sept. 30, 1961. [9] Excluding Northern Ireland. [10] Including Alaska and Hawaii. (Source: United Nations *Monthly Bulletin of Statistics* and Edison Electric Institute.)



WESTINGHOUSE; AMERICAN ELECTRIC POWER

(*Left*) Technician demonstrates use of ultrasonic "gun" in detecting electrical leakage, or corona, in high-voltage power lines. Gun makes audible the ultrasonic waves emitted by corona. (*Center*) Insulated from ground and charged at the same voltage as the line, barehanded men repair 34,000-volt transmission line. (*Right*) Helicopter-borne tower is installed.

creased its power generation by 5% over 1960, bringing it to a total of 881,655 million kw.-hr., including Alaska and Hawaii. Of this total, 791,975 million kw.-hr. was produced by the electric utility industry; 86,555 million kw.-hr. by other sources, such as industry, mines, and railways, whether or not they supplied electricity to the public; and 3,125 million kw.-hr. in Alaska and Hawaii combined. The Atomic Energy Commission required 1.8% less electricity than in 1960.

During 1961, according to the *Monthly Labor Review* of the U.S. Department of Labor, the United States electric light and power utilities, including Alaska and Hawaii, employed some 252,200 persons; and electric light and gas utilities together employed some 175,300 persons, making a grand total of 427,500 employees. The accompanying table shows the major categories of electric energy sales and revenues during 1961.

U.S. ELECTRIC ENERGY SALES AND REVENUES, 1961[1]

Classification[2]	Customers (number)	Revenue (millions of dollars)	Distribution (millions of kw.-hr.)
Commercial, industrial	7,358,981	6,537.8	482,291
Residential	52,569,050	5,115.8	209,021
Highway illumination	63,459	205.4	6,762
Railroads, railways	94	62.9	4,685
Other public authorities	135,653	232.3	16,438
Interdepartmental[3]	2,943	15.1	1,531

[1] Including Alaska and Hawaii. [2] Revised to allocate formerly used classification of "Rural" to other appropriate classes of service. [3] To other departments, such as water, gas, and ice. (Source: Edison Electric Institute.)

The total number of residential customers at the end of 1961 was about 52.5 million, which included about 177,000 in Alaska and Hawaii; this was an increase of about 2.2% over 1960. Revenues from energy sales to ultimate customers in 1961 were higher than in 1960, following the trend over the past 20 years. The residential classification continued to produce the greatest proportion of the revenue, with 42% of the total coming from this source, greater than either commercial or industrial sales singly. Industry-owned electric utilities accounted for 82% of the total revenues in 1961, as in 1960.

In 1961, investor-owned companies in the United States produced about 76% of the total electric energy generated, compared with 23% for all government output. Steam generation accounted for about 80% of the total production; hydro generation for 19.2%, and internal combustion for 0.6%. Coal continued to be the major fuel, accounting for 65.9% of the total thermal generation. Gas was second with 26.4%, then fuel oil with 7.4%, and nuclear fuel with 0.3%.

The cost of all types of fuel has nearly doubled since 1939. As compared with 1960, the 1961 cost of coal decreased from $6.26 to $6.22 per ton, while the cost of fuel oil increased by 6 cents per barrel and the cost of gas increased 1.8 cents per thousand cubic feet. (See also FEDERAL POWER COMMISSION; PUBLIC UTILITIES.)

(For additional references, see ELECTRONICS and the Index entry, *Electrical Industries.*)

G. C. BAXTER ROWE,
Former Associate Editor, "Electrical Engineering."

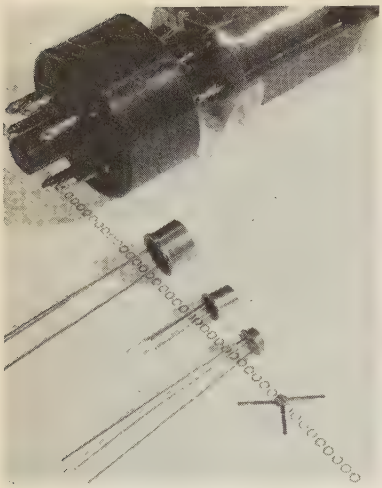
ELECTRIFICATION, Rural. See FARM SERVICES.

ELECTRONICS

The outstanding achievement of 1962 in electronics was the successful orbiting and operation of the electronic equipment of the communications satellite Telstar, launched on July 10. A Bell Telephone Laboratories project, it involved more than 1,800 subcontractors and suppliers. Most of the 15,000 separate parts of the satellite itself are electronic products. Although millions of Americans have seen television pictures relayed by Telstar, only 7% of the 2,528 transistors and diodes aboard handle television signals; the remainder are in command and telemetry circuits. The latter supply data to the ground on radiation, micrometeorites, temperature, pressure, sunlight, and about 100 other items of important information. (See also SPACE FLIGHT; TELEPHONE.)

Basic Research.—A new electrical effect in a semi-metal was announced. When strong electric and magnetic fields were applied to bismuth at temperatures close to absolute zero, it was found that the semi-metal did not follow Ohm's law. As the fields reached a certain strength, an abrupt change in its electrical characteristic appeared. Further investigation may prove useful in increasing the speed of computers.

The speech research laboratory at Air Force Cambridge Research Center includes an electronic computer that breaks down the human voice spectrum into 400 basic patterns. It is used in studies of complicated speech waveforms as part of the laboratory's speech compression program, including determination of the minimum signal for transmission and reception of information.



Transistor at lower right performs the same functions as the vacuum tube, top. Intermediate sizes of transistors illustrate the gradual miniaturization of equipment.

HUGHES AIRCRAFT CORP.

Automotive Ignition.—Electronic ignition systems for automobiles and trucks have been under development for several years. One car manufacturer now has made a transistor system optional on one 1963 model. Its major advantage is that the breaker points need handle only a small amount of current, instead of the much heavier current of the conventional system. Life of the points of a transistor system is estimated at 75,000 to 100,000 miles, about 10 times greater than that of conventional points. Other transistor systems still in development use no points at all, employing a pulse generator instead.

Medical Applications.—Live heart signals from an electrocardiogram were sent by telephone from one hospital and charted on a direct-writing oscillograph at another. The receiving recorder is similar to that used for readout of space vehicle data. Thus far experimental, the technique will allow heart specialists to make diagnoses for patients many miles away.

The first computer installation was made in a center for the diagnosis and treatment of cancer. The computer will be used in applying data-processing techniques to the study of radiation in diagnosing and treating cancer patients. It will be used initially to determine quickly and accurately such information as the amount of radiation from external sources delivered to cancer tissues and surrounding normal tissues, and the distribution of radiation by needles and seed implants. Additional data on radiation doses delivered through the body by metabolic means and measured by blood, urine, and other external counting or radiation activity will also be fed to the computer.

Taken through a field ion microscope, photo shows the arrangement of atoms in an extremely fine wire of tungsten.

U.P.I.

Microelectronics.—The micromodule program begun in 1958 by the U.S. Army was pronounced a success in 1962. The Army will spend $8 million on production of micromodule equipment and systems in fiscal 1963, double the amount of the previous year. Production of 1 million micromodules a year is expected by June 1964, and the rate will reach 3 to 5 million in 1965. Micromodules are composed of tiny wafers carrying electronic components that form circuits.

X-Rays in Space.—The first indication that X-ray astronomy in the night sky was possible was reported in June 1962, when a radiation-counter rocket probe discovered X-rays of much higher intensity than expected coming from the galactic center and around α Cassiopeiae. The probe was intended to detect X-ray reflections from the moon, hopefully leading to analysis, but the lunar reflections were obscured. An X-ray telescope—a collimator that can collect and focus soft X-rays of galactic origin—is planned. It is expected to aid in X-ray astronomy and in analysis of the moon's composition by measuring the intensity of lunar-reflected radiation. The collimator is a paraboloid cone of high-reflectivity material. Soft X-ray analysis of the moon can tell the ratio of elements present, but not their specific composition.

Automation.—A new character scanner is capable of "reading" four different intermixed type styles simultaneously. A sensor in the scanner detects characters by sensing reflections from characters and their related background. Information obtained is converted and compared with stored information. The scanner has a reading rate of 600 numbers a second, 500 alphanumeric characters a second, and a load, unload, and scan line-to-line time of 3.3 lines a second.

Drawings for aircraft and missile parts and assemblies are produced automatically by a numerically controlled engineering drafting machine put into operation in 1962. It can make design and full-scale drawings more quickly and accurately than can human draftsmen, and at less expense, from information fed into it by punched tape.

Pictures on Tape.—A facsimile transmitter has been modified to serve as a photographic input to a digital computer. Photo details go into the computer on a cell-by-cell basis so that the computer will be able to perform cognitive processes. The input will be used for automatic photo interpretation, character recognition, and other cognitive systems research. Ninety seconds are required to insert a 5- by 5-inch photograph, which is broken down into some 250,000 individual elements, each having 16 levels of gray intensity. Storage on tape provides a library of photographs.

A low-cost analog computer is used in an automatic, daylight, color-printer processor for amateur photographers. The computer determines color balance in the film negative, and the processor turns out a print in three minutes.

Atoms Made Visible.—The field ion microscope now permits direct visual observation of the atomic structure of metal surfaces. Comparison of two micrographs, taken before and after an irradiation event, will show the change in position of even a single atom. An electronic technique, field ion microscopy can be used at present only on the refractory metals, and specimens must be formed with extremely fine needle tips. This is the only microscope technique powerful enough to show directly the individual atoms of surfaces in their crystallographic arrangement and with their crystal imperfections.

(See also RADIO AND TELEVISION.)

VIN ZELUFF,
Editorial Director, "Electronic Products."

ELEMENTARY PARTICLES. See PHYSICS.
ELEMENTARY SCHOOLS. See EDUCATION.
ELIZABETH II. See GREAT BRITAIN and the Index entry, *Elizabeth II*.
ELLICE ISLANDS. See WESTERN PACIFIC ISLANDS, BRITISH.
ELLSWORTH STATION. See ANTARCTICA.

EL SALVADOR

Bordered by Guatemala on the north, Honduras on the east, and the Pacific Ocean on the south and west, El Salvador is the smallest and most densely populated of the Central American republics. It has an area of 8,259 square miles, and a population of 2,500,000 (1961 census), of which 61% is rural. Principal cities and populations (1960 est.) are San Salvador, the capital, 252,591; Santa Ana, 140,342; San Miguel, 77,622. Over 90% of the population is of Indian-European descent. Spanish is the official language.

Government.—Under the constitution of 1962, executive power is vested in a president, elected by popular vote for a five-year term and not eligible for immediate reelection. On April 29, J. A. Rivera was elected president for the term beginning July 1, 1962. The constitution also provides for a National Assembly. The 54-member Constituent Assembly that had been elected in December 1961 declared in January 1962 that it would constitute the National Assembly for a term from Jan. 25, 1962, to May 31, 1964. The country is divided into 14 departments for administrative purposes, each headed by a governor appointed by the president.

Education and Religion.—Primary education is free and compulsory in theory, but facilities are not sufficient for all school-age children. Number of schools (with enrollments), 1960: 2,479 primary (321,445); 158 secondary (20,658); 67 technical (8,898); 43 normal (3,699); and 2 institutions of higher learning (2,127 in 1959). About 21% ($16 million) of the 1962 national budget was allocated to education. Most Salvadorans are Roman Catholics.

Finance.—Budget estimates, 1961: revenue, 170.3 million colones; expenditure, 188.0 million. The actual deficit for 1961 totaled 15.4 million colones. Estimated revenue and expenditure for 1962 balanced at 184.9 million colones. The colón is equal to U.S.$0.40. External public debt (June 30, 1962): $66 million. Gold and foreign exchange reserves of the Central Bank (February 1962): 77.5 million colones (up from 45.4 million on Dec. 30, 1961, and 36.5 million on Dec. 30, 1960).

Transportation and Communications.—Two foreign-owned railways operate 469 miles of track in El Salvador and connect with Guatemalan lines. There are more than 2,000 miles of national highways (some 500 paved), including the Pan-American Highway and the 273-mile Littoral Highway completed in January 1962. A feeder road program, financed in part by the World Bank and totaling 194.2 miles, was 78% complete at the end of March 1962. There are three seaports and one international airport (Ilopango, near San Salvador).

Manufactures and Minerals.—Chief industrial products (1960, in 1,000 colones): food and drink, 28,932; alcoholic beverages, 17,930; textiles and clothing, 29,272; cement products, 8,086; silver, 75,846 troy ounces; electric power, 94,539 million kw.-hr. The manufacturing production index (1956 = 100) was 149.4 at the beginning of 1961 (134.4 a year earlier).

Agriculture.—El Salvador usually is self-sufficient in most of its chief food crops—beans, rice, sorghum, and sugar—but frequently must import corn; nearly all tillable land is in use. Chief crops (est., 1961–62): coffee, over 1.7 million bags of about 132 pounds each; corn, 143,000 metric tons (178,000 in 1960–61); cotton, 270,000 bales (176,000 in 1960–61); sugar, 57,500 tons.

Foreign Trade.—Total exports, 1961: $119.04 million (up 2% from 1960); imports, $108.44 million (down 11% from 1960). Coffee is by far the most important export, with cotton a remote second. Coffee exports for the crop year 1960–61 totaled 1.16 million bags (46% to West Germany and 42% to the United States). About 80% of the record cotton crop was sold to Japan. Imports of corn were necessary in both 1961 and 1962.

Events, 1962.—The serious decay of the government's fiscal position that had developed in 1961 as a result of an excess of imports over exports and a large inflation of credit was somewhat alleviated in 1962. Government efforts to reduce imports, Central Bank loans to private borrowers, and the budget brought about an increase in the net gold and foreign exchange reserves of the Central Bank from 45.4 million colones on Dec. 30, 1961, to 77.5 million by the end of February 1962. These actions were taken to ease pressure on the colón, and because the International Monetary Fund (IMF) made stabilization a condition of aid. By the end of 1961, El Salvador had drawn $14 million from stabilization loan funds totaling $21.25 million made available by the IMF and the Export-Import Bank of Washington. By early 1962, however, the stabilization program was going well enough so that the Central Bank could repay to the IMF a substantial part of its stabilization loan. Development loans from international agencies to El Salvador for 1962 totaled more than $21 million by the end of 1961.

The record 1961–62 coffee crop (over 1.7 million bags) was considerably larger than El Salvador's 1.3 million-bag export quota set by the International Coffee Agreement. To meet this problem, in 1962 El Salvador shipped some semiroasted coffee on the theory that only green coffee fell within the quota system. This led to complaints from other participants in the system.

In January the Constituent Assembly, whose 54 members were affiliated with the Party of National Conciliation (PCN)—the "official" party of the Civil-Military Directorate which had been running the country since January 1961—promulgated a new constitution, much like that of 1950; set April 29 as the date for a presidential election for the term July 1, 1962, to June 30, 1967; and elected as provisional president of the country Eusebio Rodolfo Cordón. On January 25 the Constituent Assembly became the National Assembly, Cordón was inaugurated, and the Civil-Military Directorate turned over its powers to the Assembly and the president.

Immediately after announcement of the presidential election date, the opposition parties began preparations. It was not long, however, before they were charging that the PCN was not going to permit free campaigning, that insufficient time was allowed for preparations, and that the supervising electoral board would not be fair. In March, four opposition parties informed the board that they would not enter candidates unless certain conditions were met, including postponing the election to August and extending an invitation to an Organization of American States group to inspect election conditions. The board would not agree to all the terms proposed (including the inspection group), and in April resigned because of its inability to persuade opposition parties to offer candidates.

The PCN had chosen as its candidate Col. Julio Adalberto Rivera, who had been a leading member of the Civil-Military Directorate. Rivera campaigned vigorously throughout the country, emphasizing the socioeconomic reforms that the Directorate had promised. Rivera was duly elected on April 29 and inaugurated on July 1.

Demonstrations and strikes against the government during the year occasionally were accompanied by violence, including bombings. Some of these actions clearly were leftist, and often directed at the United States. Leftist demonstrations on Salvador's Independence Day in September led to a drastic antisubversive law that went into effect in October. The law, which provided prison terms for those found guilty of Communist activities, organizing illegal strikes, inciting sabotage or destruction, impairing the national economy, and handling explosives, immediately provoked heated debate in the country. Passage of the law was taken as further evidence of a turn to the right by the PCN, already suggested by the slowed pace of the program of economic-social reform result-

ing in part from vigorous conservative opposition.

ROBERT JONES SHAFER,
Professor of History, Syracuse University.

EMPLOYMENT. See LABOR and the Index entry, *Employment.*

ENDOCRINOLOGY

Important developments occurred throughout the field of endocrinology during 1962. A test was worked out for mild pituitary ACTH insufficiency, an artificial radioactive isotope began to replace some types of pituitary surgery, and various new drugs proved beneficial, while the effects of others were being checked.

Test of Pituitary Function.—The recognition of pituitary insufficiency of severe degree is not difficult by ordinary clinical examinations, but there has long been a need for a simple test of residual pituitary function to assist in the diagnosis of hypopituitarism of milder degrees. From a practical clinical viewpoint, it is important to recognize such patients, for they run the danger of developing adrenocortical insufficiency under the stress of surgery or other trauma.

Methopyrapone (Metopirone) has the unique property of selectively inhibiting 11-beta hydroxylation in the biosynthesis of the three main corticosteroids: hydrocortisone (cortisol), corticosterone, and aldosterone. Individuals with normally functioning pituitary and adrenals, when given methopyrapone, respond with a decrease in plasma cortisol. Since pituitary release of adrenocorticotrophic hormone (ACTH) is dependent on the levels of the circulating cortisol, an intense stimulation of ACTH secretion occurs in order to raise the plasma levels to normal. However, in the presence of the continued enzymatic blockade at the step which leads to cortisol and corticosterone synthesis, there is a marked increase in their precursors—11-deoxycortisol and 11-deoxycorticosterone—in the plasma and their metabolites in the urine. The urinary excretion of these compounds can be measured by determining the 17-hydroxycorticosteroids or 17-ketogenic steroids. Although these tests are not done routinely in most hospital laboratories, they are quite widely available from laboratories which specialize in endocrine determinations. This test, of course, measures only the ability of the pituitary to secrete ACTH, and not the other trophic hormones.

Progestational Agents.—Several synthetic steroids with potent progesterone-like activity have been developed and have found widespread usefulness in clinical medicine. They are employed in many everyday gynecologic problems such as dysfunctional uterine bleeding, premenstrual tension, cystic mastitis, and in certain types of recurrent spontaneous abortion. Medroxyprogesterone acetate and norethindrone are two such compounds.

Enovid is a mixture of a progestational agent plus an estrogen, which has found widespread acceptance as an oral contraceptive agent. It has been known for years that estrogens inhibit ovulation, but estrogens alone have never been used for birth-control purposes, because the dosages necessary to stop ovulation often also caused abnormal uterine bleeding. However, when estrogen is combined with the progestational agent, the mixture effectively suppresses ovarian function and only rarely are bleeding problems encountered. In general these drugs are safe, and it has been only recently that the use of Enovid has possibly been associated with a few cases of serious thrombophlebitis. Even if this proves to be merely a coincidence, there are some conservative physicians who question the wisdom of using potent hormone preparations for millions of women for long-term contraceptive purposes, especially inasmuch as most women who are interested in birth control have in the past accomplished the same result using more "old-fashioned" but time-tested methods.

Delalutin (17-alpha-hydroxyprogesterone caproate) in very large doses has been found to have palliative benefit in far-advanced, inoperable cancer of the uterine endometrium.

Hypophysectomy.—Surgical extirpation of the pituitary gland is performed for a number of serious conditions, including certain tumors of the pituitary, certain inoperable metastatic cancers, and progressive "malignant" exophthalmos. It has been found that pituitary function can be ablated by the implantation of yttrium-90 pellets into the sella turcica, which is simpler than the open surgical procedure. Yttrium-90, an artificial radioactive isotope with a half-life of 2.5 days, emits a potent beta radiation.

Anovulation.—The induction of ovulation in infertile anovulatory females is one of the areas of human reproduction which has met with very little success. Small doses of X-irradiation to the pituitary and ovaries are successful in selected cases, but are used with reservation because of the fear of producing gene mutations. Surgical resection of polycystic ovaries is also sometimes successful, and the amenorrheic, hirsute female can sometimes be made to ovulate with certain cortisone derivatives. A new drug, chloramiphene, has shown promise in some patients with functional anovulation. Chloramiphene is structurally related to a nonsteroid estrogen, but it does not have estrogenic, progestational, or corticoidal activity. It seems to act as a pituitary "modifier" and is capable of inducing ovulatory menses as well as sustaining the corpus luteum for periods longer than the usual 14-day luteal phase.

ROBERT F. SKEELS,
The Shelton Clinic, Los Angeles.

ENGINEERING. See BRIDGES; CANALS; DAMS; HIGHWAYS; RAILROADS; TUNNELS.

ENGLAND. See GREAT BRITAIN.

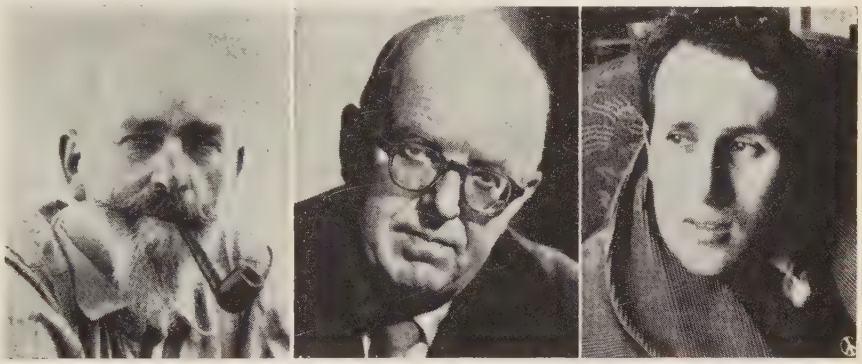
ENGLISH LITERATURE

Certain events on the outskirts of literature probably attracted a wider audience than any books published in 1962. Of these, the most sensational was F. R. Leavis' intemperate attack on C. P. (Sir Charles Percy) Snow as scientist, novelist, and man in "The Two Cultures?—The Significance of C. P. Snow," his final Richmond lecture to the students of Downing College, Cambridge. The title of the lecture had its source in Sir Charles' Cambridge University Rede Lecture, "The Two Cultures" (1959), in which he maintained that the abyss that exists between men of letters and scientists is a serious threat to our civilization. Extra-literary events that aroused less hostility included the dedication on June 16 of the Martello Tower at Sandycove, Ireland (setting of the first episode in *Ulysses*) as a James Joyce museum, and the festival of the arts held at Wellingborough by Center 42, the movement led by the proletarian playwright Arnold Wesker to enhance the cultural life of the English working class.

Fiction.—Of the novels published toward the end of 1961, Richard Hughes' *The Fox in the Attic* was probably the most remarkable. It is the

first in a projected series entitled *The Human Predicament* that will cover the period from the Munich *Putsch* in 1923 to the end of World War II. The principal character is a naïve English aristocrat who goes to Germany and becomes alert to the aftermath of the war in that country and the beginnings of Hitler's rise to power. Evelyn Waugh's *Unconditional Surrender* (American title, *The End of the Battle*) completed the trilogy initiated by *Men at Arms* (1952) and continued in *Officers and Gentlemen* (1955). The final volume sets forth not only the hero Guy Crouchback's resigned acceptance of things as they are but also his efforts to accomplish some good in an evil world.

Angus Wilson, in *The Old Men at the Zoo*, strove to combine a realistic-satirical account of the power struggle among the aging staff of a zoo and the impact on them of a boldly imagined nuclear war. In *The Prime of Miss Jean Brodie*, Muriel Spark, against the background of her native Edinburgh, studied the influence of a strong-minded if somehow sinister teacher on a group of her favorite students. *Key to the Door*, by the proletarian novelist Alan Sillitoe, described the grim experiences during the Depression and in military service of a brother of the hero of his first and best book, *Saturday Night and Sunday Morning* (1958).



Important figures in English literature in 1962: (*from left to right*) Richard Hughes, author of *The Fox in the Attic;* C. P. Snow, novelist, who was the subject of a scathing attack; and Arnold Wesker, a playwright and leader of a "proletarian" movement.

SANDRA LOUSADA; WALTER BIRD; STUDIO BRIGGS.

Among the novels that appeared in 1962, there were noteworthy offerings by writers of diverse literary generations. Aldous Huxley's *Island* described the utopian lives of the inhabitants of a South Sea island as seen through the eyes of a disillusioned English journalist. Huxley's account of the sources of the journalist's unhappiness had a compelling immediacy greater than did his description of the earthly paradise, and the paradise itself is not spared the inescapable internal threats of pain and death or the final threat of destruction from external violence. Christopher Isherwood's *Down There on a Visit* contrasted the author-observer's youthful with his mature reactions to four major characters whose sexual activities he viewed with an almost chilling detachment. In *The Kindly Ones* (the Greek furies), sixth volume in Anthony Powell's social panorama, *The Music of Time*, the experience of the narrator as a boy during World War I served as a prelude to his mature preparation for involvement in World War II and showed the impact of the approaching events on characters familiar and unfamiliar.

An Unofficial Rose, by Iris Murdoch, resembled *A Severed Head* (1961) in the extremely complex pattern of its characters' amorous relations, and developed the theme that love is a fatality of which the consequences in most cases fall far short of satisfying fulfillment. In *The Spoilt City*, second volume of a proposed trilogy, *The Great Fortune*, Olivia Manning described sensitively the approach and impact of World War II on Rumania and contrasted the heroine's keen awareness of its perils with her husband's unrealistic attempts to offset the Nazi threat. A more ambitious but not completely integrated novel was Doris Lessing's *The Golden Notebook*. Within the framework of current events, it presented the contents of four notebooks devoted to the heroine's varied interests in love, politics, imaginative writing, and a record of her actual life. John Braine's *Life at the Top* continued the history of Joe Lampton, hero of *Room at the Top* (1957), and ended with his acceptance, on new terms, of a dubious success in career and marriage.

Drama.—The year was not especially rich in new plays of high quality. In Edinburgh, Christopher Fry's *Curtmantle*, an historical drama dealing with the reign of Henry II, had its first English production. Written in a less spectacularly decorative style than his earlier plays, it did not succeed in giving vitality to any save its central figure, the king. At the Royal Court, John Osborne's *Plays for England* included *The Blood of the Bambergs*, a tasteless treatment of the marriage of a princess and a commoner, and *Under Plain Cover*, a fantastic, if repellent, comedy of a man and a woman who cooperate in the expression of their sado-masochistic neuroses.

Harold Pinter's *The Collection*, which had already been presented on radio and television, proved far less effective than *The Caretaker* (1960) in its treatment of the relations between a man and his wife and a dress designer and his lower-class protégé. Doris Lessing's *Play with a Tiger*, dramatizing a situation already treated in her novel *The Golden Notebook*, studied the relationship between an Englishwoman bent on living a free life and her brash and unscrupulous American lover. Perhaps the best play of the year will prove to be Arnold Wesker's *Chips with Everything*, which presented a group of Royal Air Force conscripts and showed the triumph of class distinctions over a public-school youth who has attempted to escape them.

Poetry.—Ronald Bottrall and Roy Fuller each published his *Collected Poems*, in 1961 and 1962, respectively. The poetry of Bottrall, although acclaimed by such critics as Dame Edith Sitwell and F. R. Leavis, struck others as technically expert but too imitative of Pound, Auden, and Empson to claim individual distinction. The most effective poems by the poet-novelist Fuller were drawn from his experiences in service during World War II and not from his rather gray and resigned civilian life after the war.

My Sad Captains and Other Poems (1961), by Thom Gunn was widely noticed and generally admired. In this volume, the relatively opaque style of his early poems contrasted sharply with

the transparent style of his recent poems, which express a bleak nihilism not unrelated to the values espoused by west coast beatniks. Dame Edith Sitwell, in the pungent preface to her ten poems in *The Outcasts,* protested against the banishment of grandeur from contemporary poetry and maintained that poetry should be "the deification of reality." In this collection, with her now familiar force and skill, she treated the contrasted themes of the sense of loss and desolation in our times and the need for praising beauty and love and God.

Tares (1961), by the Welsh clergyman R. S. Thomas, reinforced the impressions his earlier volumes gave of simplicity, honesty, directness, and toughness in the representation of the harsh lives of his rural parishioners. By contrast, C. Day Lewis' *The Gate* seemed bookish and traditional in the unhappy sense of that term. In George Barker's *The View from the Blind I,* critics distinguished three such diverse strains as Swinburnean volubility, elegiac sensuousness, and a lightly mocking vein that did not exclude his view of himself; the two latter strains were fortunately dominant. Christopher Middleton's *Torse 3: Poems 1949–1961* exhibited skill in the creation of complex structures; and *The Early Drowned, and Other Poems* (1961), by Hilary Corke, expressed fastidiously a resigned hedonism.

Criticism.—In works on the theory of criticism, evidence was accumulating of a vigorous reaction on the one hand against the microscopic particularity of the New Critics and on the other hand against the aesthetic and moral dogmatism of F. R. Leavis and his numerous disciples. Thus, C. S. Lewis' *An Experiment in Criticism* (1961) maintained that a work of art can be either "received" or "used," and objected to the Leavis school on the grounds that it "used" literature for moral or psychological enlightenment; by "receiving" literature, Lewis meant opening one's mind and heart to it, and coming to understand it for its own sake and not for any ulterior end.

In a less argumentative vein, the late Edwin Muir in *The Estate of Poetry,* his Charles Eliot Norton lectures at Harvard, defined the New Criticism as "reading into a poem all sorts of probable or possible meanings apart from the clear and obvious one." From these currents and countercurrents of criticism, Robert Graves stood staunchly apart. In his *Oxford Addresses on Poetry,* he attacked recklessly poetry that seemed to be Apollonian and extolled idiosyncratically such Dionysian writers as Skelton, Wyatt, and Raleigh.

In applied criticism, Bernard Blackstone's *The Lost Travellers* ranged the most widely. Here he studied the variations on the journey, the quest-theme, in the major Romantic poets. A fresh and useful work was Bernard Bergonzi's *The Early H. G. Wells, a Study of the Scientific Romances.* By demonstrating the distinction of Wells' work in this increasingly popular if generally debased genre, he seemed to be preparing the way for the needed rehabilitation of a gifted and once immensely popular writer.

J. D. Beer's *The Achievement of E. M. Forster* and K. W. Gransden's *E. M. Forster,* though thoughtful and sometimes illuminating commentaries, failed to take sufficient account of the influence on Forster of his upbringing and his long association with the University of Cambridge or of the adverse criticisms that have become vocal in recent years. The two critical works that provoked the most intense discussion were William Empson's *Milton's God* (1961) and David Holbrook's *Llareggub Revisited: Dylan Thomas and the State of Modern Poetry.* The purpose of Empson's book was to demonstrate that Milton attempted but did not succeed in justifying the ways of a God whom Empson sees as the essence of "premeditated malignancy." Holbrook's attack on Dylan Thomas as a man and as a poet was so shrill and extravagant as to be self-defeating.

Biography and Autobiography.—On the whole, the biographies of the year seemed less intriguing but possibly of more enduring significance than the autobiographies. Dame Edith Sitwell, in *The Queens and the Hive,* completed the account of the life of Queen Elizabeth, whose history up to her accession she had narrated in *Fanfare for Elizabeth* (1946). Meriol Trevor's *Newman, the Pillar of the Cloud* was the first volume of what seems likely to prove the best modern biography of her great subject. Sharply antithetical to the personality and the triumphant career of Cardinal Newman were the personality and the sense of failure recounted in Lady Katherine Chorley's *Arthur Hugh Clough, the Uncommitted Mind.* Lady Chorley not only gave the best available history of his life, but speculated as to the reasons for his failure to achieve the greatness of which he was thought capable.

Three collections of letters proved invaluable as contributions to our knowledge of their writers. In *The Letters of Oscar Wilde,* impeccably edited by Rupert Hart-Davis, the assembly of 1,298 letters furnished more than adequate material for a much needed revaluation of this tragic figure. *The Collected Letters of D. H. Lawrence,* edited by Harry T. Moore, contained 300 unpublished letters but omitted hundreds that have appeared elsewhere. An all-important but also incomplete contribution to a knowledge of Lawrence was *Frieda Lawrence: the Memoirs and Correspondence* (1961), edited by E. W. Tedlock.

O Dreams, O Destinations, an Autobiography, by Phyllis Bentley, explored the abyss between the two main terms of her title. In *The Heart to Artemis: a Writer's Memoirs* by the pseudonymous Bryher, Winifred (Ellerman) Macpherson, was most communicative in her description of her childhood. Sir Osbert Sitwell's *Stories My Father Told Me, an Evocation of Extravagant Episodes* garnered reminiscences of his fantastic father, Sir George. Emlyn Williams' *George, an Early Autobiography* (1961) proved to be a moving if somewhat self-conscious narrative. The most widely noticed autobiography, Leonard Woolf's *Growing, an Autobiography of the Years 1904–1911* (1961) was a sequel to his early life in *Sowing . . .* (1960).

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ENTOMOLOGY. See AGRICULTURAL RESEARCH SERVICE and the Index entry, *Insects and Insecticides.*
EPIDEMIOLOGY. See Index entry.
EPISCOPAL CHURCH. See PROTESTANT EPISCOPAL CHURCH.
ERITREA. See ETHIOPIA.
ESPIONAGE. See Index entry.

ESTONIA

The Estonian Soviet Socialist Republic, on the northeast coast of the Baltic Sea, has an area of 17,370 square miles; its population is 1,197,000 (1959), about 56% urban. In 1959, 73% of the population were Estonians, a Finno-Ugrian nationality; 22%, Russian; and the remaining 5%, mainly Finns, Ukrainians, Belorussians, and Jews. Chief cities and their populations are: Tallinn (Reval), the capital, 280,000 (1959); Tartu (Dorpat), 74,000 (1959); and Pärnu, 36,300 (1956).

Government.—An independent republic since 1918, Estonia was forcibly annexed by the USSR in 1940, and reoccupied near the end of World War II. The United States does not recognize this annexation. The Estonian legislature is a unicameral Soviet elected for four-year terms. It rarely meets and, in the interim, delegates its authority to an 8-man Presidium headed by Aleksey A. Myurisep and to a Council of Ministers (cabinet) headed by Premier Valter I. Klauson. The Estonian government has no political autonomy, and merely executes orders from Moscow. All key government posts are held by members of the Estonian Communist Party, which is headed by First Secretary Johannes G. Kebin.

Education and Religion.—School enrollment, 1961–62: 170,000 in grade schools, 33,700 in high schools, and 11,000 in technical high schools and colleges. Number of scientific research institutes: 24. Principal religion: Lutheran.

Finance.—The 1962 state budget: expenditures, 340,596,000 new rubles (U.S.$378,061,560), an increase of 19,530,000 rubles over 1961.

Transportation and Communications.—Transport networks (miles): main railways, 905; secondary rail lines, 433; roads, 10,900; paved roads, 1,000. Airlines serve Moscow, Leningrad, and Riga. The main seaport is Tallinn. Telephones number 36,200; radio receivers, 300,000.

Manufactures and Minerals.—Important industrial products (metric tons, 1961): oil-bearing shale, 10,300,000; cellulose, 103,500; paper, 94,400; steel, about 4,000; chemical fertilizer, over 405,000; cotton textiles, over 114,000,000 meters; electric power, 2.9 billion kw.-hr. Chief manufactures: natural gas (from oil shale), electrical machines, farm machines, superphosphate fertilizer, construction materials, and textiles. Planned industrial expansion during 1962 (percentage over 1961): electric power, 33; machine building, 18; building materials, 16; all industry, 9.

Agriculture.—Major agricultural products (metric tons, 1961): grain, 358,000; milk, 820,000; meat, 96,000; butter, 15,400; fish, 85,800. Area under crops: about 1,830,000 acres, mostly planted to grain, hay, potatoes, and flax. Approximate number of livestock: cattle, 452,000; sheep and goats, 260,000; horses, 65,000. Number of farm tractors, 7,950. Farm ownership is divided among 679 collective farms and 155 state farms.

Foreign Trade.—Most Estonian trade is with the remainder of the USSR. Principal exports (1962): butter, meat, bacon, canned fish, electrical apparatus, cloth, furniture. Principal imports: grain, coal, petroleum, ferrous metals, timber.

Events, 1962.—The official campaign against embezzling by state employees resulted in April in the execution at Tallinn seaport of a female cashier who had headed a group of thieves who stole 70,000 rubles from government offices. The Communist press, as before, indicated that much political unrest exists in Estonia, with many Estonians clinging to their traditional desire for national independence, fondness for private farming, pro-Westernism, and pro-Germanism.

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ETHIOPIA

The Empire of Ethiopia (or Abyssinia) is located in northeastern Africa and is bounded by the Red Sea, Sudan, Somalia, and British East Africa. The total area, including Eritrea (federated with Ethiopia in 1952 as an autonomous unit under the Ethiopian crown), is estimated at 480,000 square miles. The land consists chiefly of vast tablelands and plateau regions with a few high, rugged mountain chains.

Ethiopia's population is estimated (mid-1959) at 21,800,000. The principal cities and populations (1961 est.) are Addis Ababa, the capital, 449,000; Asmara, capital of Eritrea, 120,000; Dessie, 40,000; Dire Dawa, 40,000; and Massawa, 25,000.

Amharic is the national language, but English, Italian, and French are common among commercial people. The Amharas (who supply the ruling family and most of the senior officials) and the Tigreans, two groups of Semitic and probably Hamitic descent, constitute one third of the population. The Hamitic Gallas constitute 40% of the population. The largest foreign group, estimated at 50,000, is of Arab origin, mostly from Yemen. There are also Italian, Indian, Armenian, and Greek communities.

Government.—Emperor Haile Selassie I (b. 1891), crowned king in 1928 and emperor in 1930, rules virtually as an absolute monarch. Under the 1955 constitution, a Council of Ministers is partially responsible to Parliament, which consists of two houses, the House of Deputies (210 members, popularly elected) and the Senate (appointed by the emperor, with a membership not exceeding half the number of deputies). The emperor retains veto power over legislation; the House of Deputies has a role in fiscal affairs. Ethiopia proper is divided into provinces, each ruled by a governor appointed by the emperor. Eritrea, governed by a chief executive chosen by a popularly elected assembly, is represented in the Ethiopian Parliament. A number of non-Ethiopian advisers, mainly from the United States and Great Britain, assist in the work of the ministries.

Education and Religion.—School facilities are available for only about 6% of the 3,200,000 school-age population. Over 90% of the population is illiterate; however, the number of school children is steadily increasing, and a considerable number of students are being sent abroad for advanced study. There were 186,810 students enrolled in government schools in 1960–61. Haile Selassie I University was established in December 1961, incorporating six separate previously established colleges. The Ethiopian Orthodox Church, a Christian communion allied with the Coptic Church, is the established church. Muslims are probably as numerous as the Ethiopian Orthodox Christians. From 5 to 15% of the population is pagan.

Finance.—Government revenue, 1961–62 est.: Eth.$162.0 million (Eth.$196.8 million in 1960–61); ordinary expenditure, Eth.$197,274,830 (Eth.$190.9 million in 1960–61); and capital expenditure, Eth.$123,147,450. The 1962–63 budget called for ordinary expenditures of Eth.$209,068,796 and capital expenditures of Eth.$77,999,987. The main capital expenditures budgeted are civil aviation (Eth.$52,650,000), highways (Eth.$7,421,317), and industry (Eth.$11,578,000). The Ethiopian dollar equals U.S.$0.40. Foreign exchange reserves: Eth.$180.2 million as of June 2, 1962.

Transportation and Communications.—Ethiopia has about 3,000 miles of all-weather roads and 6,000 miles of roads passable in the dry season. The 487-mile Addis Ababa-Djibouti (Somaliland) railroad runs for 421 miles in Ethiopian territory. The Massawa-Agordat railroad in Eritrea totals 191 miles. The government-owned Ethiopian Airlines (operated by Trans-World Airlines) provides domestic and international service. Motor vehicles, 25,175 (1961); telephones, 12,012 (1960); radio receivers, 85,000 (1959).

Manufactures and Minerals.—Industrial production is confined almost entirely to the processing of agricultural commodities. A few consumer items are produced, as well as bricks, salt, flour, beer, textiles, shoes, soap, and tobacco products. Mineral production includes only gold (41,500 troy ounces in 1961) and, platinum. A United States firm has been given a concession for potash production.

Agriculture.—The country is virtually self-sufficient in agricultural produce except for cotton. Over 90% of the population is engaged in agricultural production. Coffee, which grows wild, is Ethiopia's major product and provides one half of the country's foreign exchange; 1961 coffee production amounted to 66,000 metric tons (53,500 in 1960). Production of 70,000 tons was forecast for 1962. Other crops include teff (a bread grain), barley, wheat, corn, and durra.

Foreign Trade.—Total exports, 1961: Eth.$196.2 million (Eth.$192.6 million in 1960); imports, Eth.$231.2 million (Eth.$219.3 million). Estimates for 1962: exports, Eth.$231.2 million; imports, Eth.$234.0 million. Principal exports: coffee (58,500 metric tons in 1961), hides and skins, pulses, and oilseeds. Chief customers: the United States (receives nearly 50% of Ethiopia's exports), West Germany, the United Kingdom, and India. Principal suppliers: Japan and Italy.

Events, 1962.—The Empress Menen (b. 1891) died on February 15; Prince Sahle Selassie, the emperor's youngest son, died on April 23, at the age of 31.

In July, disturbances occurred in Eritrea, in apparent opposition to the federation with Ethiopia. The emperor accused foreign enemies of sowing the discord. A hand grenade thrown into a gathering being addressed by the emperor's personal representative killed eight persons. The Eritrean Assembly on November 14 voted to end Eritrea's federated status and for complete unification with Ethiopia (effective November 15).

In September, a U.S. Peace Corps contingent of 244 persons, the largest assigned to any country, arrived in Ethiopia to aid in education.

Gradual expansion of the economy continued during 1962. Plans were formulated for the second five-year plan (1963–67), which emphasizes development of agriculture and industry. Exchange and import controls were eased considerably in 1962. In October, the emperor announced that the government would submit to Parliament new legislation to reform feudal land tenure systems. Increasing foreign investment took place during the year.

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ETHNOLOGY. See ANTHROPOLOGY.
EURATOM. See EUROPE.

EUROPE

Europe in 1962 continued to demonstrate that astonishingly renewed vigor and prosperity which have brought it back in recent years to the forefront of the world's stage. The European boom continued in its remarkably durable course, and economic activity was still increasing. Such broad generalizations, however, masked considerable variations from country to country, which ranged from an insignificant increase in Sweden to substantial gains in Italy and France. It was broadly true that a certain easing-off was discernible in the rate of improvement. This was due to an increasing

WIDE WORLD

President de Gaulle of France (left) and Chancellor Adenauer of Germany review parade of French and German troops near Reims, July 8, on Adenauer's state visit to France.

labor shortage, fairly rapid rises in wage levels, and a consequent profit squeeze. At the same time the British economy, which had hitherto lagged behind those of Continental neighbors, began to show a brisk upturn beginning in June.

The long-continued boom was associated with the success of the European Economic Community (EEC) and the European Free Trade Association (EFTA), particularly the former. Moves toward the economic integration of Europe were showing new dynamic power. Yet the pattern of the future was not clear; throughout the year great decisions were pending which would shape the future of the continent for many decades ahead.

Specifically, still undecided was the question of British membership in EEC. If Britain joined, it could be presumed that through various kinds of links, all the EFTA members would follow, and there would be one great trading bloc in western Europe. There was considerable opposition in Britain to joining, however, and it was not clear that German Chancellor Adenauer and French President de Gaulle really wished for British membership. To them, Britain would be a formidable rival for the leadership of a united Europe; to the smaller states, she would be a welcome counterpoise to France and West Germany. The small states were eager to have a genuinely integrated western Europe, provided that it included Britain.

MEMBERSHIP IN EUROPEAN ORGANIZATIONS
(x—full member; a—associate member)

Country	Council of Europe	Euratom	ECSC	Common Market	EFTA	NATO	OECD	WEU
Austria	x	..	..	..	x	..	x	..
Belgium	x	x	x	x	..	x	x	x
Canada	..	..	..	..	..	x	x	..
Cyprus	x	..	..	..	..	..	..	..
Denmark	x	..	..	..	x	x	x	..
Finland	..	..	..	..	a	..	..	..
France	x	x	x	x	..	x	x	x
Germany, West	x	x	x	x	..	x	x	x
Greece	x	..	..	a	..	x	x	..
Iceland	x	..	..	..	..	x	x	..
Ireland	x	..	..	..	..	..	x	..
Italy	x	x	x	x	..	x	x	x
Luxembourg	x	x	x	x	..	x	x	x
Netherlands	x	x	x	x	..	x	x	x
Norway	x	..	..	..	x	x	x	..
Portugal	..	..	..	..	x	x	x	..
Spain	..	..	..	..	..	..	x	..
Sweden	x	..	..	..	x	..	x	..
Switzerland	..	..	..	..	x	..	x	..
Turkey	x	..	..	..	..	x	x	..
United Kingdom	x	..	..	..	x	x	x	x
United States	..	..	..	..	..	x	x	..

The French president's visit to Germany at the beginning of September was a notable landmark, seemingly signaling the end of the long era of Franco-German hostility. Yet its basis was not very strongly established, for it rested primarily on the personal *rapprochement* of two aged men who must soon in the course of nature relinquish control of their respective countries. West German politics might have a stable future, but the traditional instability of French politics was beginning in the fall to reassert itself.

The year also saw the first hostile reaction to EEC on the part of the Soviet Union. Despite the fact that the Common Market, as an example of private enterprise at its most successful and of international cooperation, is a fundamental refutation of Communist ideology, Soviet reaction has been laggard. It began with a speech by Soviet Premier Khrushchev on May 30 and was followed in June by a conference which attempted to breathe more life into the trading organization of Communist states (Comecon). (See also COMMUNISM.)

Generally speaking, Europe was stable politically during the year, except for the trends noted in France and some increased unrest in the two Iberian dictatorships. But over the whole continent, as over the world, hung the possibility of disastrous developments arising out of the Berlin question, a "European" question, but one in regard to which the policies of the United States and the Soviet Union will prove decisive.

POLITICAL ORGANIZATIONS

Council of Europe.—This 16-member consultative and parliamentary body, the oldest of the present European organizations, in 1962 pursued its normal course of providing intelligent commentary on the activities of Europe as a whole. As usual, the Consultative Assembly of the Council met three times in 1962 at Strasbourg, France. The third part of its 13th ordinary session, held on January 16–18, endorsed the "Freedom from Hunger" campaign of the Food and Agriculture Organization of the United Nations; stressed the urgency of the problem of international officials whose posts disappear due to changes in the structure of European organizations (this arose out of the transformation of the Organization for European Economic Cooperation into the Organization for Economic Cooperation and Development); expressed approval of recent developments in EEC; and instructed its economic committee to study the future development of trade relations between western Europe and the United States.

The first part of the 14th session, May 15–18, produced a strong recommendation on European economic and political integration, containing the significant clause: "The principle of unanimity must not be perpetuated." The session also approved a report urging greater standardization of equipment and procedures in European civil aviation. The second part of the 14th session, September 19–25, debated, among other general topics, proposed working relationships between the Council and OECD.

Switzerland, which began in 1961 to send a delegation of observers to the Consultative Assembly, moved nearer to membership in 1962. A resolution was introduced in the Swiss National Council on June 20 recommending that the Federal Assembly study the question of membership; reply was made for the government that it shared this view and would examine the compatibility of membership with the national constitution. Switzerland acceded to the European Cultural Convention during the year, and thus automatically be-

came a member of the Council for Cultural Cooperation (CCC).

The European Conference of Local Authorities held its 4th session at Strasbourg, March 21–24. This was the first meeting under the charter granted by the Council's Committee of Ministers.

The European Court of Human Rights (a creation of the Council) on February 22 re-elected as its president and vice president, for three-year terms, Lord McNair (United Kingdom) and René Cassin (France). Among other business, the court during the year finally struck the Raymond De Becker case from its court list (De Becker having withdrawn his charges against the Belgian government). It also refused to entertain appeals from Franz Isop (against Austria); Ilse Koch, widow of the commandant of Buchenwald (against Germany); and Gen. Raoul Salan (against France).

In a contested election on May 15, Per Federspiel (Denmark) was re-elected to serve a second year as president of the Consultative Assembly.

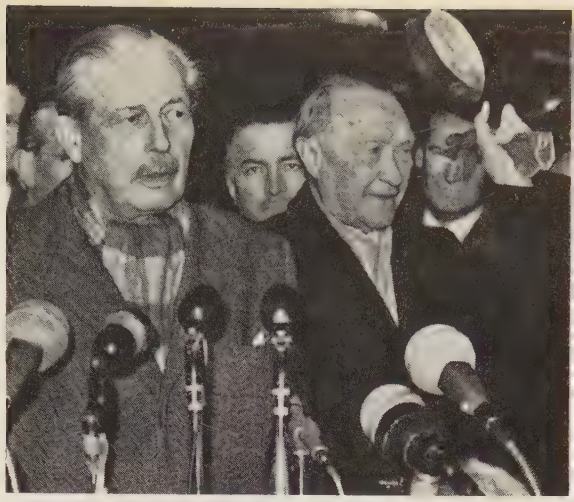
Western European Union.—At a meeting of the WEU Council in London on April 10, Edward Heath (United Kingdom), lord privy seal, spoke on the British attitude toward future European political integration. Arthur Conte (France) was re-elected president at the first part of the 8th ordinary session of the WEU Assembly, held in Paris, June 4–8. In addition to the usual reports on defense questions—which, in a strict sense, are the proper business of this particular organization—and one on European space programs, the Assembly debated general questions regarding the future pattern of Europe.

The Three Functional "Communities"

European Economic Community.—There were really two aspects to the history of the EEC (Common Market) in 1962—as of the other functional "communities," the European Coal and Steel Community, and the European Atomic Energy Community (Euratom). One was the continuation of their normal functioning and their degree of success in carrying out their purposes. The other was the negotiations which, if successful, will substantially enlarge their membership beyond the present six (common to all three communities), and thus greatly change their structure, as well as enhance their already great significance. The events of the year were such that the latter aspect almost overshadowed the former; but, of course, it is the success of their normal functioning that has generated on the part of nations yet outside the communities the desire to become members or associates.

The most important actual decision made by EEC during the year was the detailed agricultural policy finally adopted at 5:29 A.M. on Sunday, January 14, and dated retroactively to January 1. The agreement, which was achieved only after 200 hours of discussion in 45 working sessions, got the Community over the hump of the trickiest of all its problems. The new policy aims to balance supply and demand by greater regional specialization and an improvement of quality; and to stabilize agricultural markets and give a fair return to farmers, as well as a fair deal to consumers. The fundamental objective, of course, is that at the end of the transitional period (on Jan. 1, 1970) there shall be a full common market for agricultural products throughout the Community. The new regulations came into force on July 1, 1962, and 7½ years were therefore allowed for progressive introduction of the new policies, unless an acceleration is made.

The agricultural agreement permitted EEC to enter on the second four-year stage (1962–66) of the 12-year transitional period envisaged in the Treaty of Rome. Tariffs on trade in industrial goods were reduced a further 10 per cent on July 1, 1962, bringing the total cut since 1959 to 50 per cent. This is virtually a "point of no return" in the process of economic integration because (among other reasons) the earlier rule of unanimity in the decisions of the Council of Ministers gives way in the second stage to a veto-free system of decision-making by qualified majorities.



WIDE WORLD

In Bonn, West Germany, on January 8, British Prime Minister Macmillan (l.) is greeted by Chancellor Adenauer.

The economic health of EEC continued good in 1962. According to the quarterly report published by the EEC Commission in July, industrial production in the first quarter of 1962 rose by 5.5 per cent, as compared with 6.5 per cent in the first quarter of 1961. The expansion was "less vigorous" than hitherto, but was expected to reach a rate of 5.5 to 6 per cent over the whole year.

Negotiations of great difficulty and complexity were conducted throughout the year regarding the applications for membership or associate membership of no fewer than 11 states. The applicants for full membership are the United Kingdom, Norway, Denmark, and Ireland (the first three are NATO members, and Ireland cannot afford to let her economy go a separate way from that of Britain). Greece became an associate member on November 1, and Turkey, Spain, and Portugal have applied for associate membership as a transition to full membership later. Austria, Sweden, and Switzerland have submitted associate applications carefully hedged by qualifications about their neutral status.

The success of the Common Market is currently so great that the members are not prepared to purchase any country's accession by concessions. Thus it is clear that the hopes of Britain for concessions on Commonwealth trade, or of the neutrals for especially tender treatment, will evoke but minimal responses. The British negotiations were the clue to all the others. Sessions in May and August did not reach a decision before the Commonwealth conference in September, at which Britain's partners gloomily accepted her EEC membership as inevitable but signally failed to welcome it. The British negotiations resumed on October 8.

In March 1962 the European Parliamentary Assembly, consultative body of the three communities, adopted the new name of the European Parliament.

European Coal and Steel Community.—In 1962 the Coal and Steel Community, the oldest of the three, completed its 10th year of existence. In its 10th annual report, published in February, the

High Authority noted that the entry of the United Kingdom would raise annual coal production in ECSC to 400 million metric tons (greater than that of either the United States or the Soviet Union) and steel production to approximately 100 million metric tons (about the same as that of the United States and considerably greater than that of the Soviet Union).

The report, defining the general situation, stated that the internal demand for coal had reached its peak in 1956–57 and that there had since been a falling-off. The demand in 1961 was below that of the previous year. In steel there was still expansion but at a more modest rate, crude steel production rising in 1961 from 72.8 to 73.2 million metric tons. It was noted that in steel, since demand is no longer certain to outpace supply, greater efforts in regard to quality, costs, and marketing will be necessary. However, steel demand actually took a strong upward turn from February onward. (See also IRON AND STEEL.)

Among the major efforts of the High Authority in 1962 was the vast program of "readaptation" to resettle and re-employ coal workers whose jobs have been eliminated. Thus far the High Authority has set aside some $50 million for these general purposes. Although the Belgian mines (regarding which the coal crisis of 1959–60 arose) are the hardest hit, they are not the only ones so affected. On Jan. 18, 1962, new readaptation plans covering mines in the Ruhr were approved. On June 29, at the request of the French government, similar benefits were extended to miners in the Centre-Midi coalfields of France.

In the latter part of 1962 the High Authority was working on a new comprehensive energy blueprint for the Community.

European Atomic Energy Community.—On Jan. 10, 1962, Pierre Chatenet (France) became the third president of the Commission of the European Atomic Energy Community (Euratom), replacing Etienne Hirsch, who had held the office since Feb. 2, 1959. In addressing the European Parliament on February 20, M. Chatenet sketched the Community's second five-year research program, which will extend from 1963 through 1967 and will cost about $425 million (nearly double that of the first program, which in 1962 was some 95 per cent completed). President Chatenet said that the commission would strive to encourage European manufacture of fuel elements and to develop succeeding generations of reactor types already in operation.

The 5th general report of Euratom, covering April 1961—March 1962, noted that at the end of 1961 total installed nuclear capacity in the Community amounted to 73 megawatts of electric power, and that 270 million kw.-hr. of nuclear electricity was produced during the year. By the end of 1962 an additional 78 megawatts was to be added, and by the end of 1966 it was expected that nuclear sources would provide 2 per cent of all the electricity produced in the community. (See also ATOMIC ENERGY.)

OTHER ECONOMIC ORGANIZATIONS

European Free Trade Association.—While all the members of EFTA share the hope that the British negotiations with EEC will be successful and that all EFTA members will shortly enter into some category of relationship with the Common Market, their own organization has been going ahead successfully with its own plans in the confident expectation that these will ease the transition. On March 1, and again on Oct. 31, 1962, the tariffs of five EFTA member states on goods covered by the agreement were reduced ahead of schedule, each time by a further 10 per cent, making a total reduction of 50 per cent since July 1, 1960. Austria and Norway were to conform to the new rates later on. External trade of EFTA nations has generally kept pace with the world expansion, but the rate of increase in their mutual trade has approximately doubled.

Organization for Economic Cooperation and Development.—OECD, which became the successor agency to the Organization for European Economic Development (OEEC) on Sept. 30, 1961, continued its plans for extending the benefits of cooperation and technology to underdeveloped parts of the world. The Technical Cooperation Committee met for the first time in March 1962, and paid special attention to technical assistance programs for Greece, Iceland, Spain, Turkey, and Yugoslavia. Various projects which will concern more than one country also were studied, such as promotion of education in agriculture, improved marketing of fruits and vegetables, and training of personnel in research. In August, two consortia were set up to aid Greece and Turkey.

European Monetary Agreement.—EMA is the successor agency to the European Payments Union, which it replaced in December 1958, and is subordinate to OECD. The reports of EMA in 1962 chiefly noted the satisfactory state of affairs that the "normal" method of international payments through the exchange markets is now becoming more and more the prevailing one, and that therefore the net amounts which remain to be settled in dollar payments through the special operations of the agreement are steadily diminishing. Aid to Greece and Turkey to further economic development, from the consortia set up in 1962, will be largely handled by the European Fund of EMA.

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EUROPEAN ATOMIC ENERGY COMMUNITY. See EUROPE.
EUROPEAN COAL AND STEEL COMMUNITY. See EUROPE.
EUROPEAN ECONOMIC COMMUNITY. See EUROPE.
EUROPEAN FREE TRADE ASSOCIATION. See EUROPE.
EUROPEAN MONETARY AGREEMENT. See EUROPE.
EUROPEAN UNION. See EUROPE.
EVENTS OF 1962. See the CHRONOLOGY at the front of this volume.

EXCHANGE RATES

The general movement toward greater international cooperation in maintaining stability in foreign exchange markets was an outstanding feature of 1962. Common measures to protect the exchange value of major currencies took a variety of forms, including larger official intervention in forward exchange markets by central banks and treasuries, arrangements between national monetary authorities for short-term credits, and the provision of additional resources to the International Monetary Fund (IMF).

In 1961, for the first time in over 20 years, the United States had resumed foreign exchange operations in support of the dollar and to supplement actions taken to halt the sizable drains upon its gold reserves. The resources to carry out such operations were substantially enlarged in February 1962 when the Federal Reserve Bank of New York was authorized to engage in open-market operations in foreign currencies as agent for the U.S. Treasury and the Federal Reserve System. In the next six months a series of reciprocal credit, or swap, facilities amounting to $700 million were negotiated with seven foreign central banks and the Bank for International Settlements. Under these arrangements, the participating central bank agrees to exchange (swap) its own currency for the currency of the other party up to a stated amount over a limited period of time, for use in exchange transactions.

On May 2, 1962, Canada established a new par value of 1.081 Canadian dollars per U.S. dollar, replacing the 12-year-old, fluctuating exchange rate system. However, doubts regarding the tenability of the new parity, along with speculative pressures, resulted in large outflows of short-term funds and the exchange rate tended to fall. The Canadian authorities acted decisively to defend the new parity, adopting a number of measures designed to improve the country's international

PAR VALUES OF CURRENCIES OF MEMBER COUNTRIES OF THE INTERNATIONAL MONETARY FUND
(As of Oct. 31, 1962)

Member	Currency unit	Par value (units per U.S. dollar)
Afghanistan	afghani	...[1]
Argentina	peso	...[2]
Australia	pound	.4464
Austria	schilling[3]	26.00
Belgium	franc[3]	50.00
Bolivia	boliviano	...[2]
Brazil	cruzeiro	...[2]
Burma	kyat	4.762
Canada	dollar[3]	1.081
Ceylon	rupee	4.762
Chile	escudo	...[2]
China (Taiwan)	yuan	...[1]
Colombia	peso	1.950[2]
Costa Rica	colón	6.625[4]
Cuba	peso[3]	1.000
Cyprus	pound	.3571
Denmark	krone	6.907
Dominican Republic	peso[3]	1.000
Ecuador	sucre	18.00[4]
El Salvador	colón[3]	2.500
Ethiopia	dollar	2.484
Finland	markka	320.0
France	new franc[3]	4.937
Germany, Federal Republic of	Deutsche mark[3]	4.000
Ghana	pound	.3571
Greece	drachma	30.00
Guatemala	quetzal[3]	1.000
Haiti	gourde[3]	5.000
Honduras	lempira[3]	2.000
Iceland	króna	43.00
India	rupee	4.762
Indonesia	rupiah	...[1]
Iran	rial	75.75
Iraq	dinar	.3571
Ireland	pound[3]	.3571
Israel	pound	3.000
Italy	lira[3]	625.0
Japan	yen	360.0
Jordan	dinar	.3571[4]
Korea	won	...[1]
Kuwait	dinar	...[1]
Laos	kip	...[1]
Lebanon	pound	2.191[2]
Liberia	dollar	...[1]
Libya	pound	.3571
Luxembourg	franc[3]	50.00
Malaya	dollar	3.061
Mexico	peso[3]	12.50
Morocco	dirham	5.060
Nepal	rupee	...[1]
Netherlands	guilder[3]	3.620
New Zealand	pound	.3596
Nicaragua	córdoba	7.000[4]
Nigeria	pound	...[1]
Norway	krone	7.143
Pakistan	rupee	4.762[4]
Panama	balboa[3]	1.000
Paraguay	guarani	...[2]
Peru	sol[3]	...[2]
Philippines	peso	2.000
Portugal	escudo	28.75
Saudi Arabia	riyal[3]	4.500
Senegal	CFA franc	...[1]
Sierra Leone	W. Af. pound	...[1]
Somalia	somalo	...[1]
South Africa	rand	.7143
Spain	peseta	60.00
Sudan	pound	.3482
Sweden	krona[3]	5.173
Syrian Arab Republic	pound	2.191[2]
Tanganyika	E. Af. shilling	...[1]
Thailand	baht	...[1]

PAR VALUES OF CURRENCIES OF MEMBER COUNTRIES OF THE INTERNATIONAL MONETARY FUND, Cont'd

Member	Currency unit	Par value (units per U.S. dollar)
Togo	CFA franc	...[1]
Tunisia	dinar	...[1]
Turkey	lira	9.000
United Arab Republic: Egypt	pound	.3482[4]
United Kingdom	pound[3]	.3571
United States	dollar[3]	1.000
Uruguay	peso	7.400[2]
Venezuela	bolivar	3.350[4]
Vietnam	piastre	...[1]
Yugoslavia	dinar	300.0[2]

[1] Par value not yet established. [2] No transactions in the exchange market take place at rates governed by the par value last agreed on with the International Monetary Fund. [3] Convertible currency under Article VIII of the fund's Articles of Agreement. [4] Not all transactions in the exchange market take place at rates governed by the par value.

payments position. On June 24, 1962, international assistance totaling $1,050 million was made available to Canada in the form of a drawing on the IMF equivalent to $300 million in various European currencies, a $400 million line of credit with the Export-Import Bank of Washington, and reciprocal credit facilities with the Federal Reserve System for $250 million and with the Bank of England for $100 million.

On Oct. 24, 1962, the new borrowing arrangements of the IMF came into force. Under these arrangements, 10 leading industrial countries (Belgium, Canada, France, Germany, Italy, Japan, the Netherlands, Sweden, the United Kingdom, and the United States) undertake to provide the IMF, in case of need, with supplementary resources amounting to the equivalent of 6 billion U.S. dollars. These additional resources will better equip the IMF to deal with possible disturbance of the internal monetary system arising from large-scale movements of funds.

Since October 1961, initial or new par values were established by Canada, Cyprus, Israel, Malaya, and Portugal.

(See also INTERNATIONAL MONETARY FUND.)

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EXHIBITIONS. See FAIRS AND EXHIBITIONS; PAINTING AND SCULPTURE; and the Index entry, *Exhibitions.*

EXPLORATION. See ANTARCTICA; GEOGRAPHY AND EXPLORATION; SPACE FLIGHT.

EXPLORER SATELLITES. See SPACE FLIGHT.

EXPLOSIONS. See Index entry.

EXPORT-IMPORT BANK OF WASHINGTON. See Index entry.

EXPORTS. See INTERNATIONAL TRADE and the *Foreign Trade* section of articles on countries.

EXPOSITIONS. See FAIRS AND EXHIBITIONS.

EYE, Diseases of the. See OPHTHALMOLOGY.

F

FRANCE—Eager hands reach to greet President de Gaulle in Gray, France, on his tour of the Jura region in June.

AFP FROM PICTORIAL PARADE

FAEROE ISLANDS. See DENMARK.

FAIRS AND EXHIBITIONS

The following article reviews major fairs and exhibitions in 1962 under two headings: (1) Agricultural Fairs; and (2) International Trade Fairs. For a reference guide to related subjects, see the Index entry, *Shows*.

AGRICULTURAL FAIRS

In recent years the International Association of Fairs and Expositions (IAFE) has strongly demonstrated its value not only to member fairs but also to hundreds of nonmembers. At the regional meetings of the IAFE and at the annual convention each November in Chicago, every phase of fair management is discussed and evaluated. These discussions are closely followed by all fair managers, who receive workable suggestions for improving their own annual events. The beneficial results have been especially noticeable during the last three years. Hundreds of county fairs have followed the lead of the larger state and regional exhibitions in enlarging their grounds, providing additional exhibit space, and augmenting their entertainment features.

Not all fairs are able to pay their own way, but most of the more than 2,500 such annual events in the United States and Canada gross sufficient revenue from admissions, grandstand shows, and sale of exhibit space to cover the cost of operation, and many show a substantial profit.

Attendance at agricultural fairs in 1962 compared favorably with the previous year, which was exceptionally good. For the last ten years the two largest fairs on the North American continent—the Canadian National Exhibition, Toronto, Ontario, and the State Fair of Texas, Dallas—have been steadily climbing toward the 3 million mark in attendance. In 1962 the CNE passed that figure by about 10,000, but 4 inches of rain at Dallas in the first week killed the fair's chances for a record attendance, and the final figure was slightly over 2,780,000.

Over or close to the million mark were the Michigan State Fair, Detroit; Minnesota State Fair, St. Paul; Los Angeles County Fair, Pomona, Calif.; and Pacific National Exhibition, Vancouver, British Columbia. The Ohio State Fair, Columbus, attracted 321,000 persons despite several rainy days. The New York State Fair, Syracuse, drew 468,000. The Wisconsin State Fair, West Allis, hit by heavy rains, dropped to 784,000. Among the free fairs (no admission charge) the Allegheny County Fair, Pittsburgh, Pa., had an estimated attendance of nearly 700,000, and the Ionia (Mich.) Free Fair, 475,000. In Canada, the Calgary (Alberta) Exhibition and Stampede drew 567,000; Regina (Saskatchewan) Provincial Exhibition, 235,000; and the Trois Rivières (Quebec) Exhibition, 100,000.

In line with growing patronage, more than 200 county fairs took steps in 1962 to enlarge their grounds and construct new buildings. Hundreds of other fairs, large and small, completed improvements costing in the aggregate millions of dollars. At the Kansas State Fair, Hutchinson, a new industrial exhibits building was one of many improvements. The New Mexico State Fair, Albuquerque, has a new half-million dollar grandstand in operation, and other improvements are planned. The Los Angeles County Fair, Pomona, Calif., completed its million-dollar livestock building, which includes five new horse barns. At the CNE, Toronto, the $3 million Better Living Center, under construction for two years, was placed in operation.

NAT GREEN,
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INTERNATIONAL TRADE FAIRS

More than 70 million persons on both sides of the Iron Curtain have seen displays and demonstrations of United States products and technology sponsored by the U.S. Department of Commerce at international trade fairs. Between 1954 and 1962 the United States sponsored 127 exhibitions at such fairs in 38 countries. These exhibitions, sponsored by the Commerce Department's Office of International Trade Promotion, have resulted in millions of dollars of on-the-spot sales for American firms, and have often encouraged United States firms to sell regularly in worldwide markets, thus crediting the United States balance of payments.

Official United States exhibitions abroad are tailored to the needs and aspirations of the host countries. At the 1962 Tripoli International Trade Fair, for example, American irrigation and desalinization equipment suited to the Libyan economy was prominently displayed and sold. At the 1962 Third Central African Trade Fair, at Bulawayo, Southern Rhodesia, the United States exhibition featured copper products, mainstays of the Rhodesian economy, and American woodworking equipment. At the German Industries Fair in West Berlin, American machinery demonstrated the latest automation techniques as a solution to a growing labor shortage in the divided city.

Highlights of exhibitions staged by OITF in 1962 included the appearance of Vice President Lyndon B. Johnson, during his goodwill trip to the Middle East, at the American pavilions at international trade fairs in Izmir, Turkey, and Thessalonike, Greece. Postmaster General J. Edward Day was the official United States representative at Japan's Fifth Osaka International Trade Fair.

United States exhibitions were staged for the first time in 1962 at international trade fairs in

Tripoli, Libya; Bulawayo, Southern Rhodesia; Brno, Czechoslovakia; and Lagos, Nigeria. The United States also staged exhibitions in San Salvador, El Salvador, and Buenos Aires, Argentina (the first official American appearances at trade fairs in those countries), and in Djakarta, Indonesia.

The United States also participated in international trade fairs in Osaka, Japan; Casablanca, Morocco; Poznan, Poland; Damascus, Syria; Zagreb, Yugoslavia; Plovdiv, Bulgaria; and Karachi, Pakistan.

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FALKLAND ISLANDS

A British crown colony in the South Atlantic, the Falkland Islands consist of East Falkland and West Falkland, with adjacent islands. The colony (excluding dependencies) has an area of 4,618 square miles, and a population (1962 census) of 2,127, mainly of British descent with some Scandinavian strains. English is the spoken language, and Anglicanism is the principal faith. Stanley (1962 pop., 1,072), on East Falkland, is the capital and chief settlement.

The colony is administered by a governor (Sir Edwin Arrowsmith, appointed on Jan. 21, 1957), who is assisted by an 8-member Executive Council and an 11-member Legislative Council, 4 members of whom are elected. Government revenue in 1960–61 totaled £266,586; expenditure, £275,178. Compulsory education is provided in Stanley; 314 pupils were enrolled in 1961. There were 504 radios and 1 radio station in 1961.

Production of wool, the chief industry, totaled 4,800,000 pounds in 1961 (4,500,000 in 1960). Total imports for 1961 were valued at £1,540,000 (£1,570,000 in 1960); exports, £2,600,000 (£4,210,000). Argentina claims jurisdiction over the Falkland Islands, which it calls Islas Malvinas.

Falkland Islands Dependencies.—Administered by the Falkland Islands since 1908, the Falkland Islands Dependencies consist of South Georgia (area, 1,450 square miles) and the South Sandwich Islands (130 square miles). In March 1962 the Falkland Islands Dependencies south of latitude 60°S. were constituted as a separate British colony (see BRITISH ANTARCTIC TERRITORY). South Georgia (1961 pop., 521) is the center for the Antarctic whaling industry, which produces most of the world's whale oil (337,900 tons in 1961–62).

FALLOUT, Radioactive. See ATOMIC ENERGY and the Index entry, *Radioactivity*.

FAMILY DATA. See Index entry, *Families*.

FANFANI, Amintore. See biographical sketch under ITALY.

FAR EAST

One of the most significant themes in the Far East in 1962 was provided by the problems, policies, ambitions, and aggressions of Communist China. This was not a surprising fact, but rather one inherent and inescapable, having regard to the enormous preponderance in both population and area of China within the region, and to its central location.

Chinese Problems and Policies.—China might and did constitute a military threat to her neighbors, but her economy certainly could not be said to provide any convincing example of the professed merits of communism. At the three-week meeting of the National People's Congress in Peking in April 1962, China's present rulers came as close as they dared to a public admission of failure. The grandiose claims and plans of the economic "great leap forward" of 1958 and 1959 are for the moment a thing of the past. More modest plans for the future reversed the old policy of giving a priority to heavy industry, and looked instead to a "balance" which would seek to build up agriculture as a base before again aiming at industrial expansion.

The sheer difficulty of feeding the Chinese population undoubtedly contributed to the fact that birth control became respectable again in the summer of 1962, thus reverting to the earlier policy which prevailed from 1954 until 1958, before Mao Tse-tung proclaimed that China's enormous and growing population was its greatest asset.

The formidable internal difficulties of the Chinese Communists, however, seemed to do little to make them better neighbors to other nations, or better partners to the Soviet Union. Indeed,

FAR EAST

Major developments in the Far East in 1962 included the Chinese invasion of India, continuation of the guerrilla warfare in South Vietnam, political instability in Laos, and the transfer of West New Guinea's administration from the Netherlands to the United Nations, pending Indonesia's assuming control in 1963.

AMERICANA MAP BY DONALD T. PITCHER

the fact that the Communist regime in China managed to survive its economic disasters without any significant help at all from the Soviet Union has left the Chinese leaders with a feeling of grim resentment toward their allies. This was the interpretation that experts gave to a series of documents which became available in October 1962. The incipient cleavage with the Soviet Union in matters of world policy, which has been noticeable for several years, is thus deepening and becoming more absolute. The Chinese seem more than ever likely to follow a "hard" line in foreign policy, in contrast to the recent Soviet argument that economic tasks must take precedence over political tasks. In a speech on September 30, Chou En-lai declared that nothing would cause China to alter its "just stand" in international affairs, presumably a reaffirmation of readiness to wage war. The speech was made at a celebration of the 13th anniversary of the Chinese Communist victory, which no Soviet official of any importance attended.

China-India Hostilities.—It was Chinese policy that led to the only eruption of open war in the region during the year (apart, that is, from continuing guerrilla struggles). For some years there had been frontier clashes in the highly mountainous regions that constitute the 1,600-mile-long frontier of India and China. These had occurred both at the western end of the border (in Ladakh, a part of Indian-held Kashmir) and at the eastern end, in the North-East Frontier Agency. In the latter, the frontier is the McMahon Line, fixed by a British negotiator in 1914, but repudiated since then by Chinese governments. In October 1962, long-continued but minor Chinese incursions across the Indian frontier gave way in both places to something much larger and more dangerously aggressive, as Chinese troops beat back Indian resistance and advanced fairly considerable distances into Indian territory. An ambiguous cease-fire came into being on Chinese initiative at the beginning of December.

Thus was demonstrated the total bankruptcy of India's foreign policy toward China, including the great pretense to have discovered in the *Pancha Sila,* or Five Principles of Coexistence, new foundations for foreign policy superior to any traditionally known. Over the past decade and a half, India had, in practice, behaved much like any other state. When it felt strong enough to act with hope of success, it had done so; when afraid to oppose a powerful potential foe, it had found specious reasons for a policy of appeasement; but —as had happened before in analogous situations —in the end it was forced to defend itself.

The situation was deadly serious for India, and an embarrassing one for Prime Minister Nehru and his defense minister, V. K. Krishna Menon (whose will to oppose China had always been in doubt, and who was first downgraded to defense production minister on October 31 and then dismissed). It was scarcely less embarrassing to the USSR, who saw her Communist partner embroiled in a frontier war with her neutralist friend. So far as China was concerned, the rationale of the undertaking was obscure. It was difficult to believe that China wanted to rule any large area of India, considering her problems at home, and there was speculation that the move was intended to divert attention from the home front, or to gain control of the south slope of the Himalayas to facilitate some future advance.

Pakistan was a *tertius gaudens* in the China-India fighting. She had her own frontier troubles with India, and claimed repeatedly that Indian troops had crossed the frontier in the Chittagong hill tracts (East Pakistan). Again, in the course of 1962, negotiations between China and Pakistan for a definitive demarcation of the frontier between Sinkiang-Vigur and that part of Kashmir held by Pakistan seemed to be going well. India, arguing that the whole of Kashmir is Indian national territory, regards such negotiations as illegal, and repudiates in advance any decision that may be reached. Western military aid to India caused a serious reconsideration in Pakistan of her hitherto consistently pro-Western policy.

Instability of Indochina.—The Communist threat to Indochina (using this rather ambiguous term to include the five states of Thailand, Laos, North Vietnam, South Vietnam, and Cambodia) remained a matter of intense concern to the United States, and to a lesser degree to all the rest of the free world. The threat came mostly in the form of guerrilla infiltration. The guerrillas were not all Chinese, but were armed and organized in China, and slipped across the unmarked borders from Szemao in China, or from North Vietnam. Large parts of Ngo Dinh Diem's South Vietnam were held, or terrorized, by Communists.

Since October 1961 the United States has been determined to protect South Vietnam at all costs, has poured in equipment, and has also put in some 8,000 troops under Gen. Paul D. Harkins to train and stiffen the South Vietnamese army. Some success attended these efforts in 1962, but the Communist Viet Cong foe is elusive, and quick results are not to be expected.

The concomitant of these serious efforts to hold South Vietnam was the fact that Laos was not expected to do more than remain shakily neutral, and might even be completely lost to the West. A treaty signed by 14 states at Geneva on July 23 brought to an end more than a year of negotiations and supposedly established Laotian independence and neutrality. It provided, among other things, for the withdrawal of all foreign troops after 75 days, but in the late fall the scanty information available raised reasonable doubt as to whether the Communists had in fact complied. Equally doubtful was the question of whether there was in being a single Laotian government.

U.S. Marines landed in Thailand in May and stayed there until August, when the Communist threat from neighboring Laos seemed to have diminished.

Minor Role of SEATO.—The Southeast Asia Treaty Organization (created in 1955 by the United States, Britain, France, Australia, New Zealand, the Philippines, Pakistan, and Thailand to establish the security of the area) has more and more retreated into the background of events. A group from the House Foreign Affairs Committee which toured the area in 1961 commented justly in its report (issued May 27, 1962) that SEATO "offers no security" to the nations of Southeast Asia. On July 16, President Macapagal (Philippines) advocated a reform of SEATO which would obviate the need for unanimous approval before action, and Premier Sarit Thanarat (Thailand), speaking on the eighth anniversary of the signing of the treaty (September 8), also urged the strengthening of SEATO.

Animosities and Ambitions in the Area.—One melancholy truth which events on the contemporary Far Eastern scene underlined repeatedly was that the withdrawal of Western imperialism from the area, now virtually complete, was far from meaning that national conflicts, ambitions, and rivalries would cease. The ambitions and interests of Western powers in the area merely have been replaced by indigenous rivalries and imperialisms, and the standard of international conduct is no whit higher than it was before. Perhaps the

first clear demonstration of this might be said to have occurred in 1947, in regard to Kashmir, but another striking example took place just before the end of 1961 (December 18–19) in the Indian seizure of Goa and other Portuguese territories.

In the earlier part of 1962, it appeared that Indonesian claims to Netherlands New Guinea might lead to war, but instead an agreement was made which transferred the area (now known as West New Guinea) from the Netherlands to United Nations custody on October 1—an interim stage—and then to Indonesia on May 1, 1963. The backward people of West New Guinea are quite distinct ethnically and in culture from the peoples of Indonesia. There was no case for handing them over to Indonesia beyond the fact that President Sukarno was prepared to create a good deal of tension, and possibly even fight, if he was not given the area.

No attempt was made in advance to ascertain whether the inhabitants wished to live under Indonesian rule. By any rational standards it was merely a case of transferring a dependent people from one imperial rule to another. Their new rulers are unlikely to be able to do a great deal for them in view of the fact that economic activity in Indonesia at the moment is estimated to be declining by 10 per cent per year.

Among other instances of animosities and imperialist designs within the area may be mentioned the historic enmity between Cambodia and both her neighbors Thailand and South Vietnam, which erupted more than once in 1962—complicated by the fact that Cambodia is neutral while the other two are Western allies. In the same general category falls the claim made in 1962 by the Philippines to annex (British) North Borneo. The general reaction at first was that this whole demand was absurd; but in view of the fate of West New Guinea, no territorial claim (especially if made by an independent nonwhite state at the expense of a colonial area) can be assumed to be completely in vain.

Some Grounds for Optimism.—In several countries of the area, although there was no spectacular deterioration, developments were on the whole unfavorable. South Korea became a little more authoritarian, Burma a little more anti-Western, and Ceylon a little more financially incompetent.

On the other side of the ledger, the new constitution of Pakistan, replacing that abrogated in 1958, and providing for a somewhat qualified democracy, entered into force on March 1, and was generally welcomed. Noteworthy also was the British plan to extend the independent Federation of Malaya by incorporating within it the neighboring insular areas (at present under British rule) of Brunei, Sarawak, and North Borneo, as well as the semi-independent city of Singapore. The new federation would be known as Malaysia. If all goes well it will come into existence in 1963, and will create a stable and anti-Communist government at the southeast tip of Asia. However, the revolt which broke out in Brunei on December 8 brought into question the feasibility of the plan.

(See also FOREIGN POLICY OF THE UNITED STATES; and separate articles on the Far Eastern countries.)

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FARM CREDIT SYSTEM. See FARM SERVICES.

FARM SERVICES

Mounting capital needs of United States farmers during 1962 brought increased demands on the various federal financial services which are available in addition to regular commercial credit. These special services include loans to farmers and their marketing, purchasing, and service cooperatives from the Farm Credit System; credit provided by the Farmers Home Administration

UPI

Indian students in New Delhi demonstrate on November 1 to protest violations of India's border by Communist Chinese.

and accompanied by technical farm-management advice; and long-term loans to rural electric cooperatives and telephone companies and cooperatives to expand and improve electric and telephone service in rural areas. Besides these special credit facilities, the Federal Crop Insurance Corporation assists farmers in many counties by all-risk insurance against crop losses caused by drought, flood, insects, and plant disease.

Farm Credit System.—On June 30, 1962, farmers and their marketing, purchasing, and service cooperatives were using a record $5.8 billion in loans from the Farm Credit System supervised by the Farm Credit Administration. This was an increase of $528 million, or 10.1%, over the previous year. The Farm Credit System loaned a record $4,763,822,000 to farmers and their cooperatives in the fiscal year 1962; this sum was $460 million, or 10.7%, more than in the fiscal year 1961.

The Farm Credit System is composed of more than 800 national farm loan associations and 12 federal banks—a completely farmer-owned farm mortgage credit system; 487 production credit associations and 12 federal intermediate credit banks—a system of operating credit for farmers; and 13 banks for cooperatives, which provide credit for farmers' cooperatives.

As of June 30, 1962, farmers and their cooperatives had increased their capital stock ownership in farm credit banks and associations to $447 million, or $46 million more than a year earlier. Since the end of the fiscal year 1957, capital stock owned by farmers and their cooperatives in the credit system has increased by $207 million.

The 12 federal land banks, as of June 30, 1962, had 381,000 loans to farmers outstanding,

India's Defense Minister Krishna Menon (left), Communist China's Foreign Minister Chen Yi (center), and Soviet Foreign Minister Gromyko drink toast at reception in Geneva, July 22, during meeting on Laos. Krishna Menon, an advocate of friendship with China, was dismissed in November.

WIDE WORLD

totaling $3 billion. This was 0.3% more in number and 8.8% more in amount than a year earlier.

Farmers' need for operating credit reached another new peak in 1962. The 487 production credit associations made loans totaling $3 billion during the fiscal year, an increase of 10.3% over the fiscal year 1961. As of June 30, 1962, 298,679 members of these associations had loans outstanding of $2 billion—a new record and an increase of 0.9% in members and 10% in amount over the preceding year. Membership in the associations totaled 524,752, an increase of 0.8% during the fiscal year. Farmer members owned all the stock in 475 associations, compared with 470 at the end of fiscal year 1961.

The 12 federal intermediate credit banks extended credit totaling $3.9 billion during the 1962 fiscal year, an increase of $346 million, or 9.8%, over 1961. Of this amount, $3.6 billion was extended to production credit associations.

Farmers' cooperatives borrowed $860 million from the 13 banks for cooperatives during the fiscal year 1962, or 13.6% more than in fiscal 1961. The number of loans, 2,057, was 3.5% more than in the previous year. The banks had $692 million in loans outstanding to 2,817 cooperatives on June 30, 1962, an increase of 16.5% in amount and 0.8% in number compared with the year before.

Rural Electrification Administration.—Since the start of REA's electric program in 1935, about $4.6 billion in long-term loans have enabled rural electric cooperatives and other local organizations to bring electric power to millions of rural homes, farmsteads, schools, churches, and commercial establishments. Loans amounting to $261.4 million were approved by the REA during the fiscal year 1962, $13.1 million less than in the previous year. As of June 30, 1962, electric loans had been made to 1,094 rural service organizations. These included 991 rural electric cooperatives, owned and operated by the members they served. REA borrowers are serving more than 5 million farms and other establishments in 46 states and Puerto Rico, serving about 20 million persons. Systems financed by REA serve more than half the electrified farms in the United States. By June 30, 1962, REA borrowers had repaid more than $1 billion in principal and more than $500 million in interest to the federal government.

The average monthly consumption of electricity on lines of REA borrowers increased to 489 kw.-hr. in the calendar year 1961, an increase of 4.7% over 1960 and about 5.5% more than in 1955.

During the fiscal year 1962, REA made the highest percentage of generation and transmission loans for any year of the REA program. These loans authorized additional generating capacity of 644,000 kw., bringing to 3.5 million kw. the total energy production capacity provided through REA financing.

By the end of the fiscal year 1962, about 1.3 million subscribers were using modern dial telephone service provided by REA-financed facilities. About 70% of United States farms had telephone service, compared with 38% when the program began in 1949.

During the fiscal year 1962, REA made telephone loans amounting to $92.2 million. Loans were made to 43 new borrowers, bringing the number of REA-financed telephone systems to 790. Of these, 576 are commercial companies and 214 are subscriber-owned cooperatives. The telephone program now reaches 1,750,000 subscribers, or more than 6½ million people, in 46 states and the Virgin Islands. As of June 30, 1962, telephone borrowers had paid REA over $81 million in principal and interest.

Farmers Home Administration.—Supervised agricultural credit services—credit accompanied by technical farm management advice—provided by the Farmers Home Administration (FHA) in 1962 was administered through 1,427 county offices, serving agricultural areas throughout the United States, Puerto Rico, and the Virgin Islands.

FHA made and insured loans totaling a record $637 million during the fiscal year 1962, 61% more than the previous record of $395.7 million in the fiscal year 1961. Principal and interest collecting during fiscal 1962 amounted to $336 million, compared with about $307 million in each of the two previous years. During the year, 205,000 families either received loans or used credit advanced in previous years, 12% more than in fiscal 1961. Approximately 22,000 borrowers repaid their loans in full during the year.

Operating loans totaling $275,360,000 were made to 74,741 farmers in the fiscal year 1962. Emergency loans totaling $63,340,000 were made to 20,891 farmers, enabling them to resume normal farming operations in the wake of droughts, floods, and other disasters.

Loans amounting to $96,428,000 for construction and repair of farm and rural houses and other essential farm buildings were made to 11,349 borrowers. Farm ownership loans for $183,008,000 were extended to 11,788 farmers to improve, enlarge and buy family farms, and to refinance debts. Of this amount, $143,008,000 was advanced through the insured loan program.

Water-development and soil-conservation loans totaling $15,878,000 were advanced to 953 farmers and 100 associations, serving about 5,400 persons. These loans are used mainly to develop irrigation and domestic water supply systems. Watershed-protection and flood-prevention loans totaling $3,332,000 were made to 21 organizations to protect and develop land and water resources in small watersheds during the fiscal year 1962.

During the fiscal year 1962 the insured real estate loan program was improved to encourage further participation of private lenders, and a new forestry loan program was inaugurated to stimulate better land use and timber production on suitable farm lands.

Federal Crop Insurance Corporation.—The corporation's all-risk insurance on money spent to produce crops was expanded further in 1962. New insurance plans for peas, potatoes, and peanuts were developed and placed in operation, and plans were made to add apples, cherries, and canning tomatoes to crops eligible for insurance in 1963.

The service potential was also expanded for the 13 crops previously insured—wheat, corn, cotton, soybeans, tobacco, rice, barley, oats, flax, citrus, grain sorghum, dry edible beans, and peaches. Action was taken by the corporation to extend insurance operations into 100 additional counties in 1962, the maximum expansion authorized by Congress for any crop year. This brought the number of counties in which federal crop insurance is available to 996. A further extension into 100 new counties was planned for the 1963 crop year. Contracts in force brought in premium income in 1962 estimated at about $22,500,000 for $350,000,000 of protection provided.

(See also AGRICULTURAL RESEARCH SERVICE.)

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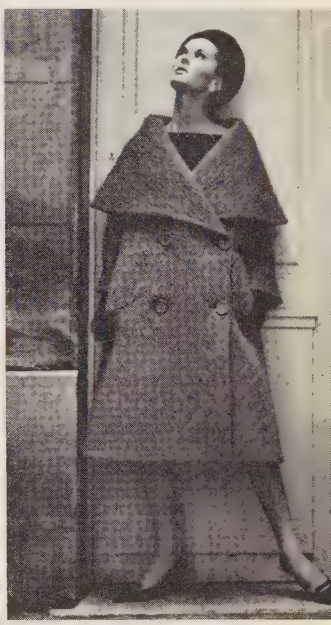
FARM STATISTICS. See AGRICULTURE; FARM SERVICES; and the Index entry, *Farm.*

FARMERS HOME ADMINISTRATION. See FARM SERVICES.

FASHIONS

Fashion in 1962 was notable for the wide range of color, silhouette, and fabric presented by American designers. For every type, from the avant-garde to the ultrafashionable, a new free movement and femininity were expressed.

Consciousness of the figure was noticeable; clothes were molded and frankly clinging. Spring ushered in a little-girl look that was daringly provocative. Waists were tiny, sleeves long and tight, hiplines curved, and necklines plunging. Waistlines, the main theme in all collections, were high and gentle, sashed lightly, or cinched with wide belts. Jackets were short and clipped, while skirts whirled beneath in full circles, extravagantly gathered, or gored to near circles, minimizing the center of the figure. Deep cowl necklines, ruffled edges, fringes, and welt seamings were also featured.



OHRBACH'S OF NEW YORK; ANNE FOGARTY; OHRBACH'S OF NEW YORK

(*Left*) Dress with slashed neckline and folded skirt, from a design by St. Laurent, and (*right*) "A"-line coat with large cape collar, adapted from Simonetta-Fabiani, are American copies of European fashions. (*Center*) A gold-embroidered skirt created by Anne Fogarty, with a double-knit molded leotard top, illustrates the trend to separates for at-home evening wear.

By fall, three silhouettes emerged: a skinned-down, sleek, and tailored look; a bloused and wrapped look; and a new natural outline, achieved by a bias cut. Bloused or unbelted, the bias cut looked soft and ample, often constructed in an "A" line. Skirts were of every shape—slim, gathered, paneled, pleated, gored, flared, draped, circular, and yoked—and were even worn over other skirts. Interest was on the silhouette, with little trim except fur, self-detail, and braid. Lines were clean, although cut was sometimes complex. The dolman sleeve of spring was replaced by tailored or peaked set-in sleeves. Coats and jackets had straight, rather squared backs, with a fitted line at the front.

Color.—Like silhouette, color was feminine and mellow. Sugary pinks, salad greens, yellows, and candy colors were popular. For daytime wear, mellow neutrals were worn with flashes of blue, from marine to ice. Red, white, and blue punctuated combinations for morning, afternoon, and evening wear. Prints appeared predominantly in bold black and white and in tones of green. Silk prints appeared throughout the year, in "pretty" rather than bizarre designs. Resist prints were also popular. Black, particularly in silk, returned as the leading basic. Fall prints were rich, vivid, and strange; Picasso blues and greens, reds and oranges, odd browns, and black and white appeared in every fabric and most types of costume. Cashmere wool colors were bright, and spring and summer colors tinted winter-weight town-and-country clothes. Prominent were such out-of-season colors as pale green, sky blue, white, oyster, cream, dandelion yellow, and peppermint pink.

Fabrics.—American designers used fabric in new, exciting, and extravagant ways. Materials ranged from flat formal surfaces to lush piled yarns in a wild array of colors and patterns. Coats and suits for spring featured nubby textures, along with a variety of smooth-faced wools. Silk and wool Alaskine, usually a dressy fabric, was a daytime favorite. Four-ply black silk became as basic as black crepe or sheer wool for round-the-clock wear. The use of two patterns in one ensemble was featured in many collections; plaids were shown with prints and polka dots with stripes. The same pattern was often superimposed on printed silk chiffon over printed silk.

Cotton, wool, and synthetic knits, both domestic and imported, were available in every fashion category and price range. Synthetic stretch fabrics portended a new era in knit dresses and sportswear. Fall flannels and printed wools entered a growing circle of evening fabrics, designed in short and long lengths in evening and cocktail dresses, coats, and suits. A bulky look, light as air, flourished the year round, in mohairs, tweeds, brushed wools, bouclés, and puffy silk matelassé. Wide-ribbed silk ottomans, ribbonzine lace, fringed silk faille, ribbon knits, rich embroideries, and many other fabrics created surface values that became more important than texture. Velvet made a strong comeback in fall. Thick, lacy mohair ap-

peared in bare top dresses. Brocades, satins, and metallic knit clothes, luminous rather than shiny, were often dramatically combined with tweed or flannel. Plaids, checks, paisleys, and myriad gigantic flowers created the most patterned fall and winter fashions in years.

Sportswear.—In 1962, sportswear attained new influence and diversity. A new fashion category was at-home clothes, from lounging garments to extravagant boutique separates. The two-piece look of skirt and top flourished in both casual clothes and evening wear. Even sweaters were appropriate for evening dress when combined with long, luxurious skirts. Shirts were designed in lush, evening fabrics, as were slacks. Suede was used in every kind of coordinate, and stretch slacks and tops made their appearance in moderate priced markets. The short-short decreased in popularity, as the Jamaica length became popular. The bikini bathing suit was more popular than ever before, as was the one-piece bathing suit.

Accessories.—In 1962, accessories were as colorful as other apparel. This was especially true of shoes. The trend started in spring with a complete range of rainbow colors in patent, kid, suede, and fabric. Fall shoes featured lizard and snake skins in every color, including gold and silver. Heels were generally low and stacked, although the tiny slim heel of the previous year was still seen. There was a bare look in many shoes, with sides and backs exposed, and there was a new rounded shape to the toe. Boots, from knee to ankle length, made fashion news. Most were lined for warmth, and many were fitted and heeled like a shoe. In bright red, shiny black, or white, and in fur, zebra, pony, and lizard, they were as colorful as shoes.

Gloves tended most often to be in six- or eight-button lengths. Bags were diminutive, as compared with previous seasons, and more compact and trim. Colorful snake and lizard bags were designed to match shoes. Tapestry prints and bright colored kid were available at every price.

In jewelry, too, color was promoted. Beads hung around the neck in exciting color combinations and huge stones or long, narrow strands fell from the ears. The tasseled sautoir, with matching earrings, became fashionable, along with bangles, in many colors for summer and in gold and silver for fall and winter.

Hats were larger, and hair was piled higher. Big brimmed leghorns, bouffant berets, wide-brimmed rollers, and tall, deep cloches were important throughout the year.

Men's Fashion.—The trim, easy two-button suit was the important item in men's fashions for 1962. The look established by President Kennedy was as immediately popular as the Ivy League three-button suit was 10 years earlier. The two-button suit allowed more shoulder, more lapel, and more chest room, and exposed more shirt and tie. There was also a small, growing interest in the one-button suit jacket.

Classic suiting fabrics continued to be featured, such as worsteds, cotton and synthetic cords, sharkskins, mohairs, and iridescent blends. Camel became important for fall, while shetlands and rugged tweeds dominated the leisure-wear market. Gray flannel, out of fashion for five years, returned in more durable blends. The ski-look in country clothes was as outstanding in men's sportswear as in women's. Fur-trimmed collars and fur-lined semicasual coats, as well as suede and suede-trimmed jackets, were also popular in leisure clothes. Odd jackets continued in casual wear, with more prominent patterns.

Brown for town made a surprising comeback, often with subtle stripings of black, blue, or green. High-rising slip-on shoes with square toes and new wing tips were shown for casual as well as evening wear. Stripes were popular in shirts and ties. Hats with preshaped crowns or triangular convex forms and semicasual town hats in silk and velour made fashion news.

Awards.—The 20th annual Coty Fashion Critics' Award was presented on Sept. 27, 1962, to Donald Brooks, whose costumes for *No Strings* had won a New York Drama Critics Award. Halston, a milliner for Bergdorf Goodman, won a special award.

ANNE FOGARTY,
Fashion Designer.

FATS AND OILS

World production of fats and oils and oil-bearing materials apparently reached a new high in 1962, continuing the upward trend of the past decade. A slight decline in soybean production was more than balanced by record outputs of peanuts and cottonseed and the largest flaxseed output since 1956.

The United States, easily the largest producer and exporter of fats and oils, had its second biggest soybean crop—669 million bushels. This was 3% below the 1961 record of 693 million bushels, but 60% above average. American flaxseed production of 31.6 million bushels was almost 10 million bushels (45%) more than the drought-affected crop of 1961, but was still about 10% below average. Cottonseed output of about 6.1 million tons was 2% larger than in 1961, as well as the biggest crop since 1953. Peanut production was 1,786 million pounds, compared with 1,743 million in 1961 and the average of 1,538 million.

Lard output for the year ended Sept. 30, 1962, was estimated at 2,525 million pounds, up about 25 million from the preceding year. Estimated production of fats and oils during 1962 exceeded 18 billion pounds for the first time.

U. S. PRODUCTION OF FATS, OILS, AND OILSEEDS
(Calendar years; amounts in billion pounds)

	1952–54 average	1960	1961	1962 est.
Soybean oil	2.8	6.0	5.9	6.5
Cottonseed oil	1.9	1.8	1.8	1.9
Lard	2.5	2.6	2.5	2.5
Butter	1.2	1.2	1.3	1.3
Other food fats and oils	0.6	0.9	1.0	1.0
Tallow and grease	2.6	3.5	3.6	3.6
Fish and marine oil	0.1	0.2	0.2	0.2
Other inedible oils	0.7	0.5	0.5	0.5
Tall oil	0.3	0.8	0.8	0.9
Total	12.8	17.5	17.6	18.4

World output of soybeans for 1962 was estimated at about 1.1 billion bushels, 2% off the 1961 peak, but one fifth more than the 1955–59 average. Most of the decline was in the United States, with less significant decreases in Japan and probably in Communist China. Canada had a near record crop, and production increased somewhat in Brazil, Taiwan, and Indonesia.

World production of peanuts was forecast at a record 15.8 million short tons, 3% more than in 1961, and one sixth above 1955–59. A sharp increase in Argentina and a substantial gain in Communist China more than offset declining African production.

World flaxseed production was estimated at 133 million bushels, 14% above the low outturn of 1961 and 17% above average. World cottonseed production was estimated at a record 24.1 million tons, with the bulk of the increase provided by Egypt, Communist China, and the United States.

1962 PRODUCTION OF MAJOR OIL CROPS

	Soybeans	Flaxseed	Peanuts	Cottonseed
	(1,000 bushels)		(1,000 tons)	
United States	668,830	31,603	893	6,121
Canada	6,696	15,685	...	...
Mexico	...	...	...	984
China	330,000	...	2,600	3,920
India	...	15,641	5,200	2,352
Africa	...	...	4,509	2,235
Brazil	10,288	...	530	1,248
Argentina	...	35,000	477	...
World	1,080,950	132,920	15,831	24,115

World exports of fats and oils in 1962 were a record high of almost 9.3 million tons. The United States accounted for one third of these exports, 3.1 million tons.

C. J. ENZLER,
Information Specialist, Office of Information, U.S. Department of Agriculture.

FAULKNER, William Harrison

U.S. author: b. New Albany, Miss., Sept. 25, 1897; d. Oxford, Miss., July 6, 1962.

"I believe that man will not merely endure: he will prevail. He is immortal, not because he alone among creatures has an inexhaustible voice,

but because he has a soul, a spirit capable of compassion and sacrifice and endurance. The poet's, the writer's, duty is to write about these things. It is his privilege to help man endure by lifting his heart, by reminding him of the courage and honor and hope and pride and compassion and pity and sacrifice which have been the glory of his past."

With these words, delivered on Dec. 10, 1950, as part of his Nobel Prize acceptance speech, William Faulkner, one of the great American novelists and, surely, the greatest 20th-century writer from the South, summarized his philosophy as man and artist. This philosophy is an apparent contradiction of Faulkner's creative purpose as novelist and short-story writer, for he portrayed—even, seemingly, was obsessed with—the evil in man's nature and the tragedy that results from that evil. However, as Granville Hicks wrote, Faulkner's work "contains much good as well as much evil, and we can begin to see now that the good predominates." Faulkner, in illuminating the depths of the human soul, casts light on the intensity and variety of man's emotions and the genius of his vision, as well as on his prodigal nature.

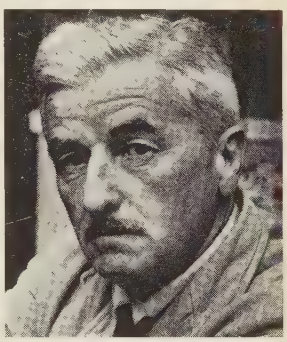
William Faulkner (originally, Falkner) was descended from the antebellum land-owning gentry of Mississippi. In childhood he moved with his family from New Albany to Oxford, the seat of the state university. After attending public schools, but not graduating from high school, he served during World War I in the British Royal Air Force. Returning to Oxford, where he spent most of his later life, he was a student at the university (1919–21) and university postmaster (1922–24).

In 1924 he brought out his first book, a volume of poetry entitled *The Marble Faun*. Moving then to New Orleans to work as a journalist, he met Sherwood Anderson, whom he credited as being "the father of all my works." Anderson assisted him in publishing his first novel, *Soldiers' Pay* (1925), which was shortly followed by others, including *The Sound and the Fury* (1929) and *As I Lay Dying* (1931). These novels, while greatly admired by a discerning group of readers, attracted little attention, and it was not until the publication of *Sanctuary* (1931) that Faulkner gained a measure of repute. According to its author, *Sanctuary*, a sensational tale of rape, violence, and degeneracy in the Deep South, was written only to make money.

Faulkner, however, was never a popular novelist, and, although he found a quickening interest in Europe, he was largely neglected by the American reading public. Increased recognition in the United States ("the Faulkner revival") followed the appearance in 1946 of *The Portable Faulkner*, a representative selection of his work, edited by Malcolm Cowley. He became a national figure when he won the 1949 Nobel Prize for "his powerful and artistically independent contribution to the American novel," and the 1954 Pulitzer Prize for *A Fable*, an allegorical treatment of the life, particularly the Passion, of Christ.

A Fable, as well as several earlier works, marked a departure from Faulkner's usual subject matter. By far the greater portion of his fiction is devoted to the region of Mississippi where he and his forebears lived and died. (In many of his books, beginning with *Sartoris*, published in 1929, Oxford is fictionalized as the town of Jefferson; Lafayette County, of which Oxford is the county seat, as Yoknapatawpha County.) Steeped in the tradition and heritage of this region, with an intimate knowledge of its denizens, rich and poor, white and Negro, he portrayed it in tragic, sometimes tragicomic, terms. In explaining his preoccupation with his home territory, Faulkner said (as quoted by Malcolm Cowley in *Writers at Work*, 1958), ". . . I discovered that my own little postage stamp of native soil was worth writing about and that I would never live long enough to exhaust it, and that by sublimating the actual into the apocryphal I would have complete liberty to use whatever talent I might have to its absolute top. It opened up a gold mine of other people, so I created a cosmos of my own. I can move these people around like God, not only in space but in time too." For Faulkner, Mississippi was the microcosm of the whole South, cursed by the scourge of antebellum slavery and left to rot in the aftermath of defeat; and for him the tragedy of the South was an extension and variation of the tragedy of all mankind.

Two major themes are threaded through Faulkner's fiction: first, the dissolution of the aristocracy, as personified by the Compson and Sartoris families; second, the rise of a materialistic, commercial oligarchy, as personified by the destructive, opportunistic Snopes clan. Feeding on the carrion of outworn values, lost pride, and degenerate moral-



William Faulkner (1897–1962)

WIDE WORLD

ity, the Snopeses rise to dominance, substituting their jackal philosophy for the moribund idealism of the old order. This subject is extensively treated in *The Hamlet* (1940), *The Town* (1957), and *The Mansion* (1959), which comprise a monumental trilogy that traces the Snopes family from 1908 through World War II.

Faulkner has been taken to task for his concentration on the morbid, grotesque, and depraved, on spiritual, mental, and physical deformity, on violence and death. He has also received critical disapproval for his frequently impenetrable, labyrinthine prose, liberally laden with interior monologues and sometimes written with deliberate disregard for place-time continuity. Nevertheless, his genius and the power of his insight cannot be controverted, and he stands as a major figure in modern literature, ranking with Ernest Hemingway as one of the greatest American writers of fiction of the post-World War I generation.

In addition to works cited, chief publications include *Mosquitoes* (1927), *Idyll in the Desert* (stories; 1931), *These Thirteen* (stories; 1931), *Light in August* (1932), *Absalom, Absalom!* (1936), *The Unvanquished* (1938), *The Wild Palms* (1939), *Go Down Moses, and Other Stories* (1942), *Intruder in the Dust* (1948), *Knight's Gambit* (stories; 1949), *Collected Stories of William Faulkner* (1950), *Requiem for a Nun* (1951), *Big Woods* (1955), *Three Famous Short Novels* (*Spotted Horses, Old Man,* and *The Bear;* 1958), *New Orleans Sketches* (1958), *Selected Short Stories* (1961), and *The Reivers* (1962).

N. H. P.

FEDERAL AVIATION AGENCY. See AERONAUTICS.

FEDERAL BUREAU OF INVESTIGATION

The Federal Bureau of Investigation (FBI), established in 1908 as the investigative arm of the

U.S. Department of Justice, is charged with the investigation of violations of certain specific federal laws and the collection of evidence in such cases. As a fact-gathering and fact-reporting agency, the FBI neither evaluates the results of its investigations nor makes prosecutive recommendations. In 1962, the FBI had investigative jurisdiction over some 165 federal investigative matters, encompassing both general investigations and domestic intelligence operations. Such jurisdiction is derived from congressional enactments, executive orders, and rulings of the attorney general. In addition to investigative work, the FBI engages in cooperative functions designed to be of assistance to local, county, and state law enforcement agencies and to other agencies of the federal government.

Headquartered in Washington, D.C., the FBI has 55 field offices located in major cities throughout the United States and in Puerto Rico. Training facilities are located in Washington and on the U.S. Marine Corps Base at Quantico, Va.

Internal Security.—The FBI's work in the internal security field is nationwide. It embraces investigative jurisdiction over espionage, sabotage, treason, subversive activities, violations of the Atomic Energy Act, and related domestic intelligence functions.

During the course of the 1962 fiscal year, two men were convicted of espionage activities on behalf of the Soviet-bloc powers. In addition, intelligence and counterintelligence information disseminated by the FBI enabled the Department of State to take action against officials of the Soviet Union and its satellite states who engaged in activities beyond the scope of their duties in the United States.

Also during the year, as a result of the open defiance by the Communist Party, U.S.A., of the Supreme Court's ruling that it must register with the attorney general as an agent of the Soviet Union, indictments were returned against the party as an organization and against two of its top leaders for failure to comply with the Internal Security Act of 1950. (See also COMMUNISM.)

Crime Investigation.—Increases were recorded in all major phases of FBI accomplishments during the 1962 fiscal year. Fines, savings, and recoveries in FBI cases rose to an all-time high of $174,561,341. This sum represents a return of $1.37 for every dollar appropriated for the FBI in the year ending June 30, 1962. Included in the total savings and recoveries were 18,921 stolen motor vehicles recovered in FBI cases.

Convictions in cases investigated by the FBI totaled 12,635, the largest such total for any peacetime fiscal year. Convictions were recorded against 96.9% of all persons brought to trial; of these, 92.6% involved pleas of guilty. Prison sentences for a total of 37,100 years, plus six life sentences, were assessed, and fines amounting to $1,796,365 resulted from these convictions. In the fiscal year, 1,878 violators of the Fugitive Felon Act were apprehended. In all types of FBI cases, 11,163 fugitives were located, 1,228 more than in the preceding year. (See also CRIME.)

Cooperative Services.—The FBI continued its policy of providing cost-free cooperative services designed to assist local, county, and state law enforcement agencies and other agencies of the federal government in the more effective performance of their duties. During the 1962 fiscal year, the FBI Laboratory received 191,253 specimens of evidence requiring 231,456 scientific examinations.

Each working day throughout the fiscal year, the FBI Identification Division received an average of more than 23,000 fingerprint cards for processing—a total of 5,832,677 for the fiscal year. Fugitives identified through fingerprint comparisons totaled 17,568. At the close of the fiscal year, Identification Division files contained a total of 163,690,807 sets of fingerprints, representing an estimated 76,744,859 persons. FBI Disaster Squad fingerprint experts assisted in identifying victims at the scene of eight air crashes.

The FBI, upon request, participated in 3,666 local and regional police training schools attended by 101,865 officers in the 1962 fiscal year. Two sessions of the FBI National Academy were held in Washington, D.C., in the same period.

Over 100,000 items of criminal intelligence information, including data received from its confidential informants, were made available to other law enforcement agencies during the fiscal year 1962.

Other cooperative FBI services include the publication and distribution of pamphlets, charts, posters, and other printed materials dealing with the crime problem and law enforcement. The best known and most widely circulated of these publications are the *FBI Law Enforcement Bulletin* and the *Uniform Crime Reports* bulletin, both issued on a regular basis.

J. EDGAR HOOVER,
Director, Federal Bureau of Investigation.

FEDERAL COMMUNICATIONS COMMISSION

Established by the Communications Act of 1934, the Federal Communications Commission (FCC) regulates all interstate and foreign commerce in broadcasting and wire transmission in the United States. The first experimental active communications satellite—Telstar, launched on July 10, 1962—was operated under the terms of FCC authorizations, as were its associated receiving and transmitting stations in the United States. (See also SPACE FLIGHT.)

During 1962 the FCC also increased its efforts to require rule compliance by commercial broadcasters. For the first time, programming was a major factor in denying two applications for renewal of broadcast stations (four other licenses were either revoked or denied renewal during the fiscal year 1962). An FCC denial of an application for a new frequency modulation (FM) station in Elizabeth, N.J., on the grounds that no efforts had been made to ascertain the programming needs of the community it intended to serve was upheld by the U.S. Court of Appeals for the District of Columbia Circuit on March 29, 1962. In 1962 the FCC concluded taking testimony in an inquiry (in progress since 1959) into television network programming practices. Broadcasters were also warned about advertising practices and proper identification of the sponsors of programs.

Radio (General).—More than 3.7 million authorizations of all kinds had been granted by June 30, 1962. Of these, more than 2.5 million were commercial radio operators' and 230,000 were amateur operators' permits. The number of radio stations in the United States increased to about 955,600.

National Defense.—The CONELRAD (Control of Electromagnetic Radiation) system was altered on April 23, 1962, in accord with a Department of Defense determination that there was no longer need to curb the transmissions of most types of radio stations to prevent their navigational use by enemy airplanes and guided missiles.

International.—A telephone cable to Bermuda was opened during the year, and a similar cable linking the United States and Japan was expected to be completed in 1964. Permission was granted to extend to Panama and Colombia a cable now linking the United States and Jamaica.

Common Carriers.—The FCC continued in 1962 to investigate three new services offered by the Bell System: Telpak (a private-line multitype service), WATS (Wide Area Telephone Service), and WADS (Wide Area Data Service). Modifications in Bell's tariff system were approved, resulting in the transfer of about $45 million in annual revenue from intrastate to interstate operations, reducing intrastate rates in 31 states by $36 million a year.

Broadcast Services.—During the fiscal year 1962 the number of commercial television station authorizations in the United States increased from 650 to 654. The number of translators and boosters rose from 1,700 to 2,500. As of June 30, 1962, there were 548 commercial stations on the air—464 very high frequency (VHF) and 84 ultra high frequency (UHF). Noncommercial educational stations on the air totaled 64, of which 44 were VHF. A law signed by the president on July 10, 1962, required new television sets to be equipped for reception of UHF as well as VHF channels. The change-over date is April 30, 1964. There are 70 UHF channels, and only 12 VHF; the latter 12 carried the largest proportion of television transmissions.

Amplitude modulation (AM) radio station authorizations totaled nearly 3,900 by June 30, 1962; there were more than 3,700 stations on the air. FM station authorizations numbered 1,400, with 1,012 commercial stations and 201 noncommercial stations in operation.

Safety and Special Radio Services.—Some 930,000 radio users in more than 40 categories were licensed by the FCC at the end of the fiscal year 1962. The fastest growing category was the short-range vocal-transmission citizens service, for which almost 100,000 users were licensed during the fiscal year, bringing the total to more than 300,000. As of June 30, 1962, authorized radio stations included: amateur, 237,000; marine, 127,600; aviation, 107,000; industrial, 93,000; public safety, 38,600; and land transportation, 13,300.

Field Engineering and Monitoring.—In addition to its inspections of radio stations and its investigations of interference and other complaints, the FCC in 1962 helped to develop a transmitting antenna to assist direction-finding operations in locating space capsules floating on the sea after re-entering the earth's atmosphere. The commission's field staff also designed and constructed an improved wide-aperture radio direction finder.

(See also PUBLIC UTILITIES; RADIO AND TELEVISION; TELEPHONE.)

GEORGE O. GILLINGHAM,
Chief, Office of Reports and Information, FCC.

FEDERAL CROP INSURANCE. See FARM SERVICES.

FEDERAL DEPOSIT INSURANCE CORPORATION. See BANKING.

FEDERAL HOUSING ADMINISTRATION. See HOUSING.

FEDERAL LAND BANKS. See FARM SERVICES.

FEDERAL POWER COMMISSION

The Federal Power Commission in 1962 adopted major new policies, made extensive staff reorganizations, and streamlined its procedures in a vigorous program to speed up the handling of its workload and to eliminate the backlog of cases which had been accumulating for nearly a decade. In late 1962, membership of the commission was as follows: Joseph C. Swidler, chairman; Lawrence J. O'Connor, Jr., vice chairman; and Howard Morgan, Charles R. Ross, and Harold C. Woodward.

Natural Gas Producer Regulation.—During the year the commission concentrated on its program to establish realistic price ceilings on gas sold from each of the nation's major producing areas. Proceedings to set fair rates for gas produced in the Permian Basin area of southwestern Texas and southeastern New Mexico were well advanced in the late summer of 1962. This case will serve as a model and will expedite future proceedings in other areas. In the fiscal year 1962, producers made 6,597 filings, which included 1,554 rate increases totaling $13,930,309 annually. Of these, 808 increases, amounting to $7,501,816, were suspended. Including the carryovers and the suspensions in 1962, there was a backlog on June 30, 1962, of $164,870,541, of which $159,402,190 was being collected subject to refund pending the commission's determination of the amount to be allowed, and $5,468,351 was still under suspension.

Pipeline Regulation.—The commission issued 79 certificates in the fiscal year 1962, authorizing more than 2,950 miles of gas pipeline and 247,000 compressor horsepower. This brought the total amount of pipeline and compressor horsepower authorized since 1942 to nearly 103,000 miles and 7,021,000 hp. The commission suspended wholesale gas rate increases totaling $24,477,400 during the year, which, added to previously undisposed of increases, left a total of $400,673,600 in suspended pipeline rates requiring action. Action was taken on $123,484,500 in annual rate increases during the year, $1,227,200 being withdrawn, $58,279,800 disallowed, and $63,977,500 accepted. As a result of its program to clear up past rate cases, refunds to consumers ordered by the commission by midyear totaled more than $153,000,000.

Electric Power.—The commission in 1962 initiated a national power survey to formulate an interconnected and coordinated power supply system for the nation for the 1970's and 1980's. The commission also acted on 121 applications relating to hydroelectric projects during the fiscal year ended June 30, 1962, licensing 1,366,545 kw. of new unconstructed capacity. At the end of the year there were 558 licenses outstanding, designed to provide 25,297,517 kw. of ultimate installed capacity. Total installed capacity of utility generating plants on June 30, 1962, was 186,005,596 kw. Industrial generating capacity was 17,878,349 kw. on the same date.

(See PUBLIC UTILITIES.)

JOSEPH C. SWIDLER,
Chairman, Federal Power Commission.

FEDERAL RESERVE SYSTEM. See BANKING.

FEDERAL TRADE COMMISSION

The Federal Trade Commission, charged with keeping competition free and fair, in 1962 had the heaviest workload in its history. Many organizational and procedural changes adopted in 1961 were put into effect in 1962. Of special significance were increased efforts to secure industrywide compliance with the law, as opposed to proceedings against individual respondents. This necessitated a transformation on the part of the commission from a passive, prosecution-conscious view to the more affirmative goal of achieving maximum compliance with the law.

The commission adopted procedures, under the rule-making authority delegated to it by Congress, for the promulgation of trade regulation rules. These rules express the experience and judgment of the commission, and are based on facts of which it has knowledge, from various sources, or within its official notice, concerning the substantive requirements of the statutes it administers.[1] Another innovation was the adoption of procedures to assist businessmen in determining in advance whether a proposed course of action might violate any of the

[1] The FTC operates under two major statutes—the Federal Trade Commission Act and the Clayton Act, both of 1914—and others which include the Wool Products Labeling Act (1940), the Fur Products Labeling Act (1951), the Flammable Fabrics Act (1953), and the Textile Fiber Products Identification Act (1958).

laws administered by the commission or be likely to result in further commission action.

The commission also began the publication of *Advertising Alert,* containing a summary of complaints and orders in advertising cases, together with general warnings concerning misrepresentations in specific areas of current interest. This publication, which is distributed to radio and television stations, Better Business Bureaus, and other organizations, is designed to aid them in recognizing objectionable advertising practices.

In addition to its ten field offices in principal cities throughout the United States, the commission maintains field stations for the limited purpose of administering the Wool, Fur, Textile Products, and Flammable Fabrics Acts. Four additional field stations were opened in 1962—in Charlotte, N.C.; Denver, Colo.; Miami, Fla.; and Houston, Texas. Arrangements were made for each of the regional and branch offices of the Small Business Administration to receive and transmit to the commission complaints alleging violations of the laws administered by the commission.

During the fiscal year ending June 30, 1962, the commission approved 474 complaints and issued 407 orders to cease and desist. There were more than 2,800 investigations in progress at the end of the year. Actions by the commission ranged from orders requiring divestiture of properties acquired in violation of the antimerger law to orders enjoining camera trickery and spurious demonstrations of products on television commercials.

Commissioners during fiscal 1962 were Paul Rand Dixon, the chairman, and Sigurd Anderson, William C. Kern, Philip Elman, and A. Everette MacIntyre.

PAUL RAND DIXON,
Chairman, Federal Trade Commission.

FEED GRAINS. See AGRICULTURE; GRAINS.
FENCING. See SPORTS, GAMES, AND SHOWS.
FERTILIZERS. See Index entry.
FIGS. See FRUITS.

FIJI

Lying in the central Pacific 3,183 miles southwest of Honolulu, this British crown colony comprises over 500 islands (106 inhabited), scattered over 95,000 square miles of ocean. Fiji has an aggregate land area of 7,055 square miles, including the dependency of Rotuma (18 square miles). The population was estimated (December 1961) at 413,872, including 205,068 Indians, 172,455 Fijians, 10,417 Europeans, 8,958 part-Europeans, and 5,039 Chinese. About 72% of the total population lives on the island of Viti Levu (area, 4,010 square miles), on which is situated Suva, the capital and chief port (1956 pop., 37,371).

The colony is administered by a governor (Sir Kenneth P. Maddocks, appointed Oct. 10, 1958), who is assisted by a 9-member Executive Council and a 33-member Legislative Council. The indigenous Fijian population has a large measure of self-government, operating through 76 district councils and 14 provincial councils. The Fijian Affairs Board and the Council of Chiefs advise the government on Fijian affairs.

Government revenue in 1961 totaled £F7,445,073; expenditure, £F7,412,694 (the Fiji pound equals approximately U.S.$2.54). In 1961 there were 544 primary schools (with 78,878 pupils), 58 postprimary schools (6,527 pupils), 2 teacher-training colleges, and a medical school. Road mileage totals 1,261, of which 917 are usable in all weathers; there are about 8,000 motor vehicles. Nandi International Airport handles jet aircraft for many major foreign airlines; Fiji Airlines operates internal service and flights to Tonga, the New Hebrides, and the Solomon Islands. There are 4 radio stations and 21,948 radios (1959). Telephones number 7,206 (1960).

Fiji is primarily an agricultural country, with a mineral extraction industry. The sugar (163,000 metric tons in 1961) and coconut industries account for 95% of all agricultural exports. Total exports in 1961 were valued at £F13,126,662; imports, £F17,186,548. Principal exports were unrefined sugar, £F5,943,757; coconut oil, £F2,039,132; gold, £F1,202,022; bananas, £F239,252; copra, £F337,746; manganese ore, £F15,994; and molasses, £F111,779. Great Britain, Australia, New Zealand, and Canada are the chief trading partners.

FILMS. See MOTION PICTURES; PHOTOGRAPHY.
FINANCIAL AND ECONOMIC REVIEW. Major financial and economic developments in the United States and Canada in 1962 are reviewed in separate articles on specific subjects. For a reference guide to these subjects, see the Index entry, *Financial and Economic Review.*
FINE ARTS. See ARCHITECTURE; DANCE; MUSIC; PAINTING AND SCULPTURE; THEATER.

FINLAND

The Republic of Finland is situated in northern Europe. It has an area of 130,119 square miles, including the Aland Islands, and a population of 4,490,000 (Jan. 1, 1962, est.). Principal cities and populations (1962 est.): Helsinki, the capital, 467,371; Tampere, 129,300; and Turku, 127,300. Finnish (spoken by over 90% of the population) and Swedish (spoken by 7.4%) are the official languages.

Government.—Finland has been a republic since July 17, 1919. Its chief executive is President Urho K. Kekkonen (re-elected for a 6-year term on Feb. 15, 1962). A coalition cabinet (Council of State) of 15 members (formed April 13, 1962) is headed by Prime Minister Ahti Karjalainen (Agrarian Union). The unicameral Diet (Eduskunta) has 200 members, chosen for 4-year terms in direct and proportional elections. Political parties and number of seats held (following elections of Feb. 4–5, 1962): Agrarian, 53; People's Democrats (Communist-controlled), 47; Social Democratic, 38; Conservative, 32; Swedish People's, 14; Finnish People's (Liberals), 13; Social Democratic League (Socialist Opposition), 2; Liberal League, 1. (See below, *Events, 1962.*)

Education and Religion.—School enrollment, 1960: 792,571 (95% of the compulsory school-age population). Number of schools (with enrollments), 1960–61: 6,492 primary (625,968); 474 secondary (214,601); 542 secondary vocational (55,851); 11 teacher-training (1,601); 14 higher (23,552); 191 adult high schools and workers institutes (79,215). Principal religions: Lutheran (4,375,067 members) and Greek Orthodox (72,495), both state-supported.

Finance.—Government revenue 1961: 386,118 million markkaa (364,229 million in 1960); expenditure, 393,532 million (352,339 million). At par value, 320 markkaa equal U.S.$1. National debt: 146,110 million markkaa at the end of 1961 (139,013 million on Dec. 31, 1960). Gold and foreign exchange holdings of the Bank of Finland: 67,800 million markkaa as of Dec. 31, 1961 (up 3,300 million from a year earlier).

Transportation and Communications.—Transport network (miles, 1962): state-owned railways, 3,301 (none electrified); roads, 23,280 (1st and 2d class, 5,929); lock canals: 19. Merchant marine tonnage (July 31, 1962): 860,325. National airlines: Finnair and Kar-Air, carried a total of 543,000 passengers in 1961; Seutula, near Helsinki, is the principal airport. Other communications data, 1961: passenger cars, 216,921; trucks and buses, 82,952; telephones, 675,000 (1962); radio receivers, 1,227,559 (1960); television sets, 284,575 (1962).

Economic Indicators.—Gross national product: 1,706 billion markkaa in 1961 (up 6% from 1960). Index of industrial production (1954 = 100): 150 in 1961 (140 in 1960). Index of agricultural production (1948 = 100): 125 in 1961 (134 in 1960). Cost-of-living index (1951 = 100): 148 in July 1962 (142 on Dec. 31, 1961). The number of unemployed workers averaged 25,000 in 1961, or about 1.2% of the total labor force.

Manufactures.—Manufacturing accounts for 31% of the net national product and 26% of the labor force. Chief industrial products (metric tons, 1961): chemical pulp, 2,827,000 (up 14% from 1960); mechanical pulp, 162,000 (down 11%); newsprint, 914,000 (up 21%); sawn goods, 1,297,000 standards (down 5%); electric power, 10,207 million kw.-hr. (up 17%).

Agriculture.—Agriculture's share of the net national product is about 11% and engages 22% of the labor force. Chief crops (metric tons, 1961 est.) wheat, 460,792

(367,978 in 1960); rye, 126,719 (186,093); barley, 365,161 (440,128); oats, 941,020 (1,109,393); potatoes, 1,057,135 (1,716,678); sugar beets, 413,000 (411,000). Dairy and meat production (metric tons, 1961): meat, 117,388 (up 5%); butter, 92,171 (up 3%); cheese, 32,594 (up 6%); milk, 2,615 million liters (up 5%).

Foreign Trade.—Total exports, 1961: 337,400 million markkaa (up 7% from 1960); imports, 368,300 million (up 8%). Principal exports (in million markkaa, 1961): paper industry products, 153,900; wood industry products, 84,100; timber, 29,600; metals industry products, 38,600; agricultural products, 15,300. Principal imports: raw materials (46% of total imports); investment goods (28%); consumer goods (17%); and fuels and lubricants (9%). Chief customers (with percentage of total Finnish exports received, 1961): Great Britain (22.2%); West Germany (12.9%); the Soviet Union (12.1%). Principal suppliers (with percentage of total imports provided, 1961): West Germany (21.3%); Great Britain (15.3%); the Soviet Union (13.3%); Sweden (11.5%).

Events, 1962.—The year 1962 was a very good year for the Finnish economy generally. Industrial production increased some 5%, compared with 7% in 1961. Employment remained high, and the number of vacant jobs exceeded the number of unemployed. The cost-of-living index rose 4.3% from October 1961 to June 1962. Despite some decline in foreign demand for wood industry and agricultural products, exports during January–June 1962 ran 12% higher (imports, 11%) than in the same period of 1961. In August 1962, Finland cut duties on European Free Trade Association imports 10%, for a total reduction of 40% since mid-1961. Similar concessions were extended to Soviet imports. Prospects for Finland's association with the European Economic Community remained very doubtful. In August, Finland received a loan of $25 million from the World Bank to finance a 303,000-kw. increase in her thermal generating capacity. On Jan. 1, 1963, a new currency was introduced: a new markka, whose value is 100 times that of the old unit.

Elections and the formation of a new cabinet dominated the domestic political scene in 1962. On February 15, Urho Kekkonen was re-elected president by 199 of the 300 electors chosen in national elections on January 15–16. The candidates of the People's Democrats (Paavo Aitio), the Social Democrats (Rafael Paasio), and the Socialist Opposition (Emil Skog) received 62, 37, and 2 votes, respectively. Center parties made impressive gains in parliamentary elections held February 4–5, in which 2,310,066 voters went to the polls, a record 84.5% turnout. The Agrarians won 23.1% of the popular vote and gained 5 seats; the Liberals increased their representation also by 5, the Conservatives by 3. The Finnish People's Democratic Union (Communist) lost 3 seats and its place as Finland's largest single party (now the Agrarian Union). The badly split Socialists, divided into the Social Democratic Party and the Socialist Opposition, lost a total of 12 seats. The government of Martti Miettunen (formed July 14, 1961) resigned on March 1. Six weeks later, Ahti Karjalainen (Agrarian) succeeded in putting together a non-Socialist government of 5 Agrarians, 3 Conservatives, 2 Liberals, 2 Swedish People's Party, and 3 representatives of the Central Federation of Finnish Trade Unions. The Foreign Minister is Veli K. Merikoski (Finnish People's Party).

Following President Kekkonen's re-election, Finnish-Soviet relations returned to normal. On June 26 the two countries agreed on an exchange of microfilmed historical records. A 50-year treaty re-opening the Saimaa Canal (an important waterway in southeastern Finland lost to the USSR after World War II) under Finnish control was signed in Moscow on September 27. Finland assumed the major cost of rehabilitating the canal (estimated at over 14,000 million markkaa) and is to pay annual rentals ranging from 180,000 to 260,000 rubles. Revenue from tolls was estimated at 230 million markkaa a year.

President Urho Kekkonen of Finland was elected to his second six-year term on Feb. 15, 1962.

PARIS MATCH

The Communist-sponsored 8th Youth and Student Festival was held in Helsinki July 29–August 6. Anti-Communist demonstrations attracted international press comment. (See also COMMUNISM.)

Distinguished foreign visitors to Finland in 1962 included Israel's Premier David Ben-Gurion and UN Acting Secretary-General U Thant, who was reminded by Prime Minister Karjalainen that "Finland was the first country, with Norway, to buy United Nations bonds for an amount twice our assessment" ($1,480,000). President Kekkonen made state visits to France and Sweden and spent a 14-day vacation in October in the Soviet Union.

On June 20 the Supreme Court upheld the lower court conviction for loan irregularities of former Prime Minister Vieno J. Sukselainen and 16 other members of the State Pensions Institution, but, quashed their dismissal as members of the board. Finland's first atomic reactor was dedicated on August 30.

JOHN I. KOLEHMAINEN,
Chairman, Department of Political Science, Heidelberg College, Tiffin, Ohio.

FIRES AND FIRE LOSSES

Fires in the United States in 1962 caused 11,800 deaths and $1.55 billion in losses, a preliminary estimate by the National Fire Protection Association (NFPA) indicated. Final NFPA figures for 1961 show that 2,190,040 fires took 11,700 lives and destroyed $1,526,300,000 worth of property, as compared with 11,350 fatalities and $1,544,200,000 damage in 1960.

Property damage in 1961 reversed a three-year trend of constantly rising losses, but the total still remained above the $1.5 billion mark. Fire damage to all buildings and contents totaled $1,232,400,000 in 1961, $1,139,700,000 in 1960, and $1,083,210,000 in 1959.

The largest fire in the United States in 1961 was the $25 million Los Angeles conflagration which destroyed more than 500 buildings, mostly homes, in November. The largest loss of lives by a single fire occurred the same month near Richmond, Va., when an aircraft burned following a crash, killing 77.

The 383 large-loss fires in the accompanying table comprised less than 0.02% of the total number of 1961 building fires but caused about 18% of the monetary loss.

The NFPA's Fire Record Department reported approximately 857,400 building fires in the United States in 1961. The remaining 1,332,640 fires involved aircraft (140), motor vehicles (264,500), forests (98,500), brush, grass, and rubbish (943,600), and miscellaneous (25,900).

CLASSIFICATION OF LARGE-LOSS FIRES IN THE U.S., 1961
(Individual loss of $250,000 or more)

Classification	Number	Loss
Manufacturing	116	$ 69,195,000
Storage and warehousing	52	25,617,000
Mercantile	49	19,227,500
Aircraft	29	64,299,000
Residential	18	33,088,000
Forest	16	12,365,500
Bowling alleys	16	6,037,000
Schools and colleges	15	7,163,500
Department stores	14	10,304,000
Clubs (night, city, and country)	10	2,922,500
Restaurants	10	3,966,000
Supermarkets	8	3,103,000
Churches	7	3,334,500
Ships and trucks	5	9,476,500
Institutions	4	1,214,500
Office buildings	4	2,870,500
Radio and TV stations	2	1,400,000
Miscellaneous	8	3,242,500
Total	383	$278,826,500

Fires in private dwellings declined about 5% in 1961, to 534,200, but deaths in these fires rose slightly to about 6,100. Property damage to homes totaled $337,400,000. Four or more persons died in each of 109 residential fires. About 3,450 children—the principal victims of fire—were killed in 1961.

(See also FORESTRY.)

PERCY BUGBEE,
General Manager,
National Fire Protection Association.

FISH. See FISHERIES INDUSTRY; HUNTING AND FISHING; and the Index entry, *Fish.*

FISH AND WILDLIFE SERVICE. See Index entry.

FISHERIES INDUSTRY

The catch of fish and shellfish in the United States in 1961 totaled nearly 5.2 billion pounds, the nation's second largest. The catch was 5% greater than in 1960, due to increased catches of industrial fish, principally menhaden. From 21% of the 1961 catch plus 232 million pounds of imported herring, salmon, and tuna, packers produced 1 billion pounds of canned products, worth $422,836,394. About 47% of the catch, plus processing waste, and about 18.3 million pounds of imported herring yielded industrial products worth $75 million. Of the catch, 30% was used fresh or frozen and 2% was cured. In 1961, the catch used for human food amounted to 2.5 billion pounds; 2.7 billion pounds were used in the manufacture of industrial products and for animal feeding.

The catch in 1962 was again expected to total about 5.2 billion pounds. Production of Maine sea herring, king crabs, shrimp, yellowtail flounders, and bluefish showed substantial increases in 1962. Decreases occurred in landings of tuna, Pacific sardines, and Alaska herring. The U.S. Bureau of Labor Statistics wholesale price index for fish and shellfish in October 1962 was 119.0, 7.8 points higher than a year earlier.

Approximately 128,000 fishermen and transporters operated about 76,000 vessels and boats in 1961, and the fishermen averaged a catch of 40,500 each. Fishermen received $364 million for the 1961 catch, about $10 million more than in 1960. Processing of the catch by about 93,000 shore workers in 4,200 plants and distributing it to the ultimate consumer increased the value to $1.1 billion.

For the 16th consecutive year, the menhaden fishery in 1961 produced the industry's largest landings. The catch, amounting to 1,157,338 tons, was 148,200 tons more than in 1960. The 1962 menhaden catch was about 15% larger than in the previous year, and accounted for 45% of the total United States production of fish and shellfish.

The Pacific sardine catch—which averaged over 500,000 tons from 1934 to 1944—yielded only 21,584 tons in 1961. The canned pack amounted to 419,086 cases. Few sardines appeared off California in 1962, and the catch totaled less than 10,000 tons. The canned Maine sardine pack produced from sea herring amounted to 753,647 cases in 1961, 62% less than the 1960 total. The pack in 1962 exceeded 2 million cases for the first time since 1958. The 1961 salmon pack canned in Alaska, Washington, and Oregon, totaled 3,696,726 cases, 30% more than in 1960. The 1962 Alaska canned salmon pack of 3,420,400 cases furnished the bulk of the year's pack of about 3.7 million cases.

The 1961 canned tuna pack of 15,767,704 cases, including the output in American Samoa and Puerto Rico, was 462,300 cases larger than in 1960 and set a new record. The 1962 pack totaled about 17 million cases.

Menhaden, herring, other industrial fish, and processing waste were utilized in 1961 to produce 311,000 tons of fish meal (valued at $31,940,000), 34,416,000 gallons of oil ($14,373,000), and 112,300 tons of fish solubles ($5,469,000). Manufactured shell products were valued at $9,361,000. Production of other industrial products (such as agar agar, fish feed pellets, kelp products, and pearl essence) was valued at $13,426,000.

Fresh fish landings at Boston, Gloucester, New Bedford, and on Cape Cod, Mass., in 1961 amounted to 431,644,000 pounds, valued at $32.9 million, a decline of 3% in volume but an increase of 3% in value compared with 1960 levels. In 1961, San Pedro, Calif., led all ports with landings of 207,900 tons, principally tuna, Pacific sardines, and mackerel. Pascagoula, Miss., ranked next with landings of 192,200 tons, mainly menhaden and other industrial fish. Lewes, Del., received 140,000 tons, largely menhaden; Cameron, La., 126,100 tons, principally menhaden; Empire, La., 123,600 tons, almost entirely menhaden; Reedville, Va., 108,800 tons, chiefly menhaden; Beaufort–Morehead City, N.C., 90,700 tons, mostly menhaden; Gloucester, Mass., 81,600 tons, largely whiting, ocean perch, and industrial fish; Boston, Mass., 58,500 tons, mostly haddock, pollock, and cod; and New Bedford, Mass., 50,450 tons, chiefly sea scallops and flounders.

Alaska Sealskins.—A total of 53,460 male and 24,455 female skins was taken in 1962 from federally supervised fur seal herds on Alaska's Pribilof Islands in the Bering Sea. Dressed and dyed male skins sold at public auction in St. Louis, Missouri, averaged $107.53 each in the fall of 1962, as compared with $106.42 in the spring. Female skins sold for $48.40 at the fall sale and $44.33 in the spring.

Whales.—In 1961, catcher boats operating from the two whaling stations on San Francisco Bay took 338 whales, and 5 whales were taken at a new station on the Columbia River. The whales were used in the production of whale and sperm oil, meal, and frozen animal food, valued at $847,000.

Frozen Fish.—On Nov. 1, 1962, frozen fish holdings in the United States totaled 218 million pounds, compared with 207 million pounds a year earlier. Shrimp, salmon, mackerel, fish blocks (mainly cod), halibut, whiting, and ocean perch fillets formed the bulk of the holdings.

Foreign Trade.—United States foreign trade in fishery products amounted to $431.8 million in 1961, 7% higher than the 1960 levels. Imported edible products amounted to 1,061,662,000 pounds, valued at $336 million, or 44% of the United States supply. Imported nonedible products were valued at $61.3 million. Edible products exported in 1961 totaled only 40,137,000 pounds, valued at $19.6 million, a decline of 34.7% in volume and 23.5% in value from the previous year. Exported nonedible products were valued at $15.1 million.

World Production.—Information released by the U.N. Food and Agriculture Organization indicated that in 1961 the United States ranked fifth among the nations of the world in the catch of fish, shellfish, and other sea products. Japan ranked first with 14.8 billion pounds, followed by

Peru with 11.5 billion pounds. China ranked third with 11 billion pounds (based on estimates made by FAO), followed by the USSR with 7.1 billion pounds. The United States was next with 6.4 billion pounds. These five nations produced about 56% of the total world catch of 90.8 billion pounds in 1961.

E. A. Power,
Chief, Branch of Statistics, Bureau of Commercial Fisheries, U.S. Fish and Wildlife Service.

FISHING, Sport. See Hunting and Fishing; Sports, Games, and Shows (*Fly and Bait Casting*).

FLAGSTAD, Kirsten Malfrid

Norwegian soprano: b. Hamar, Norway, July 12, 1895; d. Oslo, Norway, Dec. 7, 1962.

At the time of her retirement in 1953, at the age of 58, Kirsten Flagstad was regarded as the foremost Wagnerian soprano since Frida Leider,

Kirsten Flagstad (1895–1962)

UPI

and as the possessor of one of the great voices of the century. However, it was not until midway in her 40-year operatic and concert career that she gained international recognition.

Intended for the medical profession by her parents, who were musicians, she began to study music seriously while recovering from an illness. On Dec. 12, 1913, she made her debut at the National Theater, Oslo, singing the small part of Nuri in Eugen D'Albert's *Tiefland*. At that time she had a small voice, but she developed it through further study and a long series of appearances in musical comedy, operetta, and opera in Oslo and Göteborg (Sweden). After a brief retirement in 1930 following her marriage to Henry Johansen, a lumber merchant, she sang at Bayreuth (1933–34). The New York Metropolitan Opera engaged her for its 1934–35 season only as a temporary replacement for Frida Leider, but after Flagstad's sensational debut there on Feb. 2, 1935, as Sieglinde in Wagner's *Die Walküre*, she remained until 1941, appearing in London, Vienna, and elsewhere between New York engagements. During the late 1930's, she and Lauritz Melchior made the Wagnerian repertory the Metropolitan's leading asset.

Returning to German-occupied Norway in 1941, Flagstad sang only in Sweden and Switzerland until after the death of her husband in 1946 as he awaited trial for collaboration with the Nazis. The next year she resumed her career in the face of considerable protest over her conduct, which she defended, stating: "My life has been music; I know nothing of politics." In her European and American concerts she sang with undiminished vocal splendor, and in 1950 she returned triumphantly to the Metropolitan. She made her final appearance there on April 1, 1952, in the title role of Gluck's *Alceste* (in English).

Even in her 60's, after her retirement from the stage, she continued to make brilliant recordings, including a complete *Götterdammerung*. In 1958 she was named director of the Norwegian Opera, in Oslo. *The Flagstad Manuscript*, her autobiography as related to Louis Biancolli, was published in 1952.

FLAX. See Textile Industry.
FLAXSEED. See Fats and Oils.

FLEMING, Donald Methuen

Canadian minister of justice and national revenue: b. Exeter, Ontario, May 23, 1905.

Donald M. Fleming was educated at the Collegiate Institute in Galt, Ontario, and at the University of Toronto, where he received his B.A. degree in 1925. He then studied law in Toronto, at the Osgoode Hall Law School and the university (L.L.B., 1930). Admitted to the Ontario bar in 1928, he was a partner in the Toronto law firm of Kingsmill, Mills, Price & Fleming from 1929. He became a king's counsel in 1944.

A Conservative, Fleming was a member of the Toronto City Council from 1939 to 1944, and served on the City Planning Board from 1942 to 1944. In 1945 he was elected to the House of Commons for Eglinton (Toronto), and was re-elected in 1949, 1953, 1957, and 1958. Following the Conservative victory in the elections of June 10, 1957, he was named minister of finance and receiver general by Prime Minister John Diefenbaker. During 1961, Fleming engaged in a prolonged controversy with James E. Coyne, governor of the Bank of Canada, over the fiscal policies of Coyne, who finally resigned after the dispute had been carried into Parliament. On Sept. 30, 1961, Fleming was elected the first chairman of the Organization for Economic Cooperation and Development (OECD).

In his budget message to Parliament on April 10, 1962, Finance Minister Fleming announced a budget tailored to general business improvement and economic growth, but with an anticipated deficit of $745 million for fiscal 1963. On May 2, after Canada's exchange reserves had fallen markedly, Fleming announced the stabilization of the Canadian dollar at U.S.$0.925, reversing the 12-year-old Canadian policy of keeping the Canadian dollar on a fluctuating exchange rate system.

In the general elections of June 18, 1962, Fleming retained his seat in the House of Commons by the narrow margin of only 762 votes. On June 24, Prime Minister Diefenbaker announced an austerity program involving several emergency economic measures to defend the stability of the Canadian dollar. On August 9 he carried out a general reorganization of his cabinet, in which Fleming became minister of justice and national revenue. (See also Canada.)

FLIGHT RECORDS

New records were set in 1962 in the categories of manned space flight and of rocket-powered and jet aircraft, helicopter, and women's aviation. Some of the more outstanding records are discussed below. They are unofficial unless otherwise noted.

Space Flight.—Five manned orbital flights, three by the United States and two by the Soviet Union, took place in 1962. The United States flights were manned by Lt. Col. John H. Glenn, Jr., February 20; Lt. Comdr. M. Scott Carpenter, May 24; and Comdr. Walter M. Schirra, October 3. Soviet Maj. Andrian G. Nikolayev began an orbital flight on August 11, followed the next day by Lt. Col. Pavel R. Popovich. Nikolayev's flight set the only new records established for distance and time: 64 orbits and 94 hours in flight. (See Space Flight.)

Rocket-Powered Flight.—Records were again set by the National Aeronautics and Space Administration's experimental X-15 aircraft. A world speed record for manned winged aircraft of 4,105 mph. was made on June 27 by Dr. Joseph A. Walker.

In a flight on July 17, Maj. Robert M. White piloted an X-15 to a record height of 314,750 feet

(slightly more than 59.6 miles), officially recognized by the Fédération Aeronautique Internationale (FAI). The flight marked the first time a winged vehicle had gone over 50 miles above the earth and thereby had achieved space flight. As a result of the flight, White became the first X-15 pilot to qualify as an astronaut.

Jet-Powered Aircraft.—Records in speed, speed of climb, and distance were set in 1962. An Air Force B-58 jet bomber set three transcontinental speed records recognized by the FAI (round trip —4 hours 41 minutes 14.98 seconds; West-East—2 hours 58.71 seconds; East-West—2 hours 15 minutes 50.08 seconds) in a 4,900-mile nonstop Los Angeles–New York round-trip flight on March 5. Piloted by Capt. Robert Sowers, the plane averaged 1,044.96 mph. (well above the speed of sound).

A Soviet E-166 set a world jet speed record of 1,652 mph. near Moscow on July 7.

A world time-to-climb record was set March 6 by an F-4H Navy jet fighter which climbed 7½ miles in 1 minute 17 seconds. On April 13, Lt. Comdr. Del W. Nordberg piloted a Navy McDonnell F4H1 Phantom II jet to a speed-climb record of 98,425.2 feet (19 miles) in 371.43 seconds.

Maj. Clyde T. Evely piloted an Air Force B-52H superbomber to a world distance record for nonstop flight without refueling in a flight from Okinawa to Madrid (12,532 miles) on January 11. The FAI recognized the record, as well as seven speed and course records on legs of the trip.

A Douglas DC-8 jet airliner set a nonstop distance record for commercial aircraft in a February 23 flight of 8,705 miles from Tokyo to Miami.

Capt. William F. Stevenson, in an Air Force B-52H superbomber on June 6–7 set a world distance record (11,337 miles) for a closed course without refueling; this record was recognized by the FAI.

Women's Flight Records.—Jacqueline Cochran on April 22 set a world record for jet plane distance in a straight line (2,279 miles between New Orleans and Gander, Newfoundland) in a four-engine Lockheed Jetstar Executive. This record was acknowledged by the FAI, together with 22 others (three of them being records for women) involving combinations of record times between various cities on the entire trip, which ended at Hanover, West Germany.

French aviatrix Jacqueline Auriol flew a Mirage III jet to a women's 100-km. (62.1-mile) world speed record of 1,149.23 mph. over the Istres, French military airbase, on June 22.

Helicopters.—In a flight on February 5 from Milford to New Haven, Conn., a Navy antisubmarine Sikorsky HSS2 set a world rotary-winged aircraft speed record of 210.6 mph. for 19 km. (11.81 miles) over a straight-line course. This was the first helicopter to exceed 200 mph.

An Air France H-43B helicopter piloted by U.S. Capt. Richard H. Coan set an FAI-recognized world distance helicopter flight record of 655.5 miles in a 25-mile closed course on June 13.

Capt. Chester R. Ratcliffe, Jr., set a world distance record of 888.4 miles (acknowledged by the FAI) on July 5 in a flight from Hill Air Force Base near Salt Lake City, Utah, to Springfield, Minn.

(See also AIR FORCE, U.S.)

FLOODS AND FLOOD CONTROL. See Index entries.

FLORIDA

A South Atlantic state of the United States, Florida ranks 22d among the states in area (land, 54,252 square miles; inland water, 4,308) and 9th in population (5,459,000 on July 1, 1962, a 10.3% increase from the 1960 census figure of 4,951,560). Urban places with populations above 15,000 in 1960:

Bradenton	19,380	Daytona Beach	37,395
Brownsville[1]	38,417	Fort Lauderdale	83,648
Carol City[1]	21,749	Fort Myers	22,523
Clearwater	34,653	Fort Pierce	25,256
Coral Gables	34,793	Gainesville	29,701
Hialeah	66,972	Plant City	15,711
Hollywood	35,237	Pompano Beach	15,992
Jacksonville	201,030	St. Petersburg	181,298
Key West	33,956	Sanford	19,175
Lake Worth	20,758	Sarasota	34,083
Lakeland	41,350	Tallahassee (*capital*)	48,174
Miami	291,688	Tampa	274,970
Miami Beach	63,145	Warrington[1]	16,752
North Miami	28,708	West Palm Beach	56,208
North Miami Beach	21,405	Westwood Lakes[1]	22,517
Orlando	88,135	Winter Haven	16,277
Panama City	33,275	Winter Park	17,162
Pensacola	56,752		

[1] Unincorporated place.

Government.—Chief executive and judicial officers in 1962 included Farris Bryant (Democrat), governor, serving a four-year term; Tom Adams, secretary of state; J. Edwin Larson, treasurer; Bryan Willis, auditor; Richard W. Ervin, attorney general; Thomas D. Bailey, superintendent of public instruction; and B. K. Roberts, chief justice of the 7-member Supreme Court.

The Florida Legislature, which convenes in odd-numbered years, comprised 37 Democrats and 1 Republican in the Senate in 1962 and 88 Democrats and 7 Republicans in the House of Representatives.

Legislation, 1962.—See below, *Events, 1962.*

Finance.—In the 1962 fiscal year, revenue of $1,284,598,054 included $636,828,386 from state taxes and $155,991,486 in federal funds. Chief tax yields were the 3% general sales tax ($181,700,882), motor fuel taxes ($127,914,906), and licensing ($66,491,501). Spending of $1,286,034,899 included $274,091,464 for education, $207,999,115 for health, welfare, and safety, and $157,580,818 for highways.

Education.—In the 1960–61 school year, public elementary schools staffed by 20,538 teachers enrolled 635,375 pupils; 270,960 junior high school students and 169,407 senior high school students were taught by 16,793 teachers; and parochial schools with 1,731 teachers enrolled 57,590. Enrollment in colleges and universities (fall 1961) totaled 79,660 students.

Estimated public school spending in the 1961–62 school year totaled $442,093,000, including current expenditures of $337,882,000 ($341 per pupil) and capital outlays of $83,841,000. Revenue of $407,689,000 was drawn chiefly from state funds ($208,812,000) and local districts ($170,083,000). Teachers' salaries averaged $5,303 (high school, $5,375; elementary, $5,250). Actual spending for higher education (1961 fiscal year) totaled $63,821,000.

Public Assistance.—In the 1962 fiscal year, public assistance payments to a monthly average of 108,667 persons totaled $79,941,361. This amount included $50,239,085 for the aged and $18,661,670 for dependent children.

Transportation and Communications.—A total of 662 miles of highway construction and reconstruction were completed in the fiscal year 1961; *highways and roads* on Jan. 1, 1961, totaled 69,216 miles (44,439 surfaced). These served 2,814,426 *motor vehicles* (as registered on Jan. 1, 1962), including 2,121,078 automobiles. Operating in the state were (1960) 13 *railroads* (using 4,560 line miles of track) and (1962) 33 regularly scheduled *airlines.* There were (1962) 53 commercial and municipal *airports* and 8 seaplane bases.

Communications media included (1961) 163 AM and 26 FM *radio stations;* 1 UHF and 16 VHF *television stations;* 45 daily *newspapers* (circulation, 1,715,000) and 129 other newspapers (321,491); and (Jan. 1, 1962) 698,300 business and 1,446,800 residential *telephones.*

Labor Force.—The state's labor force in July 1962 included 96,800 agricultural workers. Nonagricultural employment totaled 1,731,500, compared with 1,675,300 a year earlier and an average of 1,763,600 for the 12 intervening months. Of nonfarm employees, 27.5% were in trade, 16.7% in service industries, and 16.6% in government services. Unemployment in July 1962 had dropped to 111,500 from the 143,900 of a year earlier.

LEADING FLORIDA MANUFACTURES, 1960

Industry group	Total employees	Total payroll	Adjusted value added by mfr.[1]
		(thousands of dollars)	
Food and kindred products	38,016	$142,872	$396,274
Chemicals and allied products	17,475	90,267	290,768
Paper and allied products	13,577	70,512	211,116
Fabricated metals	15,174	65,965	124,196
Stone, clay, glass products	14,034	54,878	119,875
Printing and publishing	13,521	64,660	114,602
Lumber and wood products	11,413	32,189	56,942
Furniture and fixtures	8,122	26,704	43,830
Tobacco products	7,105	20,641	40,391

[1] For definition, see footnote 1 in the article *Industrial Production.* (Source: *1960 Annual Survey of Manufactures.*)

Manufacturing.—Manufacturing engaged 192,950 workers in 1960, including 135,488 in production, and provided a payroll of $848,191,000. Adjusted value added by manufacture totaled $1,804,385,000.

Mining.—Florida ranked 23d among the states in mineral output in 1961, with 1.05% of the national total. The 1961 value was an all-time high, topping the 1960 record by 8%. The state was first in output of phosphate rock, and the sole producer of staurolite and zirconium; second in rare earth metals and titanium; and third in magnesium compounds.

FLORIDA MINERAL PRODUCTION, 1961
(In short tons, except as noted)

Mineral	Quantity	Value
Clays	513,000	$ 7,202,000
Lime	213,000	3,555,000
Peat	24,573	149,000
Phosphate rock (long tons)	13,789,000	95,590,000
Sand and gravel	6,530,000	5,577,000
Stone[1]	28,855,000	36,305,000
Other minerals	...	44,802,000
Total	...	$190,933,000[2]

[1] Excludes certain stone; value included in "Other minerals." [2] Total adjusted to eliminate duplications in value of clays and stone. (Source: U.S. Bureau of Mines.)

Fisheries.—The commercial fish and shellfish catch in 1961 totaled 190,167,846 pounds valued at $25,727,578. The principal catch was shrimp (42,127,663 pounds valued at $13,546,633).

Agriculture.—Cash farm income for the first nine months of 1962 (excluding government payments) totaled $682,418,000, compared with $682,272,000 for the corresponding period of 1961. For the full year 1961, income comprised $207,709,000 from livestock, $649,933,000 from crops, and $9,039,000 in government payments. Principal income sources in 1961 were oranges, $297,715,000; wholesale milk, $80,482,000; cattle, $63,543,000; and tomatoes, $50,128,000.

The state's 45,000 farms in 1959 had an acreage of 15,237,000 (1,882,000 in harvested cropland). Livestock on farms on Jan. 1, 1962, included 1,596,000 cattle, 377,000 hogs, 7,078,000 chickens, and (1961) 39,110,000 commercial broilers.

FLORIDA CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Avocados (tons)	9,140	6,100	9,400
Beans, snap (1,000 cwt.)	1,707	1,646	1,592
Corn for grain (1,000 bu.)	7,058	9,636	9,042
Grapefruit (1,000 boxes)	34,940	35,000	38,000
Limes (1,000 boxes)	331	340	400
Oranges (1,000 boxes)	86,120	113,400	120,500
Pecans (1,000 lb.)	4,544	4,800	2,500
Strawberries (1,000 lb.)	8,962	9,524	13,529
Sugarcane for sugar and seed (1,000 tons)	1,417	2,308	5,244
Tangelos (1,000 boxes)	353[1]	1,000	800
Tangerines (1,000 boxes)	4,330	4,000	4,300
Tobacco (1,000 lb.)	28,160	32,830	34,648
Tomatoes (1,000 cwt.)	993	1,230	972

[1] Short-time average. (Source: U.S. Department of Agriculture.)

Tourism.—During the winter season of December 1961—March 1962 a record 3,413,678 persons visited Florida, according to the State Development Commission, bettering the record high of 1957–58 and foreshadowing a banner year for the state's top industry. New attractions for the tourist included the new Falling Waters State Park, between Tallahassee and Pensacola, and the Pinellas County Bayway, a 15.2-mile network of roads and bridges leading to one of the most extensive public recreation areas ever developed in Florida.

Events, 1962.—George A. Smathers of Miami, advocate of an aggressive policy toward Communist Cuba, won election on November 6 to a third term in the U.S. Senate over his Republican opponent, Emerson Rupert, by a 3–1 margin. Also reelected by a large majority for his fifth term in the U.S. House of Representatives was William C. Cramer, Republican of St. Petersburg.

A Republican foothold in central Florida was secured as Edward J. Gurney, former mayor of Winter Park, was elected representative to the Congress from one of four newly created congressional districts. The other three new seats were won by Democrats, including former U.S. Sen. Claude Pepper. Democrats also won reelection to the remaining seven districts in Congress.

Mrs. Beth Johnson of Orange County became the first woman ever to sit in the Florida State Senate. She had served in the House.

In July 1962, a three-judge federal court ruled that the existing legislative make-up was "invidiously discriminatory" against populous sections of the state, and, being in violation of the 14th Amendment, was "null, void and inoperative." On August 1, Gov. Farris Bryant convened the Legislature in special session to consider reapportionment. Before adjourning on August 11, the Legislature adopted a constitutional amendment providing for 46 senators and 135 House members (compared with the existing Senate of 38 members and the House of 95). On September 5 the three-judge federal court declared this amendment sufficiently satisfactory to be submitted to the people, but at the general election on November 6, it was defeated by approximately 67,000 votes. Opponents argued that it enabled 13.4% of Florida's population to elect a majority of the Senate and 27% to elect a majority of the House.

In an effort to reach a solution to the seven-year-old reapportionment problem, the governor called the newly elected Legislature into a second special session on November 9. After 20 days of debate, however, the lawmakers failed to arrive at a formula which would satisfy both the rural and urban interests, and the job of reapportionment was turned over to the federal court.

In August, Escambia became the sixth Florida county to begin desegregating its schools; lunch counters in variety and department stores and drugstores had been desegregated without incident in Pensacola, seat of Escambia County, in February. In September, Negroes entered the undergraduate division of the University of Florida, at Gainesville, for the first time, and three Negroes became the first to enter as regular students at Florida State University, Tallahassee.

Southern Florida was the scene of a major military buildup in October. Even before the Cuban quarantine was proclaimed, Key West was reinforced with several thousand combat-ready

Icicles hang from citrus trees in Palm Harbor, Fla., in the cold wave that damaged the state's fruit crop in December.

UPI

Marines and an additional squadron of Navy jets, and MacDill Air Force Base, at Tampa, was placed on an alert basis. On October 24, the first day of the quarantine, the Federal Aviation Agency directed civilian aircraft away from the southern part of the state. The Army assumed command of the international airport and leased other facilities at Key West, and antiaircraft positions were installed throughout the Florida Keys. Cuban refugees in the Miami area continued to present major local problems, but progress was being made in their resettlement (see REFUGEES AND DISPLACED PERSONS).

St. Petersburg's third epidemic of encephalitis ("sleeping sickness") in four years hit the city in midsummer, and by early September, 177 cases and 16 deaths had been reported. Tourism, the city's chief industry, suffered a severe decline.

Industrial growth continued in the state during 1962, maintaining an estimated rate of 50 new plants per month, besides an expansion of existing facilities. An important agricultural development arising from the elimination of the Cuban sugar quota has been the erection of six new mills to harvest the expected production for the year of 900,000 tons of sugar.

The most severe cold wave in many years struck the state in December, causing heavy damage to the citrus and vegetable crops. Subfreezing temperatures were recorded in many cities, including a record 18.5° in Tampa.

"Events" by A. J. HANNA,
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FLOWERS. See HORTICULTURE AND GARDENING.
FLUORSPAR. See MINERAL PRODUCTION.
FLY AND BAIT CASTING. See SPORTS, GAMES, AND SHOWS.
FOOD. See FOOD RESEARCH; FOOD SUPPLY; and the Index entry, *Food.*
FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS. See Index entry.

FOOD AND DRUG ADMINISTRATION

An agency of the U.S. Department of Health, Education, and Welfare, the Food and Drug Administration (FDA) enforces the Food, Drug, and Cosmetic Act and five other consumer protection laws. Enforcement activities in 18 districts are coordinated in Washington, D.C.

Foods.—Over 45,000 chemical formulations are available to the operators of 3.8 million farms for more effective production of crops. FDA establishes and enforces tolerances to prevent the shipment of crops containing unsafe levels of agricultural poisons. In the fiscal year 1962, seizures were made of 1,903 tons of grains, beans, alfalfa meal, and leafy vegetables containing residues of pesticides that were not permitted or that were in excess of the tolerances.

Approximately 2,200 chemicals are used in food processing and packing by 73,000 firms. FDA gives attention during food establishment inspections to whether additives being used are permissible and are being used at safe levels. A total of 226 tons of food containing unpermitted additives or harmful contaminants were seized in the 1962 fiscal year.

During the same period, seizures were made of 7,545 tons of filthy or decomposed food; 85 seizures involved labeling violations, in which the information required by law to appear on the label was hard to find, hard to read, or missing.

Drugs.—The Food, Drug, and Cosmetic Act of 1938 requires that new drugs be cleared for safety on the basis of evidence provided by the manufacturer. This provision prevented the drug thalidomide from reaching the United States market and causing tragic deformities in babies such as occurred in Europe. Under an exemption in the law for investigational drugs, however, more than 1,200 United States doctors were furnished 2.5 million tablets of the drug. When this was learned, FDA proposed new regulations to tighten controls over the distribution of investigational drugs. Amendments were enacted in October 1962 to assure a greater degree of safety, effectiveness, and reliability of drugs, requiring manufacturers, among other things, to prove effectiveness for labeled use as well as safety before drugs are marketed. (See also PEDIATRICS.)

About 40 seizures of drugs valued at more than $1 million were made during the year in a program to curb dangerous abuses in the collecting and selling of discarded physicians' samples.

FDA cleared 273 new drugs for marketing in 1962. Products tested and certified in FDA laboratories comprised 5,798 batches of colors, 354 of insulin, and 15,356 of antibiotic drugs.

Household Protection.—The Federal Hazardous Substances Labeling Act, which requires consumer protection information on the labels of hazardous household products, went into effect on Feb. 1, 1962. Included in the early seizures were soldering salts, carbon tetrachloride, and turpentine—all without the required warning.

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FOOD FOR PEACE PROGRAM. See FOOD SUPPLY.

FOOD RESEARCH

Of the many areas of food investigated during 1962, three especially important ones will be reviewed in this article: (1) the quality of meat; (2) formula development; and (3) texture improvement in dehydrated vegetables.

Meat Quality.—Two factors influencing the eating quality of meat considered in 1962 were the amount and distribution of fat in pork and the antemortem injection of proteolytic enzyme.

Increased demand for lean pork of good eating quality sparked investigations of the traditional, but largely unsupported, view that intramuscular fat and marbling in the carcass are of primary importance in determining the tenderness and juiciness of cooked pork. Results of these investigations, while variable, seem to indicate that loins with low levels of intramuscular fat and marbling tend to be tougher and less juicy when cooked than those with higher levels. The relationships are not sufficiently close to be used for predictive purposes, however. Muscles in other parts of the carcass have received little attention in this respect, but in one rather extensive study only a few of them showed close association between intramuscular fat content or marbling and tenderness or juiciness.

Work with proteolytic enzymes has proved that a tenderizing effect accompanies direct contact between the enzyme and meat tissue. Only in 1962, however, have data been published which indicate a similar effect with injection of enzyme into the bloodstream of an animal shortly before slaughter. The evidence offered is of three types: the relative tenderness of paired cuts, one treated and the other untreated; the effect of different levels of enzyme treatment; and consumer reaction to treated and untreated cuts.

The paired cuts were obtained by introducing the enzyme (papain) into the jugular veins of a number of ewes after surgically blocking blood cir-

culation to the right legs. Subsequent judging of the roasted pairs of legs showed that the left was markedly more tender than the right.

The enzyme level was tested on Commercial and Good grade beef steaks and roasts from animals which had received different amounts of enzyme by antemortem injection. Tenderness of the cooked meat increased appreciably and consistently as the quantity of enzyme injected increased.

Consumer reaction was obtained from 50 families who rated not only the relative tenderness but also the flavor and juiciness of beef chuck roasts from enzyme-treated animals and beef rib roasts from nontreated ones. All of the meat was cooked with dry heat, a method normally reserved for naturally tender cuts, such as beef rib (but not chuck) roasts. All of the quality characteristics were rated slightly (but probably not significantly) higher in the chuck than in the rib roasts.

The tenderizing effect was shown to take place at temperatures reached only during cooking. Evidence with regard to the effective temperature range came from both chemical and organoleptic experiments. In the former, little tyrosine was formed during several hours' incubation of papain and ground beef at 50°C. or below, but steeply increasing amounts were formed as the incubation temperature increased to the maximum tested (90°C.).

In the organoleptic tests, mutton chops from enzyme-treated sheep were judged as showing no tenderizing effect from the enzyme when cooked to interior temperatures of 55°C. or below, but as showing slight, fair, and good effects, respectively, when cooked to 60, 65, and 82°C.

Formula Development.—Adjusting the formula of a food product to the point at which it yields maximum quality has always been difficult because of inadequate methodology. Procedures available have indicated the effects of variations in a single ingredient at a time; but an adequate procedure must show the effects of variations in several ingredients simultaneously.

A statistical design developed from surface-response methodology has given promise of providing a procedure which, if not completely adequate, is at least worthy of further study. This design was used in 1962 to determine the optimum levels of salt and sugar in cured hams and to investigate the effects of different proportions of five basic ingredients on the volume and contour of lean-formula cakes. The former study indicated that maximum palatability occurred in hams which contained 2.60% salt and 1.14% sucrose. The latter study brought out numerous response-ingredient relationships. Volume and contour, for example, were particularly sensitive to variations in the baking powder ratio (percentage of baking powder to percentage of other ingredients) and the sugar-to-water ratio. The degree of change with variation in either ratio depended, however, on the exact level of the other.

Texture Improvement in Dehydrated Vegetables.—Pioneer work on a method of imparting a porous structure to dehydrated vegetable pieces was reported, enabling rapid dehydration and subsequent rehydration. For example, ⅜-inch potato and carrot cubes having this structure absorbed a greater amount of water and became more tender during 5 to 6 minutes in boiling water than did conventionally dehydrated cubes in 20 to 25 minutes. The process consists of heating partially dehydrated vegetable pieces in a closed vessel until the water in the pieces is above its atmospheric boiling point, then discharging them instantly. The flashing of water vapor from within each piece creates the porous structure. The puffed pieces are then dried conventionally to the predetermined final moisture content.

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FOOD SUPPLY

As the world's population continued its rapid expansion, the question of food and its relation to people came into increasingly sharp focus in 1962. Demographers, with their attention focused on population, tended to view the future with alarm. Agriculturists, mindful of the progress and potential of agriculture, saw the basic problem as one of applying to natural resources knowledge already at hand.

U.S. Secretary of Agriculture Orville L. Freeman, addressing a conference on Food and People in Washington, D.C., remarked: "The productivity of American agriculture . . . has given us the power to free mankind from the specter of hunger and famine." Food, he said, can be "the greatest instrument for peace and freedom which we have yet developed."

The acting secretary general of the United Nations, U Thant, in July 1962 told the 34th session of the UN Economic and Social Council in Geneva: "Endowed as our planet is, and able to take advantage of its riches as we have become, it is no longer resources that limit decisions. It is decisions that make resources. . . ."

The task of translating these sentiments into actuality, however, is a monumental one. In a detailed survey of world food conditions, *The World Food Budget 1962 and 1966,* published in April 1962, the U.S. Department of Agriculture concluded that diets are now nutritionally adequate in the 30 industrialized nations of the temperate northern area of the earth. These nations, accounting for about one third of the world's population, comprise the United States, Canada, western and eastern Europe (including the Soviet Union), Japan, Australia, and New Zealand. Their production of food, and of goods and services they can trade for food, assures their food supply for the foreseeable future, except in the event of nuclear war or other grave cataclysms.

In contrast, the people of most of the 70 less-developed countries in the semitropical and tropical southern area of the earth have diets which are nutritionally inadequate, with shortages of protein, fat, and calories. In these countries, which have a population of over 1.9 billion persons, population is expanding rapidly and malnutrition is widespread and persistent. The areas of want are, in general, Latin America, Africa, Asia, and the Far East. Within them, however, are numerous exceptions—Japan and Taiwan in the Far East; Turkey, Lebanon, and Israel in Asia; the Republic of South Africa and the Federation of Rhodesia and Nyasaland in Africa; and Argentina, Uruguay, Chile, Brazil, Costa Rica, Cuba, and Mexico in Latin America. On a national average basis, diets in these countries meet nutritional standards. Nevertheless, large elements of the population in some of them (in northeastern Brazil, for example), are believed to have substandard diets.

World food shortages in 1962 were expressed by the Department of Agriculture in terms of the following: animal protein, equivalent to 1.5 million metric tons of nonfat dry milk; pulse protein, equivalent to 150,000 tons of dry beans and peas; fats, equivalent to 3 million tons of vegetable oil;

UNICEF PHOTO BY JACK LING

Schoolchildren in Orissa State, India, eat lunches consisting partly of fruits and vegetables they have grown. United Nations provides tools and other assistance for the program.

and other protein and calories, equivalent to 29 million tons of wheat. Compared with total world food production, these deficiencies are not large, but the problem is greatly aggravated by the fact that food resources and supplies are extremely uneven in the various parts of the world.

As the *World Food Budget* points out, the problem centers primarily in the Far East and Communist Asia, where a dense and growing population makes increasing demands on the food supply. The Far East, excluding Communist China, has two thirds of the wheat shortage and almost half of the animal and pulse protein shortage. Diets in Communist China lack about half of the required animal protein and fat. The country also has a shortage of about 3 million tons of wheat. About 85% of the world nutritional gap is concentrated in Communist China and other countries of the Far East.

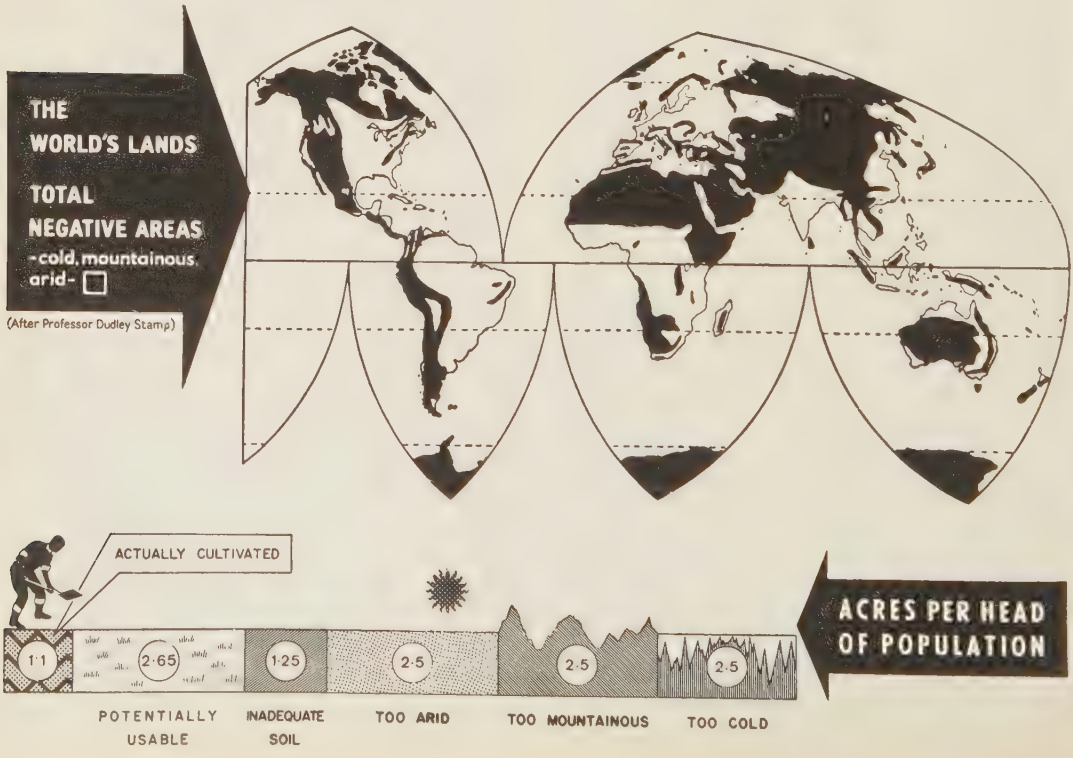
During the 1950's and early 1960's, food production and supplies increased more rapidly than population, so that per-capita food supplies in 1962 were about 13% larger than in the years just before World War II.

Food Production in 1962.—World food output in 1962, as in most of the preceding 15 years, slightly exceeded the 2% annual increase in population. World food supplies for the 1962–63 season were therefore expected to be larger than they were a year earlier.

Production of the principal food grains was relatively large. Record wheat crops in western Europe, India, and Turkey, and good wheat crops in Japan, Pakistan, Turkey, North Africa, Canada, and the United States more than offset disappointing production in eastern Europe and the Soviet Union.

The world rice crop was also better than in 1961; India had a record harvest, Japan's production was near record levels, and Communist China had a better crop than in the three previous seasons. A generally good livestock feed situation, outside of eastern Europe and the Soviet Union, supported larger output of livestock and livestock products. Hog slaughter in 1962 was expected to be about 4% larger than in 1961, with production of beef and other meats also higher. Output of milk was only about 1% larger than in 1961, partly because of difficulties in marketing butter, which tended to discourage milk production. World oilseed production reached a new high, and record output of peanuts and cottonseed and an above-average flaxseed crop more than offset a slight decrease in soybeans.

In western Europe, production of food and feed grains, potatoes, sugar beets, deciduous fruit, and livestock exceeded that of 1961. In eastern Europe, however, the food shortages caused by the below-average 1961 output, especially of meat and milk, continued in 1962. Yields and production of most major crops were below average, and the livestock industry suffered from short feed supplies for the third consecutive year.



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Reports from Communist China indicated that grain output was 7% to 12% above the poor 1961 crop, but large grain imports were still needed to relieve an extremely short food supply. India's third successive record harvest and Japan's bumper rice crop contributed to a small overall increase in food production in the Far East. A 10% increase in cereals raised food production in western Asia slightly above the previous year's better-than-average output.

In Latin America total output rose slightly but was less than the population growth. Canadian wheat production was estimated at over 550 million bushels, more than double the poor 1961 crop. The grain crops in Australia and New Zealand were expected to be good. Australia expected large meat production, but New Zealand anticipated slightly smaller output of cheese and meat.

Despite recent gains in food production, studies by the UN Food and Agriculture Organization (FAO) indicate that surpluses and shortages may continue side by side far into the future. Thus, by 1970, people in Far Eastern countries (excluding Japan and mainland China) may have only 10 grams or less of animal protein in their daily diets, compared with 65 grams per person in North America. In the meantime, surpluses of wheat, feed grains, butter, and coffee in the developed countries may increase, and surpluses of cocoa and sugar may appear. These basic problems are being addressed by nations jointly through the FAO and individually through such efforts as the U.S. Food for Peace Program.

Freedom from Hunger.—The FAO is vigorously pressing its five-year Freedom from Hunger campaign, scheduled to end in 1965. The basis of the campaign is self-help. Its aim is to aid the less-developed nations to make better use of their own material and human resources. The campaign works on three fronts: Informational and educational programs to provide information on what must and can be done to combat hunger and malnutrition; research to solve the economic, social, and technical problems of agricultural development; and national action programs to demonstrate how selected food supply problems can be solved.

Action undertaken includes wider use of high-quality seed, emphasis on poultry production to provide more protein foods in tropical and subtropical climates, reorganization of farming in countries where agriculture is unbalanced, and information on techniques which yield more food per acre and per animal, as well as more effective use of food supplies.

In addition, FAO has undertaken a World Food Program. Over a three-year period approximately $100 million in food, services, and cash will be used to promote economic growth in newly developing countries, supplement inadequate diets, and meet emergency food needs.

A World Food Congress, scheduled for June 1963 in Washington, D.C., will focus world attention on the Freedom from Hunger campaign.

Food for Peace.—Through the Food for Peace Program, the United States, by itself or in cooperation with other countries, endeavors to lift world nutritional standards. The program's most spectacular achievement thus far is the four-year wheat-rice transaction negotiated with India in May 1960, under which a daily shipload of wheat or rice, for four years, is being sent to India. During the year ended June 30, 1962, about $1.6 billion in food was provided by the United States to other countries through donation, barter, long-term credit, or sale for foreign currencies. By mid-1962, 14 countries had begun programs of using United States food grants for economic and social development projects. More than 1,000 United States agricultural technicians are working in underdeveloped areas to bring the farmers of those countries improved techniques of working their land.

The United Nations has designated the 1960's as the "Development Decade." It is now generally agreed that successful economic development requires a breakthrough in agriculture.

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FOOTBALL. See Sports, Games, and Shows.

FOREIGN AFFAIRS. See Africa; Disarmament; Europe; Far East; Foreign Policy of the U.S.; Inter-American Affairs; Middle East; articles on the major countries; and references under the Index entry, *World Politics.*

FOREIGN AID PROGRAMS, U.S.

From the end of World War II through June 30, 1962, the United States expended a net total of $89.9 billion for all types of foreign grants and credits. Three fourths of this sum, or $68.2 billion, was in the form of grants, but there were also $13.5 billion in net credits, $5.1 billion in investments in international financial institutions, and $3.1 billion in miscellaneous expenditures. The chief purpose of foreign aid until 1948 was emergency relief; from then until 1952 it helped fi-

Table 1—NET FOREIGN GRANTS, CREDITS, AND OTHER ASSISTANCE (THROUGH NET ACCUMULATION OF FOREIGN CURRENCY CLAIMS) BY PROGRAM AND BY AREA: FISCAL YEARS 1961 AND 1962

(Expenditures in millions of dollars)

Type and area	Fiscal year 1961	Fiscal year 1962
Investment in international institutions:		
Inter-American Development Bank	...	110
International Development Association	74	62
Total	74	172
Economic and other nonmilitary aid:		
Net grants	1,838	1,890
Net credits:		
New credits	1,260	2,037
Minus repayment of principal	1,288	681
Total	−28	1,357
Net other assistance:		
Gross sales (foreign currency claims acquired)	1,199	1,183
Minus foreign currencies disbursed	796	1,007
Total	403	176
Total, nonmilitary aid	2,214	3,423
Military aid (net grants)	1,656	1,713
Total, nonmilitary and military aid	3,870	5,136
Western Europe (including Yugoslavia, but excluding Greece and Turkey)	−110	394
Military grants	519	409
Other grants, credits, and other assistance	−629	−15
Eastern Europe (other grants, credits, and other assistance)	128	49
Near East (including Greece and Turkey) and South Asia	1,561	1,608
Military grants	276	299
Other grants, credits, and other assistance	1,285	1,309
Africa (except United Arab Republic)	231	375
Military grants	21	26
Other grants, credits, and other assistance	210	349
Far East and Pacific	1,514	1,537
Military grants	711	835
Other grants, credits, and other assistance	803	702
American republics	365	998
Military grants	97	118
Other grants, credits, and other assistance	267	880
Other Western Hemisphere military grants	9	...
Other international organizations and unspecified areas	164	168

Note: Because of rounding, totals do not necessarily add up.
(Source: U.S. Department of Commerce, Bureau of Foreign Commerce.)

nance western European reconstruction under the Marshall Plan. Aside from the small technical assistance program (Point Four) begun in 1950, the 1950's were devoted largely to the Mutual Security Program, which centered on building military power, political stability, and closely related economic strength, with increasing attention being paid to non-European areas. The Foreign Assistance Act of 1961, enacted under the Kennedy administration, indicated that the program would shift its emphasis to financing long-term economic and social development, but without neglecting military assistance where it was needed.

Foreign Aid Operations in the Fiscal Year 1962.—Net assistance by program and by area for the fiscal years 1961 and 1962 is shown in Table 1. In the fiscal year 1962 the net total of expenditures reached $5.1 billion, rising by $1.3 billion, or 32%, over the level of the fiscal year 1961. The emphasis in nonmilitary aid shifted from grants to loans; new credits exceeded gross grants by $128 million, while in the previous fiscal year gross grants were $609 million higher than new credits. Latin America received the largest increase in nonmilitary aid and moved into second place among the regions in this category of assistance. The general trend toward nonmilitary assistance continued, its share of net total aid rising to 67%, as compared with 57% in the fiscal year 1961.

The increase in net total aid in the fiscal year 1962 resulted primarily from the combination of a $777 million rise in new credits and a $607 million drop in repayments of principal from past loans. Net grants rose by $52 million, and the net total of other aid, consisting mainly of undisbursed foreign money derived from Food for Peace operations, declined by $227 million. The net total of nonmilitary grants exceeded the net total of credits only because repayment of principal from past loans reduced net expenditures for credits by $681 million; a comparison of nonmilitary gross grants ($1.9 billion) and new credit expenditures ($2.0 billion) shows that, in terms of new business, expenditures for loans actually exceeded those for grants for the first time in recent years, by $128 million. The expansion in the value of loan expenditures reflected the recent trend toward financing economic development by means of loans instead of grants and toward directing this aid to countries with the best prospects for development.

The leading recipients of net nonmilitary aid in the fiscal year 1962 were India ($336 million), Brazil ($305 million), Pakistan ($260 million), Turkey ($205 million), Yugoslavia ($198 million), (South) Korea ($188 million), the United Arab Republic ($187 million), (South) Vietnam ($153 million), Chile ($126 million), and (Nationalist) China ($101 million). As in the previous fiscal year, India received the largest net aid, but its total declined by $139 million. The major net increases over the fiscal year 1961 were in aid to Brazil ($79 million in 1961), Chile ($48 million), Turkey ($109 million), and Yugoslavia ($76 million). Among the leading recipients only two obtained aid almost entirely in the form of grants: (South) Korea ($184 million in grants) and (South) Vietnam ($145 million in grants). This was primarily a reflection of the heavy military burden on the economies of these two underdeveloped countries.

Within the framework of the Alliance for Progress, net nonmilitary aid to Latin America rose sharply, from $267 million in the fiscal year 1961 to $880 million in the fiscal year 1962. The increase was produced mainly by loans, which climbed from $175 million to $649 million, while grants rose only slightly, from $121 million to $139 million, and net other aid (surplus commodity sales) rose from −$29 million to $92 million.

Net military aid rose from $1,656 million in the fiscal year 1961 to $1,713 million in the fiscal year 1962, but its share of the total declined from 43% to 33% as a result of the much larger increase in economic forms of aid. Although figures for military aid to individual countries have not been released, regional totals show a continuation of the trend toward reducing this type of assistance for western Europe and increasing it for the less-developed areas of the world. Western Europe's share of total military aid decreased from 31% in the fiscal year 1961 to 24% in the fiscal year 1962, while that of the leading Far East and Pacific region rose from 43% to 49%.

Export-Import Bank Operations in 1962.—The Export-Import Bank of Washington (Eximbank), a government-owned corporation founded in 1934, fosters United States exports by a variety of financially sound loans, guarantees, and insurance arrangements of varying duration that avoid competition with private export financing. Eximbank expenditures are also included in the foreign aid total above, however, for some of the bank's operations also have the effect of augmenting aid programs by increasing total capital resources potentially available to the less-developed countries for purchases in the United States.

In the fiscal year 1962, Eximbank's project loans ran for periods of from 5 to 26 years, and most carried an interest rate of 5¾%. During the year the bank authorized $1,860 million in new credits, guarantees, and insurance, or $1,330 million when insurance and short-term guarantees are excluded. More than half of the latter sum, or $769.6 million, was authorized for the less-developed areas of the world: Africa, $126.5 million; Asia, $362.1 million (but over half to Japan); and Latin America, $336.0 million. Actual disbursements (from current and past authorizations) in the fiscal year 1962 totaled $942.7 million, of which $594.9 million went to Latin America.

Foreign Aid Program for the Fiscal Year 1963.—In his annual foreign aid message, sent to Congress on March 13, 1962, President John F. Kennedy called for the appropriation of $4,878.5 million in new funds to finance the operation of aid programs in the fiscal year 1963, but he requested only one major policy change in the basic legislation enacted in 1961. This was a proposal for the authorization of a separate long-term Alliance for Progress fund of $3 billion for the next four years, with $600 million to be appropriated for the fiscal year 1963. In the Foreign Assistance Act of 1962 (Public Law 87–565, approved on Aug. 1, 1962), however, Congress authorized only $600 million a year for four years, or a total of $2.4 billion for the Alliance for Progress fund. It authorized the expenditure of $1,818.9 million in new economic aid in the fiscal year 1963. In addition, funds already authorized for 1963 in 1961 ($1,250 million for development loans, $1,500 million for military aid, and $3.1 million for State Department administrative expenses) raised the total authorization to $4,572 million.

The act incorporated several major policy amendments that had been proposed by the House Foreign Affairs and Senate Foreign Relations committees or had been introduced in floor debate. What appeared to be the most important of these amendments were designed to:

(1) Prohibit aid to a nation when its government or government-controlled entity was indebted to a United States citizen or company, unless the president determined that continuation of aid was in the interest of the United States.

(2) Prohibit aid (except for United States-owned local currency for United States-supported hospitals, schools, and libraries) to any Communist nation, including Poland, Yugoslavia, and 16 other listed countries, unless the president determined and reported to Congress that such aid was vital to United States security, that the recipient was not controlled by the international Communist conspiracy, and that the aid would promote the recipient's independence from international communism.

(3) Require the president to establish procedures to ensure that United States aid would not be used to promote or assist aid projects or activities of the Communist bloc.

(4) Bar aid to the present government of Cuba or to any nation that assisted it, unless the president determined that such United States aid was in the interest of the United States.

(5) Require that the president suspend aid to any nation that after Jan. 1, 1962, nationalized, expropriated, or seized ownership or control of property owned by a United States citizen or any business in which a United States citizen had at least a 50% interest, or imposed discriminatory taxes or conditions that had the effect of seizing ownership or control of the property, and failed within six months to take appropriate steps (which might include arbitration) to discharge its obligations under international law to the former owner.

(6) Prohibit the president from waiving the provisions on the expropriation of United States property, unless he was satisfied that the foreign government was taking appropriate steps.

The second, fourth, and fifth of these amendments aroused the greatest contention, and many members of Congress urged further limitation of the president's power to waive the restrictions.

The Foreign Aid and Related Agencies Appropriation Act, 1963 (Public Law 87–872, approved on Oct. 23, 1962) provided funds to operate the aid programs in the fiscal year 1963 as authorized by Congress. It reduced the president's final appropriation requests by almost 21%, however, and it imposed several additional restrictions on his use of the funds. Two of the most strongly contested restrictions were extensions of the prohibitions in the authorization act on assisting Communist nations or those providing aid to the present government of Cuba. The appropriation act denied all United States aid to governments that provided military or strategic materials to Cuba. In addition, it denied economic aid to any nation that "sells, furnishes, or permits any ships under its registry to carry items of economic assistance to Cuba as long as it is governed by the Castro regime," unless the president determined that withholding such aid would be contrary to the interest of the United States. A similar set of amendments denied all arms, military equipment, and strategic items to Communist nations; it also denied economic assistance, but again permitted the president to continue such aid if he found it would be "contrary to the national interest" to withhold it.

Table 2—FOREIGN ASSISTANCE FOR THE FISCAL YEAR 1963: NEW FUNDS REQUESTED BY THE PRESIDENT AND APPROPRIATED BY CONGRESS[1]

(Millions of dollars)

Category of aid	Requested	Appropriated
Development grants	335.0	225.0
American hospitals abroad (special foreign currency program)	2.8	2.8
Investment guarantees	180.0	30.0
Surveys of investment opportunities	5.0	...
International organizations and programs	148.9	148.9
Supporting assistance	481.5	395.0
Contingency fund	400.0	250.0
Alliance for Progress	600.0	525.0
Development loans	1,250.0	975.0
Administrative expenses (AID)	55.0	49.5
Administrative expenses (State Department)	3.1	2.7
Military assistance	1,500.0	1,325.0
Total	4,961.3	3,928.9

[1] In Public Law 87–872.

Table 2 provides a summary of funds requested by the president and appropriated by Congress. Public Law 87–872 also included $2,350,062,000 in funds for other international programs, as follows: Peace Corps, $59,000,000; civil administration of the Ryukyu Islands, $8,900,000; assistance to Cuban refugees in the United States, $70,110,000; migration and refugee assistance, $14,947,000; investment in the Inter-American Development Bank, $60,000,000; subscription to the International Development Association, $61,656,000; International Monetary Fund, $2,000,000,000; Philippine war damage claims, $73,000,000; international conferences and contingencies, $849,000; and U.S. Information Agency radio transmitter, $1,600,000. In addition, the act set a limit of $1,295,000,000 on the operating expenses of Eximbank, and one of $3,000,000 on its administrative expenses.

The Agency for International Development (AID), which administers economic aid, had been headed by Fowler Hamilton since its creation in 1961. He resigned on Nov. 7, 1962, and on November 28, David E. Bell, director of the Bureau of the Budget, was named to succeed him, effective December 7. On December 10, President Kennedy appointed a committee, named the Committee to Strengthen the Security of the Free World and

WIDE WORLD

Members of Congress from both parties watch President Kennedy sign $4.572 billion Foreign Assistance Act of 1962 on August 1. In back, from left, are Senator Kuchel (R-Calif.), Congressmen Walter (D-Pa.), Morgan (D-Pa.), Frelinghuysen (R-N.J.), and Gallagher (D-N.J.), and Senator Aiken (R-Vt.).

headed by Gen. Lucius D. Clay, to review the foreign aid programs.

(See also NATIONAL SECURITY.)

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FOREIGN INVESTMENTS

The continued heavy outflow of private United States capital to foreign countries was paramount in raising total United States investments abroad by about $6 billion at year-end 1961. Direct investments, including the reinvested earnings of foreign subsidiaries, account for $2.5 billion of this growth, net purchases of foreign securities and medium-term loans for $1 billion, and short-term loans and acquisitions of liquid assets abroad for $1.5 billion.

Foreign assets and investments in the United States rose by more than $5 billion in 1961, continuing a trend which had been slowed in 1960. While more than $3 billion accumulated in United States corporate stocks held abroad, the bulk ($2.1 billion) was accounted for by appreciation of market values. Most of this market gain was wiped out in the first half of 1962. Short-term assets and United States government obligations held by foreigners rose by $2.3 billion in 1961, as compared with a rise of $2.1 billion in the previous year.

Preliminary data for 1962 show some slowing down in the rate of foreign investment, although the indicated totals are still above postwar averages. Direct investment flows abroad were affected by the unsettled conditions in many underdeveloped areas, particularly Latin America, by the oversupply for certain industrial raw materials, and by the slowing down of the rate of growth in Europe. Long-term government investments were, however, considerably above the previous year's level, which was affected by large repayments of loans.

Direct Investments.—During the first six months of 1962, direct investments abroad increased by about $1.2 billion. About one half of this total represented capital outflows, the rest being accounted for by reinvested earnings of foreign subsidiaries. With 1962 capital flows from the United States now expected to run at a slightly lower rate than the $1.5 billion invested in 1961, total earnings, as well as the amount currently being reinvested abroad, are rising. While the annual rate of growth of these investments is not greatly changed, a larger volume of funds is now generated internally

than before. Manufacturing industries were in the forefront of new developments, accounting for an increasingly important segment of the new investment dollar.

Canada.—The book value of direct investments in Canada was expected to reach $12.5 billion at year-end 1962, about $700 million above the 1961 total. At least one half of these new investments will be financed from internal resources with parent companies making available the remainder.

Final data for 1961 show that manufacturing, valued at $5.1 billion, remained the single most important industry in Canada, accounting for one half of all new investments. New investments in all other industries combined rose by about the same amount, with the bulk accruing to petroleum investments, which reached a total value of more than $2.8 billion.

Total expenditures by Canadian affiliates for plant and equipment in 1961 was $1,040 million. Projected expenditures for 1962 and 1963 are slightly higher, indicating no major changes in the volume and direction of capital flows from United States owners. Revised estimates of earnings of Canadian enterprises, which for several years had hovered around $700 million annually, were calculated at about $680 million for 1961. Lower earnings, together with increased distribution of income to United States owners, resulted in a considerably reduced level of reinvestment during the year.

Europe.—Despite the much reduced rate of growth of industrial production in Europe, American investment in Europe grew in the first half of 1962 at an annual rate of $1.1 billion, 10 percent above the previous year's volume. New United States business ventures continued to be attracted to the Common Market and, to a somewhat lesser extent, to the United Kingdom. In recent years investment has also grown rapidly in Switzerland, which has become a favored location for companies engaged in international trade and investment.

New investments in Europe are largely going into manufacturing and oil operations. In manufacturing, all industries are involved but those most favored by United States investors are the automotive, chemical, and machinery industries. Oil companies currently are investing heavily to add to their refining capacity, as well as for related facilities to transport, store, and market the increased product volume.

Latin America.—The renewed interest shown by United States companies in manufacturing investments in Latin America (about $0.2 billion annually) continued to be an important factor in 1961 and 1962. However, due to capital inflows from other industries in the early part of 1962, the overall net increase in 1962 may be less than in any recent year for this area. Because of the elimination from the totals of the investments previously listed for Cuba, the area total for 1961 was considerably reduced to $8.2 billion. The level of 1962 transactions is not now likely to bring this total much above the $8.5 billion mark by the end of the year. In order to implement the hemisphere's hopes for economic progress, further means have to be found to attract a sizable volume of private investment capital from the United States.

Much of the current expansion of manufacturing facilities has taken place in Argentina, where investments increased by $160 million. Panama, which continues to attract investments in international trade, also showed a marked growth of $60 million. The value of direct investments in Venezuela rose by about $450 million, mainly because of the revaluation of assets of a major oil company by more than $400 million.

Other Areas.—In North Africa, oil companies continued in their buildup of production facilities. Large-scale production is now in sight in Libya, where United States oil firms have spent more than $0.5 billion. Continued increases in oil production in the Middle East are bringing about a renewed flow of capital, needed partly to finance an increased volume of sales and to increase production and refining facilities.

Other Foreign Investments.—Outflows of private United States capital other than that connected with direct investments, and including purchases of foreign securities, bank loans, the financing of foreign trade, and the transfer of funds into higher-yielding liquid assets abroad, reached a record of $2.5 billion in 1961 ($2.2 billion in 1960). In the first half of 1962, these outflows were reduced and moved at an annual rate of $1.8 billion. Sales of foreign issues were up in 1962 to an estimated annual rate of $0.8

INTERNATIONAL INVESTMENT POSITION OF THE UNITED STATES, BY AREA AND TYPE OF INVESTMENT
(As of Dec. 31, 1960 and 1961; in millions of dollars)

Type of investment	Year-end 1960	Year-end 1961[1]					
		Total	Western Europe	Canada	Latin American republics	Other foreign countries	International institutions
U.S. investments abroad, total	*71,497*	*77,331*	*21,189*	*19,229*	*14,274*	*15,111*	*7,528*
Private investments	50,393	55,517	12,737	19,224	11,579	9,445	2,532
Long-term	45,410	48,927	11,340	18,040	9,765	7,251	2,531
Direct investments	32,778	34,684[2]	7,655	11,804	8,166[2]	5,596	1,463[3]
Foreign dollar bonds	4,891	5,300	406	2,704	245	927	1,018
Other foreign securities[4]	4,667	5,615	2,040	3,230	65	230	50
Other investments	3,074	3,328	1,239	302	1,289	498	...
Short-term	4,983	6,590	1,397	1,184	1,814	2,194	1
U.S. government credits and claims	21,104	21,814	8,452	5	2,695	5,666	4,996
Long-term	18,212	18,874	7,819	...	2,521	3,559	4,975
Short-term	2,892	2,940	633	5	174	2,107	21
Foreign assets and investments in the U.S., total	*44,670*	*50,018*	*28,252*	*6,784*	*4,039*	*4,844*	*5,186*
Long-term investments	18,418	21,451	15,279	3,638	1,353	1,039	142
Direct investments	6,910	7,392	5,129	1,989	130	144	...
Corporate stocks	9,302	11,808	8,706	1,461	927	664	50
Corporate, state, and municipal bonds	649	645	435	2	76	40	92
Other	1,557	1,606	1,009	186	220	191	...
Short-term assets and U.S. government obligations	26,252	28,567	12,973	3,146	2,686	3,805	5,044
Private obligations	12,127	14,114	6,418	2,079	2,235	2,974	408
U.S. government obligations	14,125	14,453	6,555	1,067	451	831	4,636
Long-term	2,276	2,781	798	340	333	79	1,231
Short-term[5]	11,849	11,672	5,757	727	118	752	3,405
Net debtor (—) or creditor position	26,827	27,313	—7,063	12,445	10,235	10,267	2,342

[1] Preliminary. [2] Data for Cuba are omitted in 1961; the 1960 total for U.S. direct investment in Cuba was $956 million (book value). [3] Represents the estimated investment in shipping companies registered in Panama and Liberia. [4] Consists primarily of securities payable in foreign currencies but includes some dollar obligations, including participation in loan made by the International Bank for Reconstruction and Development. [5] Total includes estimated foreign holdings of U.S. currency: 1960, $910 million; 1961, $913 million; not distributed by area.
(Source: U.S. Department of Commerce, Office of Business Economics.)

billion, as compared with $750 million in 1961. Medium-term foreign loans by United States banks again increased in 1961. Loans and credits extended by commercial firms also rose moderately.

Foreign Investments in the United States.—Foreigners added more than $5 billion to their United States holdings in 1961. Nearly one half of these new investments represented increased holdings of short-term assets and United States government obligations. This acquisition of liquid dollar assets had its origin in the continued favorable balance of payments position which foreign countries enjoyed vis-à-vis the United States. Most of the remainder was due to an appreciation during 1961 of the market value of United States corporate stocks owned by foreigners.

The growth rate of foreign direct investments in the United States accelerated somewhat during 1961 when $0.5 billion was added to these properties. About $0.2 billion of this total was accounted for by reinvested earnings, and $0.3 billion represented new foreign capital.

(See also INTERNATIONAL TRADE.)

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FOREIGN MONEY VALUES. See EXCHANGE RATES.

FOREIGN POLICY OF THE UNITED STATES

A series of continuing crises in Berlin, Cuba, and Vietnam; the dangerous situations in the Congo and Laos; and other conflicts in which the United States was less directly involved—in Kashmir, Angola, the China-India frontier, and the Israeli borders—all gave rise to high tensions in the public mind and serious concern on the part of the United States government in 1962.

All of these matters are dealt with in other articles in this volume, as are general issues important to the United States which developed in the United Nations or at international conferences. This article will deal mainly with the broad goals of foreign policy as set forth by President Kennedy and other high administration spokesmen.

The Basic Position.—The Kennedy administration's approach to the nation's fundamental relations with the rest of the world was outlined in the president's State of the Union message on Jan. 11, 1962. President Kennedy said: ". . . our nation is commissioned by history to be either an observer of freedom's failure or the cause of its success. Our overriding obligation in the months ahead is to fulfill the world's hopes by fulfilling our own faith.

"[We believe] that the state is the servant of the citizen and not his master.

". . . our basic goal remains the same: a peaceful world community of free and independent states, free to choose their own future and their own system so long as it does not threaten the freedom of others. Some may choose forms and ways that we would not choose for ourselves, but it is not for us that they are choosing. We can welcome diversity—the Communists cannot. For we offer a world of choice—they offer the world of coercion. And the way of the past shows clearly that freedom, not coercion, is the wave of the future. . . . Our instrument and our hope is the United Nations. . . ."

President Kennedy referred specifically to the Alliance for Progress with Latin America, the Agency for International Development, the Peace Corps, and the Food for Peace Program as means toward economic progress in the developing countries and the world generally; to factors strengthening the Atlantic community as an agency of free world security and economic progress; and to "the brave city of Berlin." ". . . The Allies have made it unmistakably clear that . . . the freedom of 2 million West Berliners would not be surrendered either to force or through appeasement." He believed a "peaceful and mutually acceptable resolution" of the problem could be found.

In his State of the Union message, President Kennedy gave equal weight to the peaceful coexistence of sovereign nations, each free within its own jurisdiction, and the freedom of individuals, whose rights in democratic theory would be prior to those of the state. The problem of resolving the conflict between these freedoms when outside intervention seems necessary to protect human rights figured in administration policy, both at home and abroad. A dilemma also was posed by the desire of the government, on the one hand, for activity and new initiatives in the interests of progress—moves likely to cause tension—and the recognition, on the other hand, of the need for order, stability, and a relaxation of tension.

Furthermore, steps for dealing with the East-West problem, which seemed to call both for defense of the free world and accommodation with the Communist world, might conflict with steps for dealing with the "North-South problem" through large-scale economic assistance to underdeveloped nations and international cooperation to that end. Finally, there was the need to reconcile action for strengthening regional groupings allied to the United States, such as the North Atlantic Treaty Organization and the Organization of American States, with action to strengthen potentially universal organizations, such as the United Nations and its specialized agencies.

Criticism by Eisenhower.—Partisan declarations before the November 1962 elections did not succeed in stopping politics at the water's edge until the Cuban crisis erupted in late October. In an address in Boston on October 15, former President Eisenhower quoted President Kennedy as saying that "during eight years of Republican administration our foreign policy drifted aimlessly about. [But] during the past months a new and firm and forward-moving foreign policy has been developed." Commenting on this "amazing burst of partisanship," the former president said: "Personally, I have been careful in all my speeches to keep current foreign policy out of partisan debates. But when a charge is made for purely political purposes, a charge that indeed should be stated in reverse, I must seriously question the advisability of continued silence."

Eisenhower then recalled "such names as Korea, Formosa, Quemoy and Matsu, Iran, Lebanon, Austria, Trieste and Guatemala, all triumphs of the clear, direct and courageous foreign policy, and the defeat of Communist efforts" as "items in the long list of successful efforts in eight years of a Republican Administration." He thought "the dreary foreign record of the past 21 months . . . too sad to talk about." But in the eight preceding years, he added, "we lost no inch of ground to tyranny." The former president doubted whether "anyone can persuade you that in the past 21 months there has been anything constructive in the conduct of our foreign relations to equal any part of that eight-year record."

Administration Claims.—The Kennedy administration denied the accuracy of this comparison. Accused on the one hand of indecision, complacency, theorizing, and appeasement, and on the other hand of provocativeness, intransigence, arms-racing, and belligerency, administration spokesmen sought to set the record straight by reference to what they called the sad inheritance that Republicans had left them because of mistakes in regard to Laos, Vietnam, Cuba, and Berlin, and to the positive Democratic achievements.

Among these achievements were listed the establishment of the Peace Corps, which had de-

veloped morale among Americans and goodwill in underdeveloped countries; and the Punta del Este (Uruguay) conference of January 1962, which had won inter-American support for opposition to communism in the hemisphere, for self-determination and nonintervention in American countries, for increased efforts to support the Alliance for Progress, for the exclusion of the Cuban government from the inter-American system, and for suspension of trade in arms with Cuba.

The administration also credited itself with the agreement reached among the powers for a neutralized Laos, stabilizing conditions in that country, and for developing a strong United Nations policy in the Congo. To the latter end the government had gained congressional support for purchase of half of a $200 million United Nations bond issue to cover the large expenditures required for forces in the Congo and the Middle

LE PELLEY IN THE CHRISTIAN SCIENCE MONITOR

"I've Changed My Mind—Let's Argue on the Bench!"

East. The administration also had gained congressional support for an Arms Control and Disarmament Agency to supervise research and operations in this field; for enlarged executive powers to negotiate reciprocal trade agreements which would make it possible to strengthen relations with the developing European Common Market and to weld the Atlantic community into an area of expanding economic prosperity and secure defense; and for substantial appropriations for economic aid to developing countries without the limitation originally supported by the House of Representatives with regard to Communist countries such as Yugoslavia and Poland.

Finally, the government claimed that a more adequate defense position had been achieved both in meeting local challenges, such as Berlin, Vietnam, and Cuba, and in general defense positions, as a result of which the comparative power position between the Soviet and Western blocs in the cold war had moved favorably toward the West.

Cuba and India.—Hemispheric support for United States policies was reaffirmed in Washington conferences among foreign ministers of American states both before and after the president's declaration on October 22 of stronger measures against Cuba. On September 4 the president had warned that if offensive preparations by the Soviet Union in Cuba were observed in addition to the defensive preparations then apparent, "the gravest issues would arise."

The president, in his radio-television address of October 22, drew attention to evidence of the preparation in Cuba of long-range missile sites and the presence of jet bombers, accusing the Soviet Union of deception in connection with the secret shipment of this material. He declared that the United States would establish a "quarantine" on further shipment of offensive arms to Cuba and would retaliate against the Soviet Union in case of nuclear attack from Cuba against any American country. A naval blockade was established the next day.

After intervention by Acting Secretary General U Thant, a contingent agreement was announced by the president on October 27 to the effect that if the missiles and bombers were removed from Cuba under inspection by United Nations observers, the United States would give assurances against invasion of Cuba. Although Cuban Premier Castro would not yield to Soviet efforts to permit inspection, the Russians promised to withdraw the offensive missiles and bombers by December 20, and the president announced the lifting of the "quarantine" on November 20.

The Soviet Union and some Western jurists criticized the United States for flouting the standards of international law and the UN Charter by establishing a naval blockade in time of peace, but the action was supported by the OAS and NATO, and by public opinion in the United States.

On October 20, in the midst of the Cuban crisis, India was invaded on its northern frontier by Communist Chinese forces. The United States immediately sent weapons to India, and this may have contributed to the cease-fire announced by China on November 21. The assistance, however, raised a controversy with Pakistan, which feared that this aid might upset the balance of power in the Kashmir dispute. The United States gave assurances that its assistance to India would be used only for defense against China, but anti-Anglo-American sentiment continued in Pakistan.

The Nuclear Threat.—President Kennedy, after a conference with British Prime Minister Harold Macmillan in April, characterized the joint three-stage proposal for disarmament as "the most comprehensive and specific series of proposals the United States or any other country has ever made on disarmament." In regard to banning nuclear tests, he said: "The United States does not intend to place its security and the security of its allies at the mercy of Soviet on-again, off-again tactics. We are ready to conclude an effective test-ban agreement now. But we cannot be led into another paper pledge."

Secretary of State Dean Rusk, on May 25, emphasized the need to adapt to the new factors of science, technology, and outer space, and to maintain the ideal of freedom, to break down trade barriers, and to build a world community of peace and order under law. After the start of nuclear tests in the Pacific in April, Rusk explained that it was necessary for the United States to renew atmospheric testing because of the Soviet refusal to accept a ban enforced by inspec-

tion. He also said that the Western right to have troops in West Berlin was derived from the "surrender of Nazi Germany" and was "not negotiable."

Speaking of disarmament, Rusk said on May 31 that "sweeping disarmament involves a major transformation of the world political scene," but added that negotiation must go on in spite of the stalemate. In answer to critics such as conservative Sen. Barry Goldwater, the secretary said that there could be no victory in a nuclear conflagration, and that the limitations in the use of military means must be recognized. He denied that the development of the Atlantic community and other diplomatic efforts around the world were "no-win"

(TOP) UPI; WIDE WORLD (BOTTOM) UPI; PICTORIAL PARADE

Top-level meetings with leaders of both East and West were an integral part of United States foreign policy in 1962. Shown here are (*upper left*) President Kennedy and Britain's Prime Minister Macmillan in Nassau, December 18; (*upper right*) Secretary of State Rusk and Soviet Foreign Minister Gromyko in Geneva, July 24; (*lower left*) Rusk and Foreign Minister Couve de Murville in Paris, June 19; and (*lower right*) Chancellor Adenauer of Germany in Washington on November 14 with (from left to right) Kennedy, Rusk, German Ambassador to the U.S. Knappstein, and German Foreign Minister Schroeder.

policies. On June 16, Rusk commented on the speed of technological change, especially in the race between offensive and defensive armaments; in the command problem as it relates to deterrents; and in the danger of war from accident or miscalculation. He insisted on the need for adequate inspection to assure observance of disarmament agreements, and cited the obstacle to negotiations in this field arising from the Soviets' identification of such inspection with "espionage."

Other Policy Statements.—Under Secretary of State George W. Ball said in February 1962 that foreign policy had to adapt itself to a rapidly changing technology, to the disappearance of empires, and to the end of isolationism for any country. The implications of economic interdependence called for liberal and cooperative economic policies among the free nations, he said.

George C. McGhee, under secretary of state for political affairs, on April 30 described in detail United States goals in foreign policy as: (1) strengthening the Atlantic community; (2) defending the frontiers of freedom throughout "the evolving world community"; (3) assisting the less-developed countries; (4) creating "a framework of interdependence among the members of the community through international organizations, trade, and private and public ties"; and (5) pursuing a policy toward Communist states to avert war. "Communist efforts to harass or frustrate the community of free nations" must be deterred, McGhee declared, and long-term constructive evolution in the Communist bloc must be promoted by offering incentives to bring about cooperation for common interests.

Chester Bowles, formerly under secretary of state, later adviser to the president on African, Asian, and Latin-American affairs, made a number of policy statements. He said in February that four global forces were shaping the world: (1) the revolution of rising expectations in underdeveloped countries; (2) the rise of the Soviet Union; (3) the transformation of mainland China; and (4) the accelerating development of science and technology.

In June, Bowles discussed the doubt expressed by Alexis de Tocqueville in the 1830's as to whether a democracy can successfully conduct foreign policy. Bowles commented on the common and the divergent opinions on foreign policy in the United States. Almost everyone, he said, is agreed that powerful armed forces are necessary, that war is likely to be suicidal, that the rising political and economic forces in Asia and Africa cannot be ignored, and that a policy of isolationism is impossible.

Among the divergencies, Bowles distinguished both the small groups of "trigger-happy extremists" who wanted war, and "men of good will" who wanted unilateral disarmament, from middle-of-the-road groups constituting 90 per cent of the population. He divided the latter into those who sought "maximum rigidity" and those who sought "maximum maneuverability." The first insisted that all states not allied to the United States should be treated alike, and opposed economic assistance to neutralist countries like India and Communist countries like Yugoslavia and Poland. The second group, with which he associated himself, distinguished among countries, avoided brinksmanship in the name of liberation, and appreciated that ideas and the opinions of people might often serve better than military weapons as instruments of foreign policy. In this connection, he distinguished three frontiers: the military, where "the two worlds are at swords' points"; the economic, where they compete; and the cultural, where they communicate.

Harlan Cleveland, assistant secretary of state for international organization affairs, said in addresses in April and May that he considered practice and operations more

important than principles and theory in the conduct of foreign policy. The former, he thought, were "sources of international law." Policies rapidly became obsolete in the changing world, but the government was trying to make the non-Communist world "hum with . . . success" to demonstrate to the Communists "that free choice works better, and feels better, than coercion." The United Nations, Cleveland said, must adjust its peacekeeping forces to particular situations. Its eight operations involving the use of force—Indonesia, Greece, Palestine, Kashmir, Korea, Middle East, Lebanon, and the Congo—had all been different, but all indicated a need for a permanent United Nations force.

This selection from the numerous policy statements of the Kennedy administration indicates vigorous thought in searching for effective and acceptable policies, and also points up the frequent difficulty in reconciling action—which foreign incidents and domestic opinion seemed to dictate—with the policies and principles asserted.

(See also CONGO, REPUBLIC OF THE; CUBA; DISARMAMENT; GERMANY; INDIA; INTER-AMERICAN AFFAIRS; LAOS; NATIONAL SECURITY; PEACE CORPS; UNITED NATIONS; UNITED STATES—*The United States in 1962;* VIETNAM.)

QUINCY WRIGHT,
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FOREIGN TRADE. See INTERNATIONAL TRADE; the Index entries *International Trade* and *Tariffs;* and articles on the individual countries.

FORESTRY

Recreational use of forest land received increased attention in 1962. On January 31, the Outdoor Recreation Resources Review Commission (ORRRC) issued a report of its three-year study of recreation resources and needs, the most comprehensive review ever made of outdoor recreation in the United States. Establishment of this commission was authorized by Congress in 1958. Under the chairmanship of Laurence D. Rockefeller of New York, the commission was made up of eight congressmen and seven private citizens. Its report forecast an accelerating demand for outdoor recreation, while the resources necessary —forests, open spaces, shoreline, and unpolluted waters—will be diminishing because of demands for other uses. The commission recommended expansion of federal and state recreation programs, including establishment of a federal recreation agency, federal grants-in-aid to assist the states in recreation planning and development, and encouragement of private enterprise in providing recreation opportunities.

In line with ORRRC recommendations, a new Bureau of Outdoor Recreation was established in the Department of the Interior on April 2, 1962. (See CONSERVATION OF NATURAL RESOURCES.)

Forest recreation also had a prominent place in the discussions at the White House Conference on Conservation, called by President Kennedy on May 24–25, 1962, to "take stock of our national estate" and to "form a basis for more cooperation in conservation." The president, in his conference address, emphasized the importance of applying the discoveries of science to conservation. Robert C. Weaver, administrator of the Housing and Home Finance Agency, described his agency's efforts to encourage comprehensive urban planning and protection of open spaces for recreational use. Secretary of Agriculture Orville L. Freeman outlined proposals for governmental aid in land use adjustments to encourage "multiple use of private lands," including recreational developments on small watersheds, cooperative recreational and family forest projects, and rural renewal developments. These proposals were included in the 1962 farm bill in Congress, but were somewhat modified in the legislation finally enacted.

National Forests.—An expanded program for development of national forests was sent to Congress by the president. It embodied specific proposals for intensified management of recreation, timber, wildlife, and water resources, new roads and trails, and government acquisition of tracts within forest boundaries, especially those having recreational values. Proposed developments included 28,000 new camping and picnic grounds and 4,000 other recreation sites.

The Forest Service reported 102 million recreational visits to national forests in 1961, a 10% increase over the preceding year. Harvest of national forest timber under sustained-yield management in the fiscal year 1962 totaled 9,076,530,000 board feet with a valuation of $129 million, up some 700 million feet and $4 million over the fiscal year 1961.

Congress appropriated $123,530,000 for protection and management of national forests in the fiscal year 1963, an increase of $10.5 million over the amount appropriated for 1962. Additional funds for research, cooperative work, and other activities brought the total 1963 appropriations for the Forest Service to $223,295,000.

Edward P. Cliff became chief of the Forest Service in March 1962, succeeding Richard E. McArdle, chief forester for ten years.

Forest Fires.—With weather conditions more favorable in 1962, forest fire losses were held to a low level as compared with 1961. Western national forest regions, where fires swept large areas in 1961, reported 40% fewer fires and 85% less acreage burned in the first eight months of 1962. Throughout the national forest system, a total of 64,836 acres were burned up to the end of August 1962, compared with 206,231 acres in the same period of 1961.

International Forestry Developments.—A Working Group on Forest Insects and Diseases met in Ottawa, Ontario, in April 1962 to study ways and means of developing cooperation among the three members of the North American Forestry Commission—Canada, Mexico, and the United States. The working group had been set up at the first meeting of the commission which was organized in Mexico City in 1961 under sponsorship of the UN Food and Agriculture Organization. Current chairman of the commission is J. D. B. Harrison, Canada's deputy minister of forestry. At its Ottawa meeting, the working group agreed to undertake definition of major forest insect and disease problems, development of quarantine principles, and exchange of information.

At a joint meeting of the Society of American Foresters and the Canadian Institute of Forestry late in 1961, Dr. R. E. Balch of Fredericton, New Brunswick, and Dr. Paul J. Kramer of Durham, N.C., received awards for outstanding achievement in biological research contributing to the advancement of forestry.

(See also LUMBER.)

CHARLES E. RANDALL,
Forestry Information Specialist,
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FORMOSA. See TAIWAN.

FOUNDATIONS AND TRUSTS. See names of organizations under SOCIETIES AND ORGANIZATIONS.

FRANCE

Including small coastal islands and Corsica (3,367 square miles), metropolitan (continental) France has an area of 212,821 square miles. The country belongs to the United Nations, the North Atlantic Treaty Organization (NATO), and various European organizations (see EUROPE). Still associated with the world's second largest colonial empire, France by 1962 had its attention so riveted on the Algerian problem and the political struggle that concern for the Community (see FRENCH COMMUNITY) had almost passed from the public scene.

Population.—On March 31, 1962, the population of France was officially estimated at 46,300,000. The population of the major cities at the 1954 census was as follows: Paris, the capital, 2,820,534; Marseille, 605,577; Lyon, 462,657; Bordeaux, 250,306; Toulouse, 217,667; Nice, 208,453; Nantes, 197,915; Strasbourg, 193,353; and Lille, 190,078.

Government.—France is a parliamentary republic, in which, however, the powers of the president are very great. As a result of the Algiers revolt of May 13, 1958, Gen. Charles de Gaulle (q.v.) was recalled to power as premier, the parliamentary institutions of the Fourth Republic were suspended, and a new constitution was placed before the people in a referendum on September 28. Accepted by 81.7% of the voters in metropolitan France, the overseas departments, and the overseas territories, the Constitution of the Fifth Republic was promulgated on Oct. 4, 1958. An electoral college composed of 81,764 delegates, representing principally the 38,000 municipal councils, on December 21 chose de Gaulle for a 7-year term as president of the republic. He assumed office on Jan. 8, 1959.

The new presidency is by law, and still more by the nature of its first incumbent, more prestigious and powerful than that of the Third and Fourth republics. Theoretically, the conduct of the government rests with the premier (chosen by the president) and his colleagues, who are responsible to the National Assembly. In fact, since 1958 real power has lain with the presidency. This dualism in the executive branch makes possible a deadlock or clash between premier and president, but by reason of de Gaulle's sense of mission and popular support, the loyalty to him of Premiers Michel Debré and Georges Pompidou, and the paralysis of political life, a collision has not been realized. Moreover, 1962 witnessed such a political upset in the National Assembly and such a strengthening of the presidential hand that ministerial revolt against the president was more remote than before. Despite the opposition of nearly every articulate group in the nation, a law amending articles 6 and 7 of the constitution was approved by 62.25% of those voting in a popular referendum on October 28 (see below, *Events, 1962*). Henceforth the president was to be elected to a 7-year term directly by universal suffrage. An absolute majority of the votes cast must be obtained either on the first ballot or, as between the two leading candidates, on the second ballot one week later.

The premier and cabinet may be overthrown by a vote of censure adopted by an absolute majority of the National Assembly. The Algerian war and the presidential power to dissolve Parliament in this eventuality curbed the impulse until Oct. 5, 1962, when the Pompidou cabinet was overthrown. The assembly has had its powers considerably whittled down: its sessions are shorter than those under previous republics and have tended to become largely *pro forma*. While the powers of the Senate have been slightly increased beyond those of the former Council of the Republic, overall parliamentary control has been drastically reduced since 1958.

With the independence of Algeria, the National Assembly consists of 482 deputies, 465 representing metropolitan France, 10 the overseas departments, and 7 the overseas territories. Deputies are elected by direct universal suffrage for 5-year terms in a possible two-stage, single-seat district election. If no candidate receives a clear majority in the first round, a runoff election is held a week later, when a simple plurality suffices to elect. This system fosters political compromises in the interim week. The composition of the National Assembly after the elections of Nov. 18–25, 1962, and the subsequent regrouping of the parties was as follows:

Parties	Number of deputies
Union for the New Republic and Democratic Union of Labor (Gaullists)	230
Socialists	67
Democratic Center (Popular Republicans, Independents, and others)	53
Communists	41
Democratic Group (Radicals and others)	38
Independent Republicans	36
Others	17
Total	482

The Senate consists of 273 members, 255 representing metropolitan France, 7 the overseas departments, 5 the overseas territories, and 6 (chosen by the Senate itself) Frenchmen abroad. Senators are elected for 9-year terms (one third being renewed every three years) by indirect suffrage, the electors in a College of Notables representing the local governments rather than the mass of citizens directly. After elections on Sept. 23, 1962, the composition of the Senate was as follows:

Parties	Number of senators
Independents	83
Socialists	52
Democratic Left	51
Popular Republicans and Democratic Center	35
Union for the New Republic (Gaullists)	32
Communists	14
Others	6
Total	273

A Constitutional Council of 9 members, appointed for 9 years (3 by the president of the republic, 3 by the president of the National Assembly, and 3 by the president of the Senate) and renewing itself by one third every 3 years, rules on the constitutionality of organic laws and parliamentary regulations. An Economic and Social Council, appointed by the executive branch, gives advisory opinions on government bills, ordinances, and decrees.

For administrative purposes, France is divided into 90 departments, 311 arrondissements, 3,031 cantons, and 38,000 communes.

Religion.—The country is Roman Catholic in a formal sense, though inclined to be anticlerical, and the church enjoys no establishment. It is nevertheless true that relations between church and state under the Fifth Republic are better than at any time since their separation in 1905. There are 17 Roman Catholic archbishops and 68 bishops. Protestants number approximately 1 million.

Education.—Compulsory between the ages of 6 and 14, education is free in all elementary schools. Secondary education is also free and is available to students passing the entrance examinations for the 7-year *lycée* program, which leads to the baccalaureate degree and university education. In 1960–61, France had 6,100 state-operated infant schools, with 875,000 pupils, and 74,800 state-operated elementary schools, with 5,750,000 pupils. Enrollment in the *lycées* and *collèges* offering secondary education totaled 797,000. The 17 universities had 202,062 students in 1960. In 1960–61 private schools enrolled 15,000 infants, 1,086,000 elementary pupils, and 472,000 secondary students. There are 5 Roman Catholic institutes (universities).

Transportation and Communications.—The railways are run by the Société National des Chemins de Fer Français (SNCF), an autonomous corporation in which the government holds 51% of the stock. In January 1961, there were 24,144 miles of track. Approximately 65% of the traffic is carried over electrified lines. In 1961, 570 million passengers and 58,836 million ton-kilometers of freight were handled. In September 1962, the SNCF announced a $280 million investment and modernization program; all track was to be electrified or dieselized by 1970.

France had 50,200 miles of national, 174,000 miles of departmental and intercommunal, and 261,000 miles of local roads in 1960. In 1962 the Ministry of Public Works approved a 1,250-mile highway construction program (approximately 9,000 miles of existing major roads were to be widened), to be financed over the next 15 years by tolls and loans. On August 14, tunnelers from France and Italy met beneath Mont Blanc, although the 7.2-mile tunnel (the longest vehicular tunnel in the world) would not be completed before December 1963.

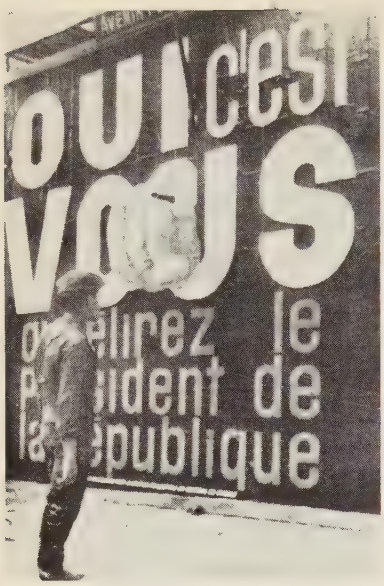
About one fourth of all goods is moved by water, and as of 1960 there were 4,821 miles of navigable waterways in use, including 1,994 miles of canals. The French merchant marine comprised 776 vessels of more than 100 gross tons, with a combined tonnage of 4,700,000 as of September 1961. Air France, the national airline, carried 3,055,500 passengers and handled 474,600,000 ton-kilometers of freight in 1960.

France had 4,357,937 telephones on Jan. 1, 1961. In 1962 there were approximately 10,500,000 licensed radio receivers and 3,059,574 television sets.

Economic Conditions.—In 1961 the French gross national product totaled 309.1 billion francs, as compared with 285.9 billion in 1960. In constant prices the increase amounted to 4.5% (compared with 6.3% the previous year). This slowing down of expansion was accounted for by the stagnation of agricultural output and by a reduction in the rate of industrial growth. Prices during the first half of 1961 were stable, but they rose thereafter as a consequence of poor fruit crops, increased de-

Georges Pompidou (r.), installed as premier of France, April 16, poses with his predecessor in the office, Michel Debré.

WIDE WORLD



Poster calls for a vote of "yes" in referendum of October 28. At stake was President de Gaulle's remaining in office, as well as the election of future presidents by popular vote.

UPI

mand for wheat, and higher support prices for cereals. The franc, with a par value of 4.937 to the United States dollar, continued to maintain itself strongly, reflecting confidence in French finances at home and abroad. Gold and foreign exchange reserves, which stood at $2,070 million on Dec. 31, 1960, totaled $2,939 million on Dec. 31, 1961, and rose to $3,616 million by Oct. 31, 1962. Repayment of $293.4 million of long-term Marshall Plan loans to the United States was only part of a total $471.4 million in advance payments of foreign debts in 1962. By the middle of the year the total foreign debt had been reduced to $1,197.3 million.

The economy was healthy, but prospects for meeting the first-year goals of the Fourth Modernization and Equipment Plan (1962–65) were mixed: the Ministry of Finance and Economic Affairs projected a 5.7% rise in the gross national product for 1962, but rapid increases in consumption threatened investment and exports. The government might have to act to restrict private consumption. It did not plan to increase taxes in 1963, however, and hoped to keep the budgetary deficit under a manageable 7 billion francs. Commitments were heavy: 22% of the projected budget (about 84 billion francs) earmarked for the armed forces; an undetermined amount for the repatriation and resettlement of Europeans from Algeria; and civil service increases. Thus the tax promise might be better electioneering than economics. The inflationary spiral continued despite

Miners in Decazeville, southern France, parade on January 26, the 39th day of their sitdown strike in protest against a government decision to close unprofitable mines gradually.

AFP FROM PICTORIAL PARADE

Bank of France directives to banks to raise their reserves from 30% to 32%, effective Feb. 1, 1962, and government requests for wage stability (the labor shortage made this impossible).

Agriculture.—About 25% of the active population is agricultural; 65% of the farmers work their own land, and 25% employ permanent paid labor. In spite of favorable conditions, the 1961 harvest was smaller than that of 1960. Heavy rains in 1960 delayed wheat sowing, and the 1961 crop, though of higher quality, fell 14.4% below 1960. Although there was a shift from wheat to barley, barley production also declined, and dry summer weather reduced the corn crop and the wine yield. Sugar beet, tobacco, and fruit production decreased, but potatoes and some vegetables rose, and milk production was the highest on record. The output of major farm products in 1961 (in thousands of metric tons, with 1960 figures in parentheses) was as follows: wheat, 9,430 (11,014); barley, 5,377 (5,716); oats, 2,591 (2,735); rye, 346 (417); corn, 2,485 (2,813); potatoes, 14,821 (12,436); beet sugar, 1,704 (2,727); grapes, 6,924 (9,677); wine, 4,478 (6,311); apples, 2,228 (5,957); pears, 328 (542); and meat, 2,060 (1,930). Preliminary estimates for 1962 indicated that the wheat (11,148,000 metric tons), rye, and oats crops would exceed those of 1961. Corn and barley were expected to decline, while the sugar beet harvest would be good. Output of vegetables, fruit, fodder, and milk would be below the 1961 level, but the wine yield would be much larger.

Government agricultural policy in 1962 embraced modernization, development of export markets, and reduction of subsidies. Longer-range measures included farmers' pensions, land purchase and redistribution, and promotion of local industry, all with a view to reducing very small-scale and marginal farming (about 50% of the 2 million farms have less that 20 acres; 17%, less than 5 acres). The Fourth Modernization and Equipment Plan aimed at an annual increase of nearly 5% in production through improved techniques.

Industry.—About 50% of the gross national product is contributed by industry. The index of general industrial production (1958 = 100) increased from 116 in 1960 to 122 in 1961, and stood at 136 in June 1962, as compared with 128 in June 1961. The output of major industrial products in 1961 (in thousands of metric tons, with 1960 figures in parentheses) was as follows: coal and lignite, 55,260 (58,236); iron ore, 66,576 (66,912); pig iron and ferroalloys, 14,808 (14,340); crude steel, 17,568 (17,280); aluminum, 323 (279); zinc, 194 (189); cement, 15,684 (14,352); cotton yarn, 314 (314); wool yarn, 146 (143); and rayon filament yarn, 57 (55). Production of motor vehicles declined from 1,350,000 in 1960 to 1,202,400 in 1961, including 987,600 passenger cars, because of lower sales to the United States and Algeria. The output of electricity in 1961 amounted to 76,452 million kw.-hr. (72,120 million in 1960), and that of natural gas to 4,008 million cubic meters (2,844 million). Crude petroleum production rose from 11,400,000 metric tons in 1960 to 19,000,000 tons in 1961, of which 16,000,000 tons came from the Sahara.

Foreign Trade.—In 1961, French exports totaled 35,587 million francs (33,868 million in 1960), and imports 32,960 million (30,978 million); corresponding figures for the first 6 months of 1962 were 18,327 million and 18,876 million, respectively. Major customers outside the franc area in 1961 were West Germany, Belgium-Luxembourg, Italy, and the United States, in that order; principal suppliers, West Germany, the United States,

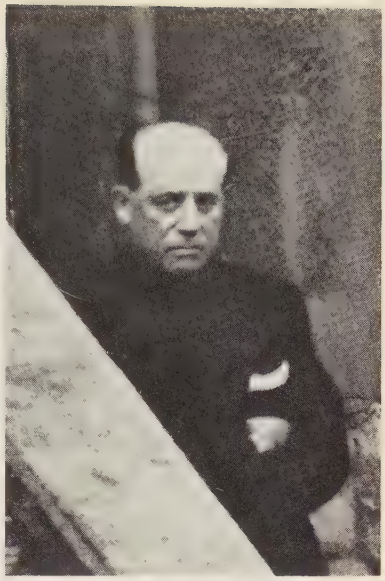
Belgium-Luxembourg, and Italy. Trade with other members of the European Economic Community (EEC; Common Market) was 14% higher than in 1960. Imports from the European Free Trade Association (EFTA; Outer Seven) rose by 24%, and exports to it by 8%. Exports to the franc zone declined by 8%; imports from it increased by 5%.

Events, 1962.—Two events dominated the year, each the achievement of Charles de Gaulle: the ending of the Algerian war, and the crushing of domestic political opposition to him. Surprisingly, the granting of Algerian independence, forced on France after nearly eight years of the worst colonial warfare any Western state ever knew, served to bolster his determination to remain in office to reshape the French regime. At year's end he could claim to have shattered parliamentary democracy as it had been known in France for almost a century. Never had French prestige in the 20th century stood higher; never had the political future of the country been so open to speculation. Freed at last from the hatred and violence of the Algerian disaster, Frenchmen approved their elderly leader and followed him across the ruins of the old political system into the unknown.

As 1962 opened, there was no doubt that the government was determined to conclude peace with the provisional government of the Algerian Republic (GPRA). Yet problems remained: What guarantees could be extracted for Europeans remaining in the new Algerian state? How could the murderous opposition to settlement from ex-Gen. Raoul Salan's Secret Army Organization (OAS) be destroyed?

On January 4, Salan called for insurrection against de Gaulle. French security forces were crippled by terrorists and by European citizens' refusal of cooperation. Muslims and Europeans favorable to settlement and independence were struck down. Algiers, Bône, and Oran were sealed off; curfews were introduced; search without warrants was practiced. In France, police raided hundreds of suspect right-wing homes, arresting scores of OAS supporters. Publication of OAS information was forbidden. From the pulpits came warnings against cooperation with terrorists. In Paris, the Communists staged demonstrations against "fascism" and *plastiquages* (plastic bombs), one of which, directed at André Malraux, blinded a child. A gigantic left-wing protest on February 8 involved such a melee when security forces dispersed the demonstrators that 8 persons died and hundreds were injured. Massive, silent demonstrations on February 12, and on the occasion of the 8 victims' funeral the next day, testified to the insanity of the OAS and the brutality of the suppression of left-wing protests against it. In Algeria, terrorists seized army supplies and sent death threats to foreign journalists and Europeans seeking to leave the country without OAS permission.

Secret talks with the GPRA continued. The president, assailing Salan and his band on February 5, promised that a settlement would come "very soon." Algeria would become "a sovereign and independent state." Louis Joxe, minister of state for Algerian affairs, and Belkacem Krim, meeting at Les Rousses on February 11–18, agreed on a cease-fire and establishment of a Transitional (Provisional) Executive. The French cabinet gave its approval on February 21; the agreements were accepted by the GPRA on February 20, and by the National Council of the Algerian Revolution on February 22–27. Final compromises were hammered out between Joxe and Krim at Évian-les-Bains on March 7–18. At 5:30 P.M. on March 18, the cease-fire was signed, effective at noon the next day.



Awaiting trial in Paris, Raoul Salan is shown in prison. The former chief of the terrorist Secret Army Organization, sentenced to life imprisonment on May 23 on charges of treason, was indicted on a separate charge of subversion, June 25.

PARIS MATCH

Terms provided for the release of prisoners within 20 days; a general amnesty; strict exclusion of armed forces from political action; gradual abrogation of emergency measures; establishment of a French High Commission and a 12-member Transitional Executive under French sovereignty until future political status was decided in a referendum; guarantees for French citizens in an independent Algeria; a three-year period within which Algerians must choose to remain French or to become Algerian; safeguarding and preferring of French oil interests, with "organic" French and Algerian exploitation of Saharan fields; a 15-year lease on the Mers-el-Kébir naval base, open to renewal; French rocket and nuclear testing bases and Saharan airfields to remain in French hands for five years; arbitration of disputes; Europeans to have proportional representation in Algerian representative assemblies and specified administrative rights in Algiers and Oran for four years; and economic, financial, technical, and cultural cooperation between France and independent Algeria.

These terms were close to total French capitulation. At once, Ahmed Ben Bella and four other rebel leaders, held since their 1956 kidnaping, were released. De Gaulle appealed immediately for popular approval in a referendum (set for April 8) to "satisfy the mind of France." On March 19, Christian Fouchet was appointed high commissioner, and the cabinet approved the establishment of the Transitional Executive headed by Abderrahmane Farès. All this, Premier Benyoussef Ben

Parisians pay homage on February 14 to four of eight persons killed in February 8 riot protesting continuing terrorism in France by right-wing Secret Army Organization.

WIDE WORLD

Khedda said on March 18, was "a great victory for the Algerian people." On the same day, however, Salan madly proclaimed OAS determination to annihilate the "Algerian rebellion," and ordered a general strike for March 19.

Murder, massacre, and reprisal followed. French military police had grenades hurled at them. On March 23, de Gaulle ordered the terrorists crushed without pity. Troops poured into Oran and Algiers and, in one shocking incident on March 26, mowed down demonstrating Europeans in Algiers' Rue d'Isly. Farès appealed on March 30 for reason, but warned that terror "will lead you nowhere." As de Gaulle called (March 26) for a referendum demonstration "that we are capable of resolving with determination a major problem of our time," the OAS warned (March 28): "There will be no quarter now; it's guerrilla war now." When Salan's deputy, ex-Gen. Edmond Jouhaud, was caught on March 26 and flown to Paris, ex-Gen. Paul Gardy took his place in western Algeria. Strikes and killings continued.

On April 8, the French accepted the Évian accords by 90% of the votes cast. The OAS was defiant, and terror continued for 10 weeks more. Neither French forces nor the National Liberation Front (FLN) mastered the killers. Salan himself was seized on April 20 and flown to Paris. Gardy succeeded him, although the principal OAS leaders were ex-Colonels Yves Godard and Jean Gardes and a former deputy, Jean Jacques Susini. In Paris, Jouhaud was tried by a special military tribunal on April 11–13, and condemned to death (the sentence was commuted to life imprisonment on November 28). From the underground, Georges Bidault promised on April 12 that his National Council of Resistance would fight to save France from the "dishonor and tyranny" of de Gaulle (on July 27, Bidault was stripped of his parliamentary immunity). Perhaps 4,000 had been slaughtered by the OAS since January 1. A massacre of 62 Algiers longshoremen on May 2 brought the hitherto disciplined Muslims to the point of running amok.

Striking defiant poses, Salan faced his judges (all threatened with death) in Paris on May 15–23. His brilliant right-wing lawyer, Jean Louis Tixier-Vignancour, embarrassed former Premier Michel Debré, a witness, and produced the decision that, as a result of unspecified "extenuating circumstances," Salan receive only life imprisonment. Furious, de Gaulle dissolved the tribunal, interpreting the proceedings as an assault on himself and an encouragement to the OAS. Indeed, despite arrests and appeals, terror continued. But the civilian leaders around Susini split from the military diehards around Gardy. Alternating between truce offers and scorched-earth threats, assailed by Jouhaud's death-cell pleas, the OAS broke up. De Gaulle created a new military tribunal on June 1. The Susini faction and the FLN reached an accord on June 17. Premier Georges Pompidou's cabinet approved it on June 21, but refused amnesty for terrorists in France. Because of left-wing pressure from Ben Bella, Ben Khedda criticized the pact. Oran, Bône, and Sidi-bel-Abbès remained intransigent, but the cease-fire took effect in Algiers. On June 20, Gardes accepted the truce. By contrast, Gardy broke off negotiations in Oran on June 22 and embarked on a wild scorched-earth orgy.

In the Algerian referendum on July 1, 5,975,581 voted for independence and cooperation with France, and 16,534 voted against. On July 3, de Gaulle announced that "France solemnly recognizes the independence of Algeria." Sovereignty was transferred to the Transitional Executive, the High Commission was dissolved, and Jean Marcel Jeanneney became the first ambassador to the new republic. The tricolor still flew over French military and naval establishments in Algeria, but 132 years of rule had ended. Susini and his followers rallied to the new state; Gardy and his fled Oran. The war was over. On August 28, Joxe and Farès signed agreements providing for teachers, technicians, and other civil servants to be recruited in France; continued use of the French Treasury and Bureau of the Budget as Algerian agents in financial matters; joint exploitation of Saharan resources; guarantees of French preference in Saharan minerals; adoption of the French petroleum production and marketing codes; and a joint agency to supervise overall production.

The consequences of the lost war for France did not end on July 3. The panic flight of Europeans continued, spurred on by reprisals, kidnapings, and property destruction by Muslims seeking revenge. Ambassador Jeanneney's complaints could not halt fear and retribution. By the end of October, about 750,000 out of approximately 1,000,000 Europeans living there on January 1 had fled to France. Some, bent on revenge against de Gaulle, now added to the 42,090 terrorist attacks of the war period, which had killed 16,378 Muslims and 2,788 Europeans (an additional 13,296 Muslims and 375 Europeans were missing). Plots against de Gaulle were numerous, and many suspects were arrested. (See also ALGERIA.)

At 8:10 P.M. on August 22, driving through Petit-Clamart to Villacoublay Airport, de Gaulle, with his wife and son-in-law, had about 150 bullets pumped into his car; six of them hit it, and the president was missed by inches. Letters mailed from the National Assembly post office applauded the attempt in the name of Bidault's council. While six men, led by Henri Maunoury, were being sentenced to long prison terms for the attempt on de Gaulle of Sept. 8, 1961, others were arrested in September for the Petit-Clamart ambush. A French air force engineer, Jean Marie Bastien-Thiry, confessed to being the leader of the plot. The anti-Gaullist network extended across western Europe. Jacques Soustelle and Bidault, expelled from Italy in August and September, disappeared from view (on December 8, it was disclosed that a warrant had been issued for Soustelle's arrest). If their agents were encouraged by the assembly's challenge in toppling Pompidou on October 5, and by the Council of State's ruling the special military tribunal unconstitutional on October 19, they had the government's assurance that it would hunt them down. The massive electoral triumph of the president in November rendered their cause all the more insane.

Early in the year it became clear that de Gaulle did not intend to retire once the war ended. With a settlement in sight, he moved toward constitutional revision to strengthen the executive branch. The debate on March 20–21 on the Évian accords, ending with conflicting shouts of "treason" and "OAS assassins," could not have improved his view of the National Assembly; nor could its less than enthusiastic approval of Pompidou's cabinet on April 27 (259–128, with 119 abstentions), a reflection of parliamentary disapproval of de Gaulle's rumored plans. On June 8, the president informed the nation that "at the proper time" it would "have to make sure that, in the future and above and beyond men who pass, the republic may remain strong, well ordered, and continuous." This meant popular election of the president. Irritation increased, reflected in assembly opposition to de Gaulle's insistence on a confederation of states, "a Europe of fatherlands,"

Security guard examines rooftops for signs of a possible assassination attempt on President de Gaulle (center), shown touring central France in May.

PARIS MATCH

rather than a supranational union of peoples. On June 13, 293 deputies left the chamber in protest against government refusal to permit a vote on foreign policy.

Opposition flared when the plan to submit constitutional reform (popular election of the president) directly to the people in a referendum was announced. All but the Gaullist Union for the New Republic (UNR) claimed that Article 89 required parliamentary amendment. De Gaulle argued on September 20 that his successor would need a mandate "directly from all citizens" to ensure the authority of the state. The struggle thus was joined. On October 4, de Gaulle requested a vote to "tell me if I can and if I should pursue my task in the service of France." Most responsible voices in the country called it blackmail. After a 15-hour debate on October 4–5, the assembly (280–190) censured and overthrew the government. Paul Reynaud, 84, who first brought de Gaulle out of obscurity nearly 30 years before, made a bitter reply to Pompidou. The assembly was dissolved by a decree published on October 10. Elections were fixed for November 18 and 25.

With the state radio and television at his service, de Gaulle conducted open war on the old parties. In speeches on October 18 and 26, he denounced them and "their regime of misfortune," and renewed his threat, if the referendum were "feeble, mediocre, or doubtful," to resign "right away and without return." The opposition was given only the briefest radio and television time to make its case on October 22 and 23. The non-Communist opposition promised a coalition government in the event of de Gaulle's retirement. The referendum, held on October 28, gave the president a 62.25% approval; 37.75% voted against. Taking account of 23.03% abstentions, 46.66% of the electorate accepted revision; 28.29% rejected it. The president was pronounced satisfied, but the opposition considered that he had suffered a measure of defeat; certainly the margin of approval was less than expected.

Thus the parties went into the election campaign hopefully. On November 7, de Gaulle denounced them as "the parties of yesteryear," and appealed for massive backing of the UNR, without naming it. Stung by charges that they had brought on the disasters of 1940 and 1958, the opposition lashed out at the president for "cheating with history and with truth." It did them no good; no more than did the Socialist promise to vote Communist, if necessary, in the second ballot to defeat UNR candidates. November 18 was a disaster for the opposition; among the casualties were Reynaud, Pierre Mendès-France, and, on the far right, Pierre Poujade. The Gaullist landslide was confirmed on November 25. If Debré was defeated, the Pompidou cabinet as a whole was returned. The Gaullists obtained majority control of the assembly, the first such party victory in modern times. Significantly, the Communists increased their seats from 10 to 41; the Socialists, theirs from 43 to 67; and the Radicals, theirs from 36 to 44. But the Independents were stricken, dropping from 123 to 50, and the Popular Republicans (MRP) fell from 57 to 38. Clearly the UNR, with 230 seats (majority control of the assembly was assured by nonconformist Independents, Radicals, and MRP members pledged to de Gaulle), had scored off these two parties. Thus the UNR was oriented to the right, but any new party stability depended on its finding a program or at least breaking up into recognizable political units. The last vestige of parliamentary control of the presidency was gone.

The nation could look back on numerous ministerial changes during the year. On January 18, Wilfrid Baumgartner resigned as minister of finance and economic affairs, handing over his office to Valéry Giscard d'Estaing. On April 14, following the Évian settlement, Premier Debré resigned, and the president entrusted the government to his banker friend and adviser, Georges Pompidou; 19 ministers were carried over from the Debré cabinet, while 10 were newly appointed. Protesting de Gaulle's sarcastic dismissal of their integrationist position as "mythical" in a press conference on May 15, 5 MRP ministers (Pierre Pflimlin, Robert Schumann, Robert Buron, Paul Bacon, and Joseph Fontanet) resigned on May 16. Pompidou quickly reorganized the cabinet. When the Independents in the assembly condemned the president's European policy on May 22 and ordered their cabinet members (Giscard d'Estaing, Louis Jacquinot, Raymond Marcellin, and Jean de Broglie) to resign, the four men refused and broke with their party. Christian Fouchet became minister delegate in the cabinet on September 11. On October 8, it was revealed that Pierre Sudreau had resigned as minister of education in protest against the president's constitutional plans. After the elections, on November 27, Pompidou was reappointed premier. His cabinet, announced on December 6, had only three new members.

Relations with the Western powers in 1962 were cordial, but affected by a determined French pursuit of parity in the Atlantic alliance and leadership in Europe. Relations with West Germany were especially good. De Gaulle and Chancellor Konrad Adenauer met briefly on February 15 at Baden-Baden. On July 2–8, Adenauer visited France, where he was courteously but unenthusiastically received from Paris to Bordeaux to

Reims. He and de Gaulle announced their intention to conclude discussions on a European political federation "as soon as possible." More spectacular was de Gaulle's visit to Germany on September 4–9. A public triumph from Munich to Hamburg, his progress was royal, marked by enthusiasm bordering on frenzy.

Less warm were relations with Great Britain, bedeviled still by the problem of Britain's entry into the EEC. Apparently, Adenauer and de Gaulle had agreed to try to achieve their European political federation during 1963; then the United Kingdom could enter the EEC by January 1964. Assuredly the president preferred a "little Europe," excluding Britain. Since the Common Market was making such heavy weather in London during 1962, prospects for better relations with France were not bright. Prime Minister Harold Macmillan conferred with de Gaulle at the Château de Champs on June 2–3, but each government gave a different version of the talks. In vain, Macmillan visited France again on December 15–16. Meanwhile, de Gaulle's continued opposition to European integration made relations with Italy, Belgium, and the Netherlands lukewarm. The year closed with de Gaulle (and his aged German friend) blocking the road toward "creating Europe."

Relations with the United States remained stiff. In response to United States pressure for greater cooperation, de Gaulle refused to consider integration of the forthcoming nuclear striking force. France, he remarked at Limoges on May 20, was "not in the tow of another state." Hoping to obtain French cooperation for the United States trade position vis-à-vis the EEC, Generals Maxwell D. Taylor and James M. Gavin supported the sale of United States nuclear equipment to France. Maurice Couve de Murville, minister of foreign affairs, observed on June 13 that, while France alone could not defend herself and Europe, French, European, and American forces had to achieve "a new equilibrium." Secretary of State Dean Rusk's visit to Paris on June 19–21 was without result here. So the dialogue continued, the French insisting on nuclear independence, the Americans warning against "competing and conflicting strategies" in the West.

In many ways, large and small, the state of France indicated its vigor and progress. It sent the splendid Atlantic liner *France* past the Statue of Liberty on February 8. With Great Britain it undertook (November 29) a gamble on a jointly designed supersonic transatlantic jet plane. It carried out an underground nuclear explosion in the Sahara on May 1. Moved by the three-week hunger strike of 74-year-old anarchist and pacifist Louis Lecoin, it finally agreed in June to recognize the status of conscientious objectors; it prepared to cut its military strength from 700,000 to 500,000 men. With four times as many cars on the roads as a decade earlier, with three fifths of the population possessing savings accounts, with 5 million refrigerators and French cooking succumbing just a little to snack bars, with wine yielding slightly to soft drinks, brandy to scotch, and alcoholism to temperance, the French were prosperous and at peace for the first time in more than 20 years.

The last president of the Fourth Republic died on November 22, marking the end of an era. But the first president of the Fifth Republic, fresh from the most stunning electoral triumph any French politician ever had, could not, unhappily for France, refrain from presiding over the funeral on November 27 with bitter words for the parliamentary regime they buried that day in Normandy with René Coty.

(See also De Gaulle; Europe; North Atlantic Treaty Organization; and the Index entry, *France*.)

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FRANCO, Francisco. See biographical sketch under Spain.

FREEMAN, Orville Lathrop. See biographical sketch under United States.

FRENCH CAMEROONS. See Cameroun.

FRENCH-CANADIAN LITERATURE. See Canadian Literature.

FRENCH COMMUNITY

By 1962 the French Community had little but economic and cultural significance. The structure of the Community relationship had evolved to the point where it was merely contractual. This had been the wish of the African states themselves; French opinion did not resist the inevitable. Editorials in the French press showed acceptance of the fact that, while there would always be a special connection between France and her former African colonies, everything had now been swallowed up in the generic problem of emancipated black Africa's relations with the West.

THE FRENCH COMMUNITY[1]

Division	Area (sq.mi.)	Population[2]
French Republic:		
Metropolitan departments	212,821	46,300,000
Overseas departments:		
French Guiana	35,135	32,000
Guadeloupe	687	276,000
Martinique	425	283,000
Réunion	970	346,000
Overseas territories:		
Comoro Islands	838	185,000
French Polynesia	1,544	76,000
French Somaliland	8,500	68,000
New Caledonia	8,499	78,000
St. Pierre and Miquelon	93	5,000
Wallis and Futuna Islands	49	9,900
Other member states[3]:		
Central African Republic	238,200	1,227,000
Republic of Chad	495,750	2,680,000
Republic of Congo	132,000	900,000
Gabon Republic	103,100	448,000
Malagasy Republic	228,000	5,577,000
Republic of Senegal	76,124	2,980,000
Total	1,542,735	61,470,900

[1] Outside the Community proper is the Anglo-French condominium of the New Hebrides, which has an area of 5,700 square miles and an estimated population of 61,000. The French Southern and Antarctic Territories (1960 pop., 103), former dependencies of Madagascar, comprising Adélie Coast in Antarctica and the Crozet Islands, Kerguelen Islands, St. Paul Island, and Amsterdam Island in the southern Indian Ocean, constitute an overseas territory that received special status in 1955. [2] Latest population estimates from Statistical Office of the United Nations, *Population and Vital Statistics Reports*, Statistical Papers Series A, vol. 14, no. 4 (October 1962). [3] Six other republics—Republic of Dahomey, Republic of Ivory Coast, Republic of Mali, Islamic Republic of Mauritania, Republic of Niger, and Republic of Upper Volta—remained outside the framework of the Community after attaining their independence in 1960; all have signed bilateral agreements of cooperation with France, as has the Federal Republic of Cameroun, a former French trust territory.

While the Algerian war continued, the new Community nations were divided on that issue. Mali took sides with the Casablanca group (Guinea, Ghana, Morocco, and the United Arab Republic) against the Monrovia group (this group's French-speaking members are the Brazzaville group of Senegal, Ivory Coast, Malagasy Republic, Gabon, Niger, Central African Republic, Mauritania, Cameroun, Dahomey, Congo, Chad, and Upper Volta). During the Lagos Conference, which was held on January 25–30 to draft a charter of loose confederation, the Casablanca group stayed away because no representative of the Algerian rebel government had been invited.

The Monrovia group of states, on the other hand, showed their sympathy with President Charles de Gaulle's efforts to end the war and their recognition of the fact that France must in all ways be their principal source of supply.

Despite President Modibo Keita's refusal to appear at Lagos, Mali demonstrated the elasticity of the Community by entering negotiations for consular, economic, financial, and monetary cooperation with France; the conventions were signed in Paris on February 2. Mali and France would enjoy reciprocal tariff preferences, and Mali would remain in the franc area and receive aid for its five-year development plan. On May 12, agreements establishing a West African Monetary Union were initialed in Paris by France, Dahomey, Ivory Coast, Niger, Mauritania, Senegal, Upper Volta, and Mali. These states agreed to set up a new African Financial Community franc, pegged at one fiftieth of the French franc. A Central Bank, presided over by an African, would issue notes guaranteed by France. On June 30, however, Mali announced its withdrawal and established its own bank. Yet it confirmed the earlier decision to remain within the franc area and announced talks for monetary cooperation with France.

Toward the year's end, when a French delegation was to arrive in Conakry for talks, even Guinea (which had chosen instant independence in 1958) loomed on the Community horizon. The Guinean evolution away from the Soviet bloc pointed up the fact that, whatever the burden of historical memory and the ideological convictions involved, French-speaking African states stood to gain by association with France and the European Economic Community (EEC). The Brazzaville group's conference at Libreville, Gabon, on September 11–14 showed progress toward rapprochement with the Casablanca group. De Gaulle's telegram of good wishes underlined the happy prospects still open within the French Community idea. If Great Britain joined the EEC, cooperation between France and her former colonies would be the more harmonious, for the hesitations of the new English-speaking African states in the Monrovia group would disappear.

In the meantime, there was no doubt about the interest of French business and the French government in the Community. While the formal structure of the Community had vanished, there remained a network of self-interest and the living and strong, if less tangible, connection with a common cultural tradition.

(See also AFRICA; FRANCE.)

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FRENCH GUIANA

Situated on the northeastern coast of South America, this French overseas department has an area of 31,135 square miles, and a population (1961 est.) of 32,000. The population is of mixed Negro, Caucasian, and Asian descent along the coast, and comprises descendents of former Negro slaves and aboriginal Indians in the interior. Roman Catholicism is the principal religion. Cayenne (est. pop., 13,362) is the capital and chief port.

The department is administered by a French-appointed prefect (René Erignac), assisted by an elected 15-member General Council. The economy is based on subsistence agriculture, supplemented by gold and timber production. The chief crops are cassava, corn, breadfruit, and yams. Sugarcane has been introduced with some success. Total exports in 1961 were valued at 378 million francs; imports, 7,745 million francs. Chief exports (in million francs): gold, 143; timber, 109. Chief suppliers were France and the United States; chief customers were France, Guadeloupe, and Martinique.

FRENCH GUINEA. See GUINEA.

FRENCH LITERATURE

The *Journal* of Jules Michelet, the great French romantic historian, published in its entirety for the first time (vol. 1, 1959; vol. 2, 1962) was one of the most discussed items of 1962. Michelet died in 1874 at the age of 76. His extraordinary *Journal* reveals some unknown aspects of him as a writer and projects new light on his life with his wife, Athénaïs. In Michelet's mystical and scientific mind, his young wife came to have the same importance as history, which was a religion with him. Athénaïs fills the pages of the second volume of the *Journal*, in which he attempts a systematic and objective study of her personality.

Another important publication of the year was a new, complete edition of André Breton's *Manifeste du surréalisme*, the occasion for a re-evaluation of surrealism. Most critics, looking back on the literature of the last 30 years, agreed that the surrealistic movement exerted an extraordinary influence which is still very conspicuous in literature and the arts.

The Novel.—The New Wave continues to bring to the shores of literature interesting experimental works, even though some of the better-known exponents of this style (Robbe-Grillet, Marguerite Duras) are busy translating it for motion pictures. The most original work was perhaps that of Marc Saporta, *Composition numéro un*. This novel, like Raymond Queneau's *Cent mille milliards de poèmes* (1961), is not one but a great number of books. It consists of 150 pages which the reader can reshuffle as he wishes. The general public becomes in a way the novelist; the reader builds the story as he sees fit, and can change it as often as he pleases.

In spite of the success of the New Novel, the traditional novel is still quite healthy because the mass of the reading public still prefers plots which can be easily understood. Academician Henri Troyat's *Les dames de Sibérie*, a long realistic novel about a French woman married to a Russian at the time of the 19th century czars, is a best seller. André Dhotel's *Les mystères de Charlieu sur Bar* is another of those sentimental, slightly mystical novels, the characters of which are born of a dream and a myth, and which reminds us of the *romans courtois* of the Middle Ages.

Robert Merle's *L'Île* is, on the more superficial level, an historical novel in the tradition of *Mutiny on the Bounty*. At the end of the 18th century a band of mutineers flee Tahiti, where the British Admiralty could have found them too easily, and settle, with a few Tahitians, on a small desert island of Oceania, to which they bring their racial prejudice, their egotism, and their ambitions. The small society is almost completely engulfed by death and destruction. Merle's novel is not only a good, lively adventure story; it is a well-written meditation on man and the problems of man's involvement in evil.

Poetry.—Poetry was very much in the literary news in 1962. The Prix des Critiques, awarded in recent years to first-rate novelists such as Albert Camus, Françoise Sagan, and Alain Robbe-Grillet, in 1962 was given to a 38-year-old poet, André Du Bouchet, for his collection *Dans la chaleur vacante* (1961). Du Bouchet, who is also known for his excellent translations of the works of Friedrich Hölderlin, Shakespeare, and James Joyce, writes a compact and severe, but fresh, nonlyrical poetry which is sometimes reminiscent of René Char. In his short poems

he creates a new surrealistic world which tries to abolish all distinctions between height and depth, proximate and distant, exterior and interior.

Several important collections of poems were published during the year. *Vents et poussière,* by Henri Michaux, gathers poems written between 1955 and 1962. In this small but important book, the author of *Plume* continues his exploration of the deeper recesses of thought. He tries to capture images of the realm of dream and nightmare, and to explore in its infinite waverings the constant oscillation of a will-o'-the-wisp consciousness. Jean Grosjean's *L'Apocalypse,* André Frénaud's *Il n'y a pas de paradis,* and Jean-Claude Renard's *Incantation du temps,* attest to the diversity of French contemporary poetry. Grosjean's poems are obscure and apocalyptic, and combine a very personal inspiration with an exceptional knowledge of the great Judaic, Islamic, and Christian texts. Frénaud, on the contrary, is attentive to reality and to daily life; his poetry is effusive and sometimes violent. Finally, Renard is a poet of Christian inspiration. His book opens on an Augustinian quotation: "Là où est la Charité rien n'est à l'étroit." ("Where there is Charity there is no constraint."). Like Claudel, he sings of the Creator, the creature, and all creation.

Theater.—Jean Anouilh's most recent plays, *La foire d'empoigne* and *L'orchestre,* are minor but very entertaining works. *L'orchestre* is a psychological study of a second-rate girls' band. *La foire d'empoigne* is a semihistorical play about the year 1815 in France. In a farcical but most convincing way, Anouilh shows that great men of history are over-fond of drama; they enjoy being the stars of a big show, whatever the cost to the simple men, the enthusiastic victims of hero worship.

Marcel Aymé's *Les maxibules* is one of the best comedies by that author. A poetic, tender, ironical work, it is a satire on many kinds of foolishness. Françoise Sagan's new work, *Les violons parfois,* was, like *Château en Suède* (1960), a brilliant, sophisticated, rather thin play, which will probably not be remembered as a masterpiece of its times.

Nonfiction.—Among the many works of literary history and criticism were Renée Kohn's erudite, brilliant *Le goût de La Fontaine,* the late Marcel Thiébaut's *Entre les lignes,* and Robert Kemp's *La vie des livres.* Pierre de Boisdeffre's *Dictionnaire de littérature contemporaine, 1900–1962* is extremely useful because it gives biographical and critical information on most of today's authors.

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FRENCH OCEANIA. See FRENCH POLYNESIA.

FRENCH POLYNESIA

Comprising some 125 islands scattered over a wide area in the south-central Pacific, French Polynesia is an overseas territory of the French Republic. The territory is composed of five principal archipelagoes: the Society Islands (divided into the Windward Islands and the Leeward Islands); the Tuamotu Islands (or Low Archipelago); the Gambier Islands; the Marquesas Islands; and the Tubuai Islands (or Austral Islands). Clipperton Island, 670 miles southwest of Mexico, is administered as part of the territory. Tahiti (area, 402 square miles; pop., 36,326), the principal island, is 3,660 miles southwest of San Francisco. The aggregate land area of French Polynesia is 1,544 square miles, and the population (1961 est.) is 76,000. Papeete (1956 census pop., 17,288), on Tahiti, is the capital and chief port.

The government is headed by a French-appointed governor (Aimé Grimald), who is assisted by a 7-member Government Council and a 30-member Territorial Assembly, elected every five years by universal suffrage. The ordinary budget for 1961 was balanced at 637 million francs CFP; the extraordinary budget, at 61 million francs CFP (63.64 francs CFP equals U.S.$1). In 1961 there were 133 public and private elementary schools (with 18,021 pupils), and 8 secondary schools (1,942 pupils).

The economy of the territory is based on the production of copra, vanilla, coffee, phosphates, and mother-of-pearl shells. Exports in 1961 totaled 1,035 million francs CFP; imports, 2,097 million francs CFP. Principal exports (in million francs CFP): phosphates, 442; copra, 266; vanilla, 178; and pearl shell, 86. Principal customers in 1961 were France, New Zealand, and the United States; principal suppliers were France and New Zealand.

FRENCH SOMALILAND

Situated in northeastern Africa on the Gulf of Aden, French Somaliland is an overseas territory of the French Republic. Its area is estimated at 8,500 square miles, and the population (1961 est.) is 68,000, composed mainly of Muslim Danakils and Somalis. Djibouti (pop. 41,000) is the capital, a major bunkering station, and a free port. The government is headed by a French-appointed governor (Jacques Compain in 1962), assisted by an 8-member Government Council and a 32-member Territorial Assembly, elected by universal suffrage. The government budget for 1962 was balanced at 1,022 million Djibouti francs; the extraordinary budget, at 332.9 million (214.4 Djibouti francs equal the U.S. dollar).

The economy of the territory is based on trade and centers about Djibouti and the Franco-Ethiopian railway. The remainder of the country is inhabited by nomadic herdsmen. About 89% of the land is desert. Total exports in 1961 were valued at 337 million Djibouti francs; imports, 3,620 million. The major customer was France; major suppliers were France, Great Britain, and Aden.

FRENCH SOUTHERN AND ANTARCTIC TERRITORIES

A French overseas territory in the southern Indian Ocean and Antarctica, French Southern and Antarctic Territories include St. Paul Island (3 sq. mi.), Amsterdam Island (16 sq. mi.), the Kerguelen Islands (2,703 sq. mi.), and the Crozet Islands (193 sq. mi.), in the Indian Ocean; and Adélie Coast (estimates vary from 150,000 to 200,000 sq. mi.) on the Antarctic continent.

Formerly dependencies of Madagascar, the territories were constituted a French overseas territory with special status on Aug. 6, 1955. They are under the control of an administrator (Pierre Rolland in 1962), who is assisted by a Consultative Council which meets in Paris. Scientific stations have been established in some of the territories, but there is no permanent population.

FRENCH SUDAN (SOUDAN). See MALI.
FRENCH TOGOLAND. See TOGO.
FRENCH WEST INDIES. See GUADELOUPE; MARTINIQUE.

FRIENDS, RELIGIOUS SOCIETY OF

Several Friends (or Quakers) attended the World Council of Churches Assembly in New Delhi, India, November–December, 1961. Present were delegates from three Quaker bodies which are members of the council: the Friends General Conference and the Five Years Meeting of the United States, and the Canada Yearly Meeting. The London Yearly Meeting, which has never joined, sent observers. When the assembly adopted a more restrictive statement defining the basis for membership, the Quaker delegates voiced their opposition, reaffirming the traditional objection of Friends to all definitive creedal statements.

From April 29 to May 1, 1962, over 1,000 Friends and others gathered in Washington, D.C., for a Friends Witness for World Order. Vigils, interviews with officials, and public meetings were climaxed by a discussion between President Kennedy and a delegation of six Friends.

The American Friends Service Committee spent about $4.5 million for its activities of international service, community relations, youth activities, and peace education. Over $1 million was spent on re-

lief for Algerian refugees in Tunisia and Morocco. In the summer of 1962 the committee was asked by the new Algerian government to help in resettlement of refugees and others who had been held in camps within Algeria. The committee established 20 centers for relief, for training young people in literacy and other skills, and for restoring homes and farms. The committee also held its second experimental international seminar for youth, co-sponsored by the USSR Committee for Youth Organization.

Jessamyn West published *The Quaker Reader*, an anthology of writings by and about Friends. An hour-long television program about Friends was presented by NBC on July 30.

On invitation from Pope John XXIII, the Friends World Committee appointed Richard K. Ullman of England to attend the Second Ecumenical Vatican Council, beginning in October 1962, as an observer.

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FROZEN FOODS. See FRUITS; VEGETABLES; and the Index entry, *Frozen Foods.*

FRUITS

Production of 20 major fruits in the United States in 1962 remained close to the 1961 level of 18,767,000 tons, the highest in a decade, according to the Statistical Reporting Service of the U.S. Department of Agriculture. Production of noncitrus fruits was down less than 1% from 1961, but was 6% above average. The sour cherry crop set a record and cranberry production was the second largest on record. Only the apricot, prune, fig, and olive crops were below average.

The 1962–63 citrus season began with prospects for increased production over the preceding year, including a record orange crop, but severe freezes in Florida in December 1962 caused extensive damage.

U.S. PRODUCTION OF FROZEN FRUITS

Product	1960	1961
	1,000 pounds	1,000 pounds
Apples and applesauce	69,853	80,117
Apricots	15,258	12,164
Blackberries	26,970	22,562
Blueberries	25,230	21,990
Boysenberries	10,229	13,020
Cherries	129,808	188,637
Grapes	14,899	13,598
Peaches	79,928	60,774
Plums and prunes	2,060	2,198
Raspberries, black	9,333	6,072
Raspberries, red	28,041	23,127
Strawberries	217,477	222,694
Logan and other berries	3,513	3,414
Other fruit	34,119	34,559
Total	659,718	704,926
	1,000 gallons	1,000 gallons
Citrus juice pack:[1]		
Orange, concentrated	84,298[2]	116,082[2]
Grapefruit, concentrated	3,841[2]	3,163[2]
Blend, concentrated	256	267
Lemon, concentrated	93	...
Lemonade base	8,450	...
Tangerine, concentrated	1,407	1,370[2]
Limeade	728	...

[1] Season beginning November 1. [2] Florida pack only. (Sources: Fruits—National Association of Frozen Food Packers; citrus juices—Florida Canners Association.)

Bearing acreage for noncitrus fruits in 1962 was higher than in 1961. Acreage for eight major deciduous fruits—commercial apples, peaches, pears, grapes, cherries, plums, prunes, and apricots—totaled 1,710,900, higher than in any of the preceding five years, but lower than in other postwar years. For seven minor fruits—figs, nectarines, olives, avocados, dates, persimmons, and pomegranates—bearing acreage was 92,300, highest of the postwar period. Acreage for the six citrus fruits—oranges, tangerines, tangelos, grapefruit, lemons, and limes—totaled 795,600, down 17,100 from 1961 but close to the level of the postwar period.

Apples.—The 1962 crop of 121,390,000 bushels was 4% below the preceding year but 10% above average. The crop included 5,234,000 bushels of summer varieties, 11,790,000 of fall varieties, and 104,366,000 of winter varieties. Leading individual varieties were: Delicious, 28,777,000 bushels; McIntosh, 16,636,000; and Rome Beauty, 9,167,000.

Peaches.—Production of 76,351,000 bushels in 1962 was 2% below that of 1961 but 16% above the 1951–60 average. The national total included 30,627,000 bushels of California clingstones, which are used mostly for canning.

Pears.—The crop of 29,102,000 bushels was about average, although 7% above 1961 production. About 26,300,000 bushels of the nation's crop was produced in the three Pacific coast states.

U.S. PRODUCTION OF APPLES, PEACHES, AND PEARS BY LEADING STATES

(1,000 bushels)

	Average 1951–60	1961	1962
Apples[1]:			
Washington	22,630	16,900	22,000
New York	17,405	24,100	20,000
Michigan	10,520	16,000	12,000
California	8,730	10,300	10,300
Virginia	9,505	10,500	9,800
Pennsylvania	7,028	9,800	8,700
West Virginia	4,773	5,500	5,000
Ohio	3,205	3,500	3,700
Massachusetts	2,450	3,150	2,900
North Carolina	1,554	2,300	2,700
Illinois	2,315	2,500	2,200
Oregon	2,151	1,700	2,000
Peaches:			
California:			
Clingstone	22,952	27,752	30,627
Freestone	11,613	12,543	12,918
South Carolina	4,213	7,800	7,000
Georgia	3,088	5,200	4,200
Pennsylvania	2,666	2,400	2,700
New Jersey	2,044	1,700	2,600
Washington	1,646	1,750	2,300
Colorado	1,599	1,900	1,800
Michigan	2,792	3,450	1,600
Virginia	1,470	1,500	1,500
Arkansas	1,458	1,500	1,020
Pears:			
California	15,472	14,460	15,917
Oregon	5,175	4,830	6,150
Washington	4,824	4,750	4,200
Michigan	1,092	1,550	1,500
New York	549	750	630
Utah	240	120	220
Colorado	193	245	220
Pennsylvania	136	115	120
Idaho	84	60	55
Connecticut	50	65	50
Texas	124	135	40

[1] Estimates of the commercial crop refer to total production of apples in the commercial apple areas of each state. (Source: Statistical Reporting Service, U.S. Department of Agriculture.)

Grapes.—The fourth largest crop on record was produced in 1961—3,148,350 tons, 2% above the 1961 crop and 6% above the 10-year average. Of the national total, 2,862,100 tons consisted of European-type grapes grown principally in California and Arizona. California's 1962 crop included 640,000 tons of wine varieties, 580,000 tons of table varieties, and 1,630,000 tons of raisin varieties. Production of raisins amounted to 178,400 tons (dried basis), 50,000 tons less than the year before.

Plums and Prunes.—Production of plums in California and Michigan fell 7% below 1961 to 88,500 tons, but was slightly above average. The United States prune crop totaled 443,000 tons, 27,800 tons more than the year before, but 10,370 tons below the 1951–60 average.

Cherries.—A record sour cherry crop of 179,190 tons was produced in 1962, 8% more than in 1961 and 42% above the 10-year average. Sweet cherry production also increased, with the 109,200 ton 1962 crop 8% above the preceding year and 24% above average.

Apricots.—The 1962 crop fell 12% below the 1961 crop and 16% below average to a total of 168,600 tons. Poor weather in California caused most of the decline.

Dates.—California's output of 22,500 tons in 1962 was 5% above 1961 production and 11% above average.

Olives.—An average crop of 50,000 tons was produced in California in 1962, but it was 14% more than the year before.

Figs.—The 1962 crop of 64,400 tons (fresh basis) was slightly above 1961, but 22% below average. Acreage was at the lowest level of recent years.

Avocados.—The 49,400 ton 1962 crop was 12% below the preceding year but 10% above average.

Cranberries.—The 1962 crop rose 8% above that of 1961 and 24% above average to 1,335,000 barrels, a total exceeded only in 1960. Massachusetts produced 58% of the United States output.

Nectarines.—The California crop of 50,000 tons was 4,000 below the 1961 record, but exactly double the 1951–60 average. Bearing acreage continued to increase, although the rate slowed.

Strawberries.—Production of 515,453,000 pounds in 1961 was 1% above the 1961 crop and 10% above average. Of the total crop, 56% was used fresh and the remainder went to processors. These were about the same percentages as in 1961.

U.S. CITRUS PRODUCTION, BY LEADING STATES
(1,000 boxes)

	Average 1951–60	1961	1962[1]
Oranges:			
California	34,973	20,700	28,000
Florida	86,120	113,400	120,500
Texas	1,740	2,300	80
Arizona	1,089	1,440	1,050
Louisiana	164	255	15
Total	124,086	138,095	149,645
Grapefruit:			
Florida	34,940	35,000	38,000
Texas	2,900	2,700	200
Arizona	2,496	2,270	1,900
California	2,473	2,940	2,400
Total	42,809	42,910	42,500
Lemons:			
California	14,952	15,200	13,500
Arizona	670	1,540	500
Total	15,153	16,740	14,000
Limes:			
Florida	331	340	400
Tangelos:			
Florida	353	1,000	800
Tangerines:			
Florida	4,330	4,000	4,300

[1] Preliminary, based on conditions as of Dec. 1, 1962. Season begins with the bloom of the year shown and ends with completion of harvest the following year. (Source: Statistical Reporting Service, U.S. Department of Agriculture.)

Citrus Fruit. *United States Crop.*—Record orange production for the second consecutive year was in prospect early in the 1962–63 season. The Statistical Reporting Service of the Department of Agriculture estimated the crop at 149,645,000 boxes, 8% more than 1961–62 output, and 20% above average. The estimate was based on conditions as of Dec. 1, 1962, and did not allow for damage from freezing weather in Florida later in the season. California's output increased sharply, but production in Texas and Louisiana fell to very low levels as a result of the freeze the preceding winter. The 1962–63 crop included 78,015,000 boxes of early, midseason, and navel oranges and 71,630,000 boxes of Valencias.

Grapefruit production was estimated at about 42,500,000 boxes, according to early prospects. This was slightly below the preceding year and the 1951–60 average. The lemon crop of 14,000,000 boxes fell 16% below that of 1961–62 and 8% below average. Tangerine production rose from 1961–62, but the tangelo crop was 20% lower.

World Citrus Production.—A new world record in production of oranges and tangerines was set in 1961–62, according to the Agriculture Department's Foreign Agricultural Service. Most of the increase came in the United States and the Mediterranean area.

Lemon production also increased; the world crop of 41 million boxes was about 5 million larger than production from the bloom of 1960. The 1961–62 lime crop also was greater, but grapefruit production fell slightly below that of the preceding year.

New plantings indicated the possibility of much larger crops of oranges, tangerines, and lemons in the future. On the other hand, little change seemed likely for grapefruit and limes.

WORLD PRODUCTION OF CITRUS FRUITS
(1,000 boxes)

	Average 1951–55	1960	1961[1]
Oranges and tangerines	315,149	380,158	403,370
Grapefruit	47,219	49,759	49,320
Lemons	30,910	36,615	41,360
Limes[2]	3,382	4,288	4,420

[1] Preliminary. [2] Egypt, Mexico, and United States only. Northern Hemisphere harvests begin in November of year shown and Southern Hemisphere harvests in May following year shown. Production in foreign countries converted to boxes of the following weights: oranges, 70 pounds; grapefruit and limes, 80 pounds; lemons, 76 pounds. (Source: Foreign Agricultural Service, U.S. Department of Agriculture.)

U.S. Foreign Trade.—Exports of fruit and fruit products rose from $253,520,000 in the fiscal year 1961 to $282,082,000 in the fiscal year 1962, according to the Economic Research Service. Fresh oranges and tangerines, the biggest single item, were valued at $37,277,000, almost $1.5 million more than a year earlier.

Imports also increased in the fiscal year 1962, totaling $168,161,000 compared with $163,372,000 in the preceding year. Bananas accounted for $77,981,000 of the 1962 total.

(See also AGRICULTURE.)

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FUEL BRIQUETTES. See MINERAL PRODUCTION.

FUELS. See ATOMIC ENERGY; COAL; COKE; GAS; MINING; PETROLEUM; and the Index entry *Fuels.* For rocket and spacecraft fuels, see MISSILES and SPACE FLIGHT.

FUR INDUSTRY

A continued rise in fur-consciousness, aided by the mode for trimmed fashions, kept activity in the United States fur industry at a high level in 1962. Mink continued to lead in sales over all other furs, but there was a marked increase in interest in other species.

Furs worn by such prominent women as Mrs. John F. Kennedy, Queen Elizabeth II, and movie actress Elizabeth Taylor revived demand for leopards and gave a great impetus to spotted furs in general. Somali leopard enjoyed such popularity that choice skins were bringing as much as $1,000 each.

Total federal excise tax collections (10% of the retail price) for the fiscal year ended June 30, 1962, amounted to $30,921,000, as compared with

$29,226,000 in the 1961 fiscal year and $30,207,000 in 1960.

Prices of ranched mink rose from $16.41 in 1961 to $18.11, partly because of the steepness of the drop in 1961, and partly because of a resurgence of demand, particularly for such colors as dark ranch, white, and pastel.

Worldwide mink production in 1961 exceeded 14 million pelts, of which the United States accounted for 6,727,000. The respective increases over 1960 were 16% and 4%. Imports into the United States were only slightly more than the previous year's 3.5 million, but exports went down about 10%. Both Scandinavia and Canada shipped fewer mink to the United States, but remained its biggest suppliers. The 1961 Annual Survey of Manufactures noted that shipments of dressed and dyed furs in the United States were valued at $14,839,000, compared with $15,582,000 in 1960.

The vogue for trimmings vastly improved sales of many long-haired furs, such as wolf, lynx, fox, raccoon, and opossum. At the same time, new dyeing techniques revived interest in Persian lamb. Mink, however, retained an estimated 70 to 75% share of retail fur sales.

SANDY PARKER,
Fur Editor, "Women's Wear Daily."

FURNITURE INDUSTRY. See Index entry.
FURS. See FUR INDUSTRY.

GERMANY—A glimpse of the barricade in East Berlin is revealed by a bomb hole in the Berlin wall on May 25.

UPI

GABON

An independent state on the Atlantic coast of central Africa, the Gabon Republic is a member of the French Community (q.v.). Its estimated area is 103,100 square miles. The population (1962 est.) of 550,000 consists mostly of Bantu ethnic groups and includes about 1,500 persons of foreign origin, mainly French. The official language is French. Chief cities are Libreville, the capital (1961 pop., 31,000), and Port-Gentil (26,000).

Government.—This former French overseas territory within French Equatorial Africa became independent on Aug. 17, 1960. The constitution of Feb. 17, 1961, provides for a president and a 67-member National Assembly elected by compulsory universal suffrage for a 5-year term. In the election of Feb. 12, 1961, candidates of the government-bloc parties were approved by a virtually unanimous vote, and Léon M'Ba, head of the dominant Democratic Party, was elected president for a 7-year term.

Education and Religion.—Education is compulsory up to the age of 16. School enrollment, 1959: 51,924 (32% of the school-age population). Number of schools (with enrollments): primary, 377 (49,816, or 80% of the school-age population); secondary, 13 (1,659); teacher-training, 2 (327); technical, 1 (122). Many persons in the coastal areas are Christians, but animism prevails among the tribes of the interior.

Finance.—The estimated budget for 1962 was balanced at 6,008 million francs CFA, or about $24 million (246.85 francs equal U.S.$1), slightly above the figure for 1961.

Transportation and Communications.—Gabon has no railroads, but a joint railroad and cableway are under construction from the manganese mines near Moanda to a junction with the Congo-Ocean Railroad in the Republic of Congo. The principal means of inland transport is the Ogooué (Ogowe) River, navigable for 100-ton barges to a point 155 miles from the Atlantic. Most towns are connected by all-weather roads, aggregating 2,590 miles. Libreville and Port-Gentil, the chief ports, have international airfields. Radio receiver licenses numbered 20,000 in 1959.

Agriculture and Forestry.—About half the labor force is engaged in agriculture, the chief subsistence crops being manioc, bananas, corn, taro, and yams. Cacao is the most valuable cash crop and third-ranking export item (2,271 metric tons exported in 1960); other cash crops are coffee, peanuts, rice, and palm products. The mainstay of the economy, however, is the $32 million lumber and wood industry. Gabon is the leading world supplier of okoumé, a softwood used for veneer and plywood (782,000 metric tons produced in 1961); hardwoods (mahogany, kevazingo, and ebony) also are exported.

Manufactures and Minerals.—Manufacturing is limited chiefly to lumber and agricultural processing industries (rice, palm oil, coffee). Mineral production in 1961 was valued at $15.6 million; the increase of 70% over 1960 was due largely to the start of uranium production near Mounano by a French company (969 metric tons of 30% uranium ore extracted in 1961). Petroleum is produced near Port-Gentil by American, Dutch, and French firms (774,000 metric tons in 1961). (See also below, *Events, 1962.*)

Foreign Trade.—Gabon is one of the few tropical African states showing a consistently favorable balance of trade. Declared exports, 1961: 13,530 million francs CFA (up 15% from 1960); imports: 8,853 million (up 11%). Logs and lumber provided well over half the value of external trade; mineral products, over one fourth. France was Gabon's leading customer (55% of exports) and supplier (60% of imports).

Events, 1962.—A French planning concern under contract to the Gabonese government released the draft of a seven-year (1963–69) development program to cost $67 million. The plan calls for increased lumber and agricultural output, labor training, and the development of small industries. Construction of a paper plant and a 20,000-kw. hydroelectric station at Kinguele Falls, on the M'Beï River, are the chief projects.

A Franco-American firm began producing manganese at Moanda in October, following completion of the cableway and railroad outlet to Pointe-Noire, in the Republic of Congo; an annual output of

750,000 metric tons of 48% manganese ore is anticipated. A consortium of Canadian and European investors has undertaken to exploit the vast high-grade iron ore deposits around Mékambo (1 billion metric tons of 60–64% iron).

Relations between Gabon and the Republic of Congo (Brazzaville) were strained in September after violent demonstrations in the two countries against each other's nationals. False reports that a Gabonese soccer team had been attacked by mobs in Brazzaville kindled latent anti-Congolese resentment in the Gabon capital. The ensuing riots and expulsion of 3,000 Congolese citizens touched off counter-demonstrations in the Congo.

R. N. M.

GALAPAGOS ISLANDS. See ECUADOR.

GAMBIA

Situated on the Atlantic coast at the most westerly part of the "bulge" of Africa and enclosed on three sides by Senegal, Gambia Crown Colony and Protectorate is the only British dependency in West Africa. The colony (area, 29 square miles), situated at the mouth of the Gambia River, comprises St. Mary's Island and the division of Kombo St. Mary on the mainland. The protectorate (3,974 square miles) extends inland for some 200 miles along both sides of the Gambia River and varies in width from 15 to 30 miles. Total area: 4,003 square miles; population (mid-1961 est.), 290,000. The capital and chief port is Bathurst (est. pop., 24,000).

Government.—The governor (John W. Paul, appointed Dec. 16, 1961) is chairman of an Executive Council composed of the prime minister and eight ministers drawn from the legislature. The House of Representatives consists of 32 members elected by the chiefs in assembly, and two nominated members without vote. The speaker and deputy speaker are elected by the House. In general elections of May 1962 the Progressive People's Party won 18 seats; its leader, David K. Jawara, was appointed prime minister on June 4, 1962.

Education and Religion.—School enrollment, 1962: 9,670. Number of schools (with enrollments): 58 primary (7,700); 5 secondary (1,870); 1 teacher-training (100). About 85% of the population is Muslim; the remainder is Christian and animistic.

Finance.—Government revenue, 1962 est.: £1,602,000, excluding a British grant-in-aid of administration of £639,999; recurrent expenditure, £2,356,000; expenditure under the development budget, £972,000.

Transportation and Communications.—Long-distance transport is chiefly by river steamer, as there are no railroads. Highways aggregate 750 miles (including 120 miles of all-weather roads). Three airlines make scheduled flights from Yundum Airport (near Bathurst) to West African countries and the United Kingdom.

Economy.—Gambia's one-crop economy is based on the production of peanuts. Exports of shelled peanuts totaled 51,100 tons in 1961. About 80% of the population is dependent largely on subsistence agriculture.

Foreign Trade.—Total exports, 1961: £3,374,000; imports, £4,572,000. Peanuts account for more than 90% of total export value. Minor exports include palm kernels, hides, and dried fish. Principal imports are textiles, machinery, vehicles, and foodstuffs.

Events, 1962.—A new constitution providing for responsible self-government was introduced in June. The crown-appointed governor retained responsibility for security, external affairs, and public service. Prime Minister Jawara has pledged to attain independence for Gambia in 1963.

A visit to Bathurst in midyear by Premier Mamadou Dia of Senegal resulted in agreement to expand the scope of the Gambia-Senegal Inter-Ministerial Committee, which studies common practical and technical problems. It was announced on October 27 that the two governments had asked the United Nations to study the possibility of establishing "some form of association" between the two countries when Gambia becomes independent.

GAMBLING. See Index entry.

GAMES. See SPORTS, GAMES, AND SHOWS.

GARDENING. See HORTICULTURE AND GARDENING.

GAS

Natural and manufactured gas production by major producing countries is shown in the accompanying tables. (Total world production figures are not available.)

MAJOR PRODUCERS OF NATURAL GAS[1]
(In billions of cubic feet)

Country	1958	1959	1960	1961
Austria	30.61	42.10	54.83	58.07
Brunei (Br. Borneo)	2.76	2.85	3.04	2.53[3]
Canada	337.80	417.34	522.97	657.89
Chile[2]	49.86	67.75	81.87	95.12
France	21.37	50.80	106.20	149.81
Hungary[2]	14.00	12.35	12.69	12.08
Indonesia[2]	77.89	83.22	90.73	91.32
Iran	26.29	32.06	36.30	104.30
Italy	193.16	228.31	240.61	256.02
Japan[2]	13.73	18.91	27.30	35.46
Mexico[2]	277.58	348.11	360.69	360.55
Pakistan	19.31	22.37	29.84	34.67
Poland	14.27	15.59	20.21	27.39
Rumania	189.41	215.80	243.28	242.58
Trinidad	23.40	25.21	27.04	29.37
United States	11,030.30	12,046.12	12,771.04	13,254.03
USSR	1,115.50	1,388.30	1,754.04	2,272.79
Venezuela	146.69	156.43	171.90	182.53

[1] Excluding gas used for repressuring, as well as gas flared, vented, or otherwise wasted. [2] Including gas for repressuring and gas wasted. [3] Estimate. (Source: U.S. Bureau of Mines.)

The following data are based on figures compiled by the U.S. Bureau of Mines and supplied by the American Gas Association. The marketed production (gross production minus the quantities consumed in repressuring, venting, and wasting) of natural gas in the United States increased 4% in 1961 over 1960. In the first half of 1962, marketed output was 6,858 billion cubic feet, compared with 6,575 billion cubic feet in the first half of 1961.

Consumption of natural gas in the United States by the 47 states using it in 1961 was as follows (in billion cubic feet): residential, 3,249 (up 5%); commercial, 1,077 (up 6%); industrial fuel, 6,714 (up 5%); field use, 1,881 (up 6%); and carbon black, 161 (down 19%).

Gross injection to underground storage in 1961 was the same as in 1960 (about 844 billion cubic feet) according to Bureau of Mines data. Withdrawals decreased from 713 billion to 698 billion cubic feet in 1961.

In 1961, interstate shipments (including imports and exports) totaled 7,949 billion cubic feet,

MAJOR PRODUCERS OF MANUFACTURED GAS
(In billions of cubic feet)

Country	1958	1959	1960	1961
Australia	87.78	88.22	93.60	53.29[1]
Austria[1,2]	21.63	22.80	12.18	12.27
Belgium	84.19	86.43	92.26	90.02
Canada	51.28	62.30	52.97	...[3]
Czechoslovakia	134.80	147.34	161.67	171.52
Denmark	14.11	15.05	14.02	13.79
France	303.19	305.88	301.84	106.14[4]
Germany, East	114.65	118.23	124.05	124.50
Germany, West[5]	871.50	809.25	924.79	879.56
Italy	78.37	74.79	85.54	88.22
Japan[1]	126.74	142.86	166.15	193.47
Netherlands	143.76	147.79	157.19	154.51
Spain	13.53	13.97	14.33	14.42
United Kingdom[6]	808.56	765.34	802.63	598.37
United States[7]	803.90	811.53	840.77	279.69

[1] Gasworks only. [2] Beginning in 1960, Vienna only (in 1959 about 50% of total production). [3] Data not available on a comparable basis. [4] Sales (in 1960 about 37% of total production). [5] Beginning 1960, including Saar. [6] Beginning in 1961, gas produced and purchased by gasworks (in 1960 about 75% of total production). [7] Beginning 1961, limited coverage, about 35%.

Note: For countries reporting in the metric system, the following conversion factor was used by the U.S. Bureau of Mines: m^3 at 32°F. (0°C.) × 37.32 = $ft.^3$ at 60°F.

(Source: *Monthly Bulletin of Statistics*, September 1962, United Nations, N.Y.)

an increase of 5%. Exports of gas totaled 10,747 million cubic feet, of which 5,577 million went to Canada and 5,170 million to Mexico. Imports of natural gas in 1961 totaled 218,860 million cubic feet, of which 167,104 million came from Canada and 51,756 million from Mexico.

(See also FEDERAL POWER COMMISSION; PETROLEUM; PUBLIC UTILITIES.)

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GASOLINE. See Index entry.

GEM STONES

The United States continued to provide a substantial market for diamonds and other precious stones in 1961, although its output was small. The value of imports of gem stones into the United States in 1961 was $222,715,000, compared with $192,488,000 in 1960, an increase of nearly 16%. The imports in 1961 were principally diamonds, including 2,274,923 carats of rough and uncut stones valued at $114,670,000, and 839,150 carats of cut (unset) diamonds valued at $78,605,000. Gem diamonds comprised 87% of the total imports. The data do not include industrial diamonds (see ABRASIVES). Other imports included cut emeralds and natural and cultured pearls (chiefly the latter). Exports of gem stones, precious and semiprecious, were valued at $14.8 million, compared with $7.6 million in 1960. Re-exports in 1961 were valued at $28 million, compared with $21.7 million in 1960.

World sales of gem and industrial diamonds, through the Central Selling Organization (London) totaled a record $268 million in 1961. No breakdown between gem and industrial sales was given.

The United States produced a wide variety of semiprecious and ornamental gem stones in 1961, the value of which was estimated at $1,309,000, an increase of $121,000 over 1960. Gem material and mineral-specimen output was reported from 45 states, with 11 states producing 85% of total value. Production of diamonds at the "Crater of Diamonds" in Arkansas was 121 carats, valued at $7,260. A new amethyst mine in North Carolina began operating in 1961. Also found in the state were a 14-ounce pink sapphire (estimated at 2,000 carats of cuttable stone), and a 24-ounce ruby (with many flaws, but estimated at 800 to 1,200 carats of cuttable stone).

(See also JEWELRY AND WATCHES; MINERAL PRODUCTION—*Diamonds*).

GENERAL ASSEMBLY, U.N. See UNITED NATIONS.

GENETICS

The 1962 Nobel Prize in physiology and medicine was awarded to F. H. C. Crick of Cambridge University, James D. Watson of Harvard University, and Maurice H. F. Wilkins of the University of London for their work on the chemical structure of genetic material. John C. Kendrew and Max F. Perutz of the Cavendish Laboratory, Cambridge University, received the Nobel Prize in chemistry for their studies on globular proteins. (See also NOBEL PRIZES.)

Cracking the Genetic Code.—Protein synthesis has been studied in vitro by adding to a suspension of ruptured bacterial cells all 20 of the usual amino acids in L form, along with different single-stranded ribonucleic acid (RNA) polymers.[1] When the added RNA came from tobacco mosaic virus (TMV), the protein synthesized had the same characteristics as the protein normally found in TMV, demonstrating that the information in TMV-RNA has the same meaning in a bacterial cell-free system as it has in a live tobacco plant. This and other evidence suggest that the messenger RNA code for amino acids is essentially identical in all organisms.

One of three winners of 1962 Nobel Prize in medicine, English biochemist Maurice Wilkins is shown with a model of DNA molecule at New York press conference, October 18.

WIDE WORLD

Pure RNA polymers were synthesized in vitro. The four usual nitrogenous bases in ribonucleic acid are adenine (A), cytosine (C), guanine (G), and uracil (U). When polyribonucleotides containing only adenine (A) or cytosine (C) bases were added to the cell-free protein-synthesizing system, no additional protein was made. The addition of the polyribonucleotide containing only the base uracil (U), however, functioned as a messenger RNA, causing the protein poly-L-phenylalanine to be synthesized. This discovery marked the first crack in the RNA code. The results demonstrated that a sequence of one or more U's in messenger RNA encodes L-phenylalanine, and that certain other sequences are meaningless for encoding amino acids. This work also confirmed what was evident from the TMV-RNA study, namely, that the RNA need not be interrupted in order to encode the successive amino acids in a polypeptide chain.

Mixed polyribonucleotides were synthesized in vitro with different ribonucleotides arranged in an essentially random linear sequence. All contained, besides U, different proportions of A, G, and C. When added to the protein-synthesizing system, it was found that although no amino acid required the presence of all four of these bases for incorporation into protein, some required three of these, others two, and phenylalanine only one. The simplest explanation is that sequences of three ribonucleotides (triplet coding units, or codons) encode amino acids. (See chart of triplet amino-acid codes in the article BIOCHEMISTRY.)

It is generally found that one or more of the bases in each triplet of messenger RNA must be U; the sequence of the bases in different triplets is, however, still largely unknown. The code is degenerate, in that different messenger RNA triplets may result in the incorporation of the same amino acid. Degeneracy has been found to result from: (1) mutations in DNA segments specifying either transfer ribonucleic acids (sRNA) or the enzymes activating these to accept individual amino acids for transport; and (2) the incorporation of faulty components into sRNA.

An amino-acid-coding triplet in messenger

[1] For a description of the functions of ribonucleic acid (RNA) and deoxyribonucleic acid (DNA) in protein synthesis, see THE AMERICANA ANNUAL, 1962, pp. 79 and 295–6.

RNA probably has a complementary triplet (generally containing at least one A) in sRNA. Messenger RNA seems to be the RNA complement of but one of the strands in a deoxyribonucleic acid (DNA) double helix, each of the triplets of which is expected to contain at least one A.

Operons.—In a number of organisms, the sequence of nucleotides in a segment of single-stranded DNA, which serves as template for the synthesis of a unit of messenger RNA, is apparently long enough to carry the information for encoding two or more polypeptide chains or proteins. Such a segment of DNA comprises an operon, a linear sequence of genes whose protein end products are under the all-or-none control of an operator gene located at one end of the nucleotide sequence.

While it is not known with certainty how the operator gene turns off and on the functioning of all the genes in its operon, there are several possibilities. For example, the operator gene may control whether or not messenger RNA is to be made from its operon; it may determine the sense or nonsense nature of the messenger produced; or a given messenger may make sense or no sense depending on a subsequent action at its operator end. Whatever the mechanism, inactivation or functioning of an operon always occurs sequentially, beginning at the operator end and proceeding along the rest of the strand. The operator can mutate so that the entire operon is always functional, always nonfunctional, or sometimes functional and sometimes nonfunctional. In the last case, the operator DNA or its messenger complement appears to be sensitive to the presence of a repressor substance made by a regulator gene located within or outside of the same operon, or to the presence of a non-gene-produced substrate.

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GENEVA CONFERENCE ON DISARMAMENT AND NUCLEAR TESTING. See DISARMAMENT.

GEODETIC SURVEY. See COAST AND GEODETIC SURVEY.

GEOGRAPHY AND EXPLORATION

Exploration of the earth is far from ended, even though skyscrapers are rising in the Mongolian People's Republic and atomic energy provides light and power in Antarctica. Expeditions in 1962 continued to explore the polar regions, to conduct oceanic research, and to climb mountain peaks. In many parts of the world, where nature has not been generous with resources, scientists were seeking ways of improving conditions to support the rapidly growing population. The arid lands were receiving special attention.

Arid Land Research.—While trying to make better use of areas that are now dry, it is also essential to prevent the spread of deserts into regions now used for farming. At a symposuim held in Rome, UN Educational, Scientific and Cultural Organization (UNESCO) scientists showed that the Sahara has moved about 1,500 miles south in the past 4,000 years. While climate has changed somewhat, it is agreed that human misuse of the land has contributed most to expansion of the dry lands of North Africa and the Middle East. Many of the inhabitants of these regions are illiterate nomads, and it is difficult to persuade them to change their age-old customs.

Among gigantic schemes for increasing the water supply in Africa is the Aswân High Dam in Egypt, scheduled for completion by 1970. In its third year of construction in 1962, it was slightly ahead of schedule. About 400 Soviet technicians were at the site. When the dam is completed there will be a new industrial complex at the site, about 1 million acres of irrigated land will be provided, and electricity will be plentiful and will cost about one third as much as at present. Behind the dam there will be a lake 300 miles long. The town of Aswân is growing rapidly and had about 50,000 inhabitants in 1962. A separate Nile River project is the 10-mile-long South Sudan Dam being constructed about 360 miles from Khartoum. It will provide additional irrigation water for Sudan cotton farmers, as well as electricity.

In the United States, a giant earth dam has been completed to retain 2,100,000 acre-feet of water on the west side of the San Joaquin Valley in California. This is the first stage in the $511 million Central Valley Project.

Conversion of salt water to fresh is receiving attention in many parts of the world. The main problem is to produce large enough quantities at a low cost. On St. Thomas in the U.S. Virgin Islands, equipment is now producing 250,000 gallons a day of water that contains only 3 parts of salt per million gallons of water. The cost of water in the locality has been reduced by 70%. On Barbados, engineers from McGill University, Montreal, were endeavoring to harness the wind, which blows steadily in many of the world's arid areas, to provide some of the energy needed to produce fresh water from salt. Sunshine is also being employed in this endeavor.

Droughts still plague areas which are not deserts, but which in good years can produce valuable crops. Recent examples are the dry "shoulder" of Brazil, where 90% of the crops were lost and 20 million persons were affected. Crop losses in China as a result of widespread drought have been on an even larger scale. (See also SANITARY ENGINEERING.)

Construction Projects.—Among the most striking man-made projects is the world's longest vehicular tunnel, being bored under 15,781-foot-high Mont Blanc between France and Italy. The tunnel, which is scheduled to be opened to traffic in 1964, is 7.5 miles long. French and Italian engineers, boring from opposite sides, broke through the last rock barrier on Aug. 14, 1962. A second road tunnel, 3.6 miles long, will link Italy and Switzerland under the Great St. Bernard Pass (8,113 feet) about 15 miles east of Mont Blanc. The work was started in 1959 and the route was expected to be open to traffic in the fall of 1963. A third European road tunnel was being constructed under the Pyrenees. A little less than two miles long, it will link France and Spain.

Discussion continued about the proposed Channel tunnel between England and France. If it is built, it will be at least 21 miles long. Two alternatives have been proposed. One is a bridge that would carry both road and rail traffic; it would include 130 spans and take six years to complete. The other is a dam, which would not only provide traffic routes on the top and locks to allow the passage of ships, but would also produce electricity. Other European road plans include a super-

highway through the Brenner Pass between Austria and Italy. (See also TUNNELS.)

Oceanographic Research.—The international Indian Ocean Expedition began work on a wide range of projects in July 1962. The 20 participating vessels from 12 nations include the *Vityaz* and *Ob* from the Soviet Union, and the *Vema* and *Atlantis* from the United States. The projects under study include several likely to prove of great economic importance, such as study of the suspected untapped reserves of fish in the Arabian Sea.

A comprehensive study of the oceanography of the Atlantic continental shelf was planned as a result of a conference on Shallow Water Oceanography, held in March 1962. The 120 papers read at the six days of sessions included geology, biology, chemistry, physics, and meteorology. New oceanographic research vessels are being built for use on both the Atlantic and Pacific coasts of the United States. The Scripps Institute of Oceanography's research craft, completely equipped for both tropical and arctic work, is expected to be ready by 1965. The 210-foot *Atlantis II*, which will include an underwater observation chamber, is being constructed by the Woods Hole Oceanography Institution.

Commander Jacques-Ives Cousteau, whose oceanographic research is based on Monaco in the Mediterranean, constructed a deep-water shelter in which two observers lived for 24 hours. They were watched through closed-circuit television from aboard the research vessel *Calypso*. This experiment proved the feasibility of extended study of the sea bottom. (See also OCEANOGRAPHY.)

Oil Production.—Soviet production of oil is going through important changes. Long absent from the world oil market, the USSR is now an important source of fuel throughout eastern Europe, and is expected to reach Western markets. A major result of the Comecon organization (the Council for Mutual Economic Assistance, set up in 1949 to integrate the economies of the USSR and its satellites) has been the completion of a pipeline from Brody in the western Ukraine over the Carpathian Mountains to Bratislava, Czechoslovakia. Other major links in the growing pipeline network are to Ventspils, Latvia; Schwedt, East Germany; and Swony, Hungary. Eventually the pipeline will reach the Soviet Union's Pacific coast. In 1961 the USSR, which produced 3.3 million barrels of oil a day, became the world's second producer, replacing Venezuela. (See also PETROLEUM.)

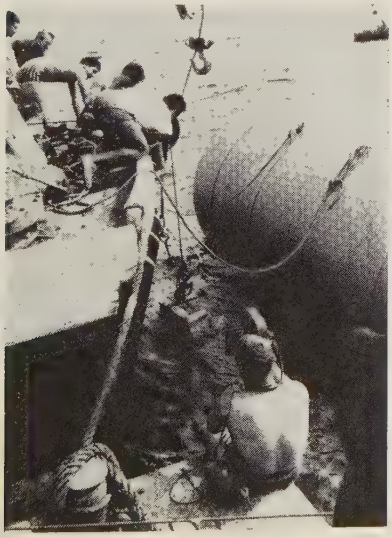
Mountain Climbing.—Mountaineering in 1962 continued to attract climbers in all parts of the world. Sir John Hunt led 12 British and five Soviet climbers in a major assault on the Pamir Range in Soviet central Asia. Among the peaks climbed was the 24,590-foot-high Mount Communism. Two Swiss guides were successful in climbing the north face of the Matterhorn (14,701 feet) in winter (Feb. 4, 1962). This had been described as "the only great feat left for mountaineers in the Alps."

An Indian attempt to climb Mount Everest in June 1962 failed. Other major climbing expeditions in the Himalaya Mountains in 1962 were on Mount Jannu (25,294 feet) by a French team; Pumori (22,342 feet) by a German team; Kanjiroba Himal (22,000 feet) by a British women's team; Jugal Himal (23,240 feet) by a Japanese team; and Kokthang (23,000 feet) by an Indian Army team. A second Japanese team, from Hokkaido University, climbed 24,012-foot-high Mount Chamlang. A team of American climbers on June 29, 1962, reached Mount McKinley, Alaska (20,320 feet) from the southeast spur for the first time.

Earth Research and Seismology.—An international study of the upper mantle of the earth's crust began in 1962. The most dramatic experiment is the Mohole Project, an attempt to drill about six miles down through the crust to the Mohorovičić discontinuity; the crust is believed to be thinnest under the oceans. In 1961 a successful test was made near Guadalupe Island, west of the coast of central Lower California, Mexico, in 11,700 feet of water. A hole 601 feet deep was bored into the ocean floor (an earlier attempt in 3,000 feet of water off La Jolla, Calif., had penetrated 1,035 feet). The final attempt is to be made in three miles of water and through three miles of crust. It may then be possible to determine the density of the core, whether the earth is cooling, and why there is a high rate of heat flow through the ocean floors.

Soviet scientists plan a series of underwater drilling projects in the Aral Sea and in a lake north of the Caspian Sea. They hope to sink a hole more than four miles deep, piercing what is said to be the thickest sequence of sedimentary rock on earth.

Canada has announced a nationwide program as part of the SCUM (Scientific Committee of the Upper Mantle) project. Seismological stations are being constructed at 500-mile intervals throughout the country. At each station a hole 1,000 feet deep



First efforts toward living under water were made in 1962. (*Left*) The *Diogene*, designed by Jacques-Yves Cousteau, is lowered into the Mediterranean off Marseille on September 10. (*Right*) Claude Wesly and Albert Falco are shown inside the craft, in which they remained 24 hours.

AFP FROM PICTORIAL PARADE

is to be drilled so that accurate readings of heat flow can be taken. This may well prove to be an economical technique for studying the composition and structure of the upper mantle. There may also be evidence concerning possible movement of continents and the forces which build mountain ranges. Recording the occurrence of nuclear explosions is an additional reason for the present widespread interest in seismology. There remains some uncertainty as to whether such explosions can always be distinguished from natural shocks due to earth movements.

Artificial earth satellites with a wide range of instrumentation are providing geographers with additional scientific tools. Transit satellites are being employed for geodetic triangulation and for astronavigation; fixes can be obtained from them with an error of 30 feet or less. (See also SEISMOLOGY.)

Weather Research.—Tiros satellites, originally intended to assist weather forecasters by photographing cloud formations from above, are proving to have other uses. Winter navigation is aided by mapping the distribution of ice in seas and lakes from photographs taken by Tiros satellites. Photographs may also make it possible to study continent-wide distributions of vegetation, as well as surface morphology.

Tiros V, launched on June 19, 1962, has as a primary aim the forecasting of Atlantic hurricanes. Circling at an altitude of 400 miles, it can scan the surface of the earth to 65° north and south of the equator. It should, therefore, also be effective for studying ice distribution in navigable waters of the Arctic and Antarctic regions.

International cooperation in the scientific use of satellites is growing. The World Meteorological Organization has under discussion a World Weather Watch proposed by the USSR and the United States. This will make use of satellites and other devices, and will be particularly useful in parts of the world that do not have complete weather-observing systems. (See also METEOROLOGY AND CLIMATOLOGY; SPACE FLIGHT.)

Polar Exploration.—The Arctic and Antarctic regions continued to receive intensive attention from scientists in 1962. The Arctic Institute of North America and the American Geographical Society opened a research base at an altitude of 8,500 feet in the St. Elias Mountains of Alaska and the Yukon. Using the best modern equipment for travel—light planes and small over-snow vehicles—the base is used for glaciological research and the study of the human response to cold conditions.

The U.S. Army Cold Regions Research and Engineering Laboratory at Hanover, N.H., in 1962 continued its project to drill through the Greenland icecap in an attempt to reach bedrock beneath. The site of the test is at Camp Century, where power is provided by a nuclear reactor.

A Canadian expedition using a dry oil well at Winter Harbour on Melville Island found that the ground is permanently frozen to a depth of almost 1,500 feet. Tests are continuing to determine the rate of flow of heat through the earth's crust at this point.

The earth's north magnetic pole continues to migrate. In 1952 it was at the northwest edge of Prince of Wales Island in the Canadian Arctic. By 1962 it was at the southern coast of Bathurst Island, at latitude 75°N. and longitude 99°30′W., as determined by a Canadian expedition. The south magnetic pole has moved 300 miles in the past 50 years.

The world's first atomic-powered icebreaker, the Soviet *Lenin*, continued to be used along the Northern Sea Route as an aid to cargo vessels. It also carried personnel and supplies for the Soviet research station North Pole 10, and for scattered automatic weather stations. In 1961 it covered 20,000 miles in service and reached latitude 81°N. (See also ANTARCTICA.)

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GEOLOGICAL SURVEY. See GEOLOGY.

GEOLOGY

The year 1962 was marked by a continuing trend toward wider use of geology in new areas and new applications. The major emphasis was still on studies in economic and regional geology, but more and more effort and many of the more noteworthy results were in fringe areas, as geology in alliance with other scientific disciplines investigated the world in which we live. A symposium on *Frontiers in Geology*, commemorating the 50th anniversary of Rice Institute, included papers on statistical inferences in geology, on biological problems relating to the composition and diagenesis of sediments, and on avenues from astronomy to geology, as well as fundamental and experimental aspects of studies of the crust and interior of the earth.

Geology has traditionally been a qualitative science, though making use of numerical data. As more data have accumulated, especially through geophysics and geochemistry, the use of high-speed computers, automatic data acquisition, and automatic data processing are being actively investigated to such a degree that the American Association of Petroleum Geologists was able to present a symposium entitled *Geology Enters the Computer Age* at its 1962 meeting. In another symposium at the University of Michigan, the needs and potential for remote sensing as applied to earth-science problems were considered.

Mapping.—In the austral summer of 1961–62 the United States launched the greatest season of scientific research in the Antarctic with participation by nearly 200 scientists, including geologists from the U.S. Geological Survey and eight universities. Aerial geologic mapping at a scale of 1:50,000 was completed in the Thiel Mountains, and reconnaissance maps of other areas were made, as well as extensive glaciological investigations.

The earthward face of the moon is being mapped photogeologically at a scale of 1:1,000,000, and the first geologic quadrangle map of the Kepler-crater region of the moon has been published by the U.S. Geological Survey. The first map covers part of the nominal target area for the Ranger spacecraft. Stratigraphic studies of the moon are continuing, and it has been found possible to discriminate major units by analysis of statistical parameters by high-speed digital computers.

U.S. Geological Survey scientists took part in several multidisciplinary cruises in the northern Pacific which were the first operations in a long-range program to make systematic observations and eventually detailed scientific maps of the entire world ocean.

Research.—The United States is carrying on a number of investigations of the earth's upper mantle applicable to the 20-nation Upper Mantle Project being coordinated by the International Union of Geodesy and Geophysics for a three-year period (1962–65). American activities include Project Vela Uniform, devoted to seismic research; and Project Mohole, in which scientists hope to drill through the ocean bottom where the earth's crust is thin to the Mohorovičić Discontinuity (Moho). After test boring in 1961 to a depth of 601 feet below the ocean floor, Project Mohole has entered a second phase with the National Science Foundation (q.v.) assuming overall responsibility. As investigations of the cores obtained in the first phase of drilling continue, plans are under way for the second, intermediate, drilling stage.

The USSR has planned to drill at least five deep holes in various regions of the Soviet Union. One of these holes may be sunk in the Sakhalin-South Kurile island region where land drilling down to the Moho may be feasible through what is believed to be a thin crust.

On Dec. 10, 1961, as an operation of Project Gnome, a 5-kiloton nuclear device was detonated in the Salado formation in the Delaware Basin about 23 miles southeast of Carlsbad, N.Mex. Seismic waves from the shock were recorded by 43 volunteer crews representing 36 organizations, in an outstanding example of cooperation. These

records are providing information on the crustal structure of the southwestern United States. U.S. Geological Survey scientists reported that veins of man-made breccia were found as much as 100 feet from the shot point. The vein material included the minerals laurionite and galena formed by lead of the shielding block in combination with chlorine and sulfur, respectively, as well as twisted wire, rail, charred wood, and salt fragments.

Subsidence over the sites of several recent underground nuclear tests formed nearly circular depressions in the level floor of Yucca Flats at the Nevada test site. This offers the possibility of creating depressions for harbors or consolidating ground much closer to populated regions without causing radioactive fallout.

A second high-pressure polymorph of silica, called stishovite, has been found occurring with coesite in shocked sandstone at Meteor Crater near Flagstaff, Ariz. The mineral was first synthesized in 1961 by Soviet scientists S. N. Stishov and S. V. Popova, at a pressure of 110 to 120 kilobars and a temperature of 1200 to 1400°C., corresponding to a depth of 400 km. in the earth. Its presence at Meteor Crater is attributed to transient shock pressures accompanying meteoritic impact.

As population increases, areas become urbanized and industrialized, and radioactive materials are more widely used, new problems in public health and safety have been created. Among those being actively investigated are radioactive waste disposal and the distribution of elements related to health. Geologic information on sedimentary basins is being compiled, physical properties of rocks and minerals are being studied, and the transport and concentration of solutions are being investigated. A nationwide program of aeroradioactivity mapping has been carried on for several years by the U.S. Geological Survey on behalf of the U.S. Atomic Energy Commission. In other investigations of the relation between distribution of certain elements and health, the presence of lead in subtoxic amounts has been noted in vegetation growing near major highways, and the absorption of vanadium in plants, important in human nutrition, has been found to vary widely. Maps are being compiled of the distribution of other elements for use of health agencies.

The oldest rocks yet known in the Western Hemisphere were found in Minnesota, where the age of the Morton gneiss has been found to be 2.8 billion years.

Temperature measurements in what is believed to be the northernmost oil exploration hole in the world indicate that subfreezing temperatures currently extend to a depth of about 1,500 feet, the greatest measured depth of permafrost in North America.

Study of aeromagnetic data obtained over the Arctic region by the U.S. Geological Survey and the U.S. Coast and Geodetic Survey shows most of the high-amplitude anomalies in a single large area west of longitude 90°W. Anomalies are small over the Lomonosov Ridge, the dominant topographic feature. No magnetic indication of the midoceanic ridge was inferred from earthquake data.

WIDE WORLD

Columns of smoke billow from Mt. Oyama on the Japanese island of Miyakejima during volcano eruption in mid-August.

Economic Geology.—In the field of economic geology, visions of a new mining boom in Alaska were sparked by the announcement of a second discovery of beryllium ore in the Lost River tin area on the western Seward Peninsula. Discovery was attributed in part to use of a beryllium-detecting device.

A new geologic map of the State of Vermont at a scale of 1:250,000, and one of Missouri at a scale of 1:500,000 were published. The University of Texas Bureau of Economic Geology announced plans for a geologic atlas of the state. The project calls for compilation of 37 maps at a scale of 1:250,000. Several geologic quadrangle maps at a scale of 1:24,000 have been published as the result of the joint U.S. Geological Survey–Kentucky Geological Survey project to map the entire state. The U.S. Geological Survey published a new tectonic map of the United States exclusive of Alaska and Hawaii. Compilation of a tectonic map of North America is well under way. The U.S. Geological Survey has also issued a series of mineral resource maps of the United States (exclusive of Alaska and Hawaii) showing locations of important deposits of various metallic and nonmetallic materials.

Education.—In a venture into a new field, a film of the 1959–60 eruption of Kilauea Iki on the island of Hawaii, produced by the U.S. Geological Survey and the U.S. National Park Service, won several prizes, including a blue ribbon at the American Film Festival and a first prize at the 13th International Exhibition of Cinematographic Art at Venice.

Outlook for the future remains somewhat problematical. Statistics compiled by the American Geological Institute indicate that the profession is made up mostly of younger men. Yet fewer students are being attracted to geology, and at the present time the number of students studying for master's and doctor's degrees is greater than those studying for bachelor's degrees.

(See also Coast and Geodetic Survey, U.S.; Geography and Exploration; Oceanography; Seismology.)

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WIDE WORLD

Opened in December 1962, a year after it was created by a Project Gnome underground nuclear explosion, this cavern near Carlsbad, N.Mex., registered 107°F.

GEOMAGNETISM. See the Index entry, *Terrestrial Magnetism and Electricity.*
GEOPHYSICS. See Index entry.

GEORGIA

A South Atlantic state of the United States, Georgia ranks 21st in area (land, 58,274 sq. mi.; inland water, 602) and 15th in population (4,100,000 on July 1, 1962, a 4.0% increase from the 1960 census figure of 3,943,116). Urban places with 1960 populations above 15,000:

Albany	55,890	La Grange	23,632
Athens	31,355	Macon	69,764
Atlanta (*capital*)	487,455	Marietta	25,565
Augusta	70,626	Midway-Hardwick (uninc.)	16,909
Brunswick	21,703	Moultrie	15,764
College Park	23,469	Rome	32,226
Columbus	116,779	Savannah	149,245
Dalton	17,868	Thomasville	18,246
Decatur	22,026	Valdosta	30,652
East Point	35,633	Warner Robins	18,633
Gainesville	16,523	Waycross	20,944
Griffin	21,735		

Government.—Chief executive and judicial officers in 1962 included S. Ernest Vandiver (Democrat), governor, serving a four-year term; Garland T. Byrd, lieutenant governor; Ben W. Fortson, Jr., secretary of state; Jack B. Ray, treasurer; B. E. Thrasher, Jr., auditor; Eugene Cook, attorney general; Claude L. Purcell, superintendent of public instruction; and William H. Duckworth, chief justice of the 7-member Supreme Court.

The Georgia General Assembly, which convenes annually, comprised 52 Democrats, 1 Republican, and 1 Independent in the Senate in 1962 and 201 Democrats and 2 Republicans in the House of Representatives.

Legislation, 1962.—Following the U.S. Supreme Court decision of March 26 concerning the apportionment of voting strength in rural and urban areas, a three-judge federal District Court ruled that Georgia could not use the county-unit system in its September 12 primary. Under the Neill Act of 1916, the 8 largest counties in the state had six unit votes each, the 30 counties next in size had four unit votes each, and the remaining 121 counties had two unit votes each—a total of 410 county-unit votes.

This system enabled a candidate who received a mere plurality of the popular vote in a county to receive all of its unit votes; the candidate who received a majority of the unit votes won the election. Critics of the system charged that 99 votes in Georgia's most populous county equaled 1 vote in its least populous county, and that 15.4% of the state's population could nominate—and thus elect—a candidate in a two-man contest.

On April 27 the General Assembly, in extraordinary session, raised the number of county-unit votes from 410 to 547, with the number of votes ranging from 40 for the largest county (Fulton) to 2 votes each for the 97 smallest counties. However, the next day the same federal court ruled that the system was still unconstitutional. As a result, the Democratic primary on September 12 was held on a popular basis for the first time in more than 50 years.

Georgia's election procedures suffered a second reversal on May 25. This time a federal court panel held that urban residents must be assured of equal representation in at least one house of the General Assembly by January 1963 or it would take steps to force the action. In compliance with the ruling, a second special session of the legislature was convened on September 27. It agreed to maintain the Senate at 54 seats but to revise the senatorial districts on a population basis, each district having approximately 75,000 residents.

Under this reapportionment plan there is a wide variation in representation among the various counties, ranging all the way from one county (Fulton) with seven senatorial districts to one district (the 50th) with eight counties. The measure, signed into law by Governor Vandiver on October 5, gives the state's nine most populous counties control over 23 of the 54 Senate seats, compared with the maximum number of 9 which they had held previously.

Measures passed by the regular session of the Assembly earlier in the year included passage of the first home-rule bill to clear the legislature (after nine years of effort). Other successful bills prohibited picketing or demonstrating around state property without a permit; prohibited strikes by state employees; established new procedures which require the state to pay tuition grants to children who do not desire to attend public schools, and give the state Board of Education the right to set up standards for private schools; and provided for two constitutional amendments creating a state budget bureau and requiring the legislature to allocate state funds. (Both amendments were approved in the November voting.)

Finance.—In the 1961 fiscal year, revenue of $399,751,307 included $395,256,538 from state taxes and $4,494,668 in federal funds. Chief tax yields were the 3% general sales tax ($148,064,178) and taxes on motor fuels ($86,095,131), individual income ($51,784,337), and corporate income ($25,170,759). Spending of $397,142,493 included $203,782,563 for education, $59,469,322 for health, welfare, and safety, and $94,850,160 for highways.

Education.—In the 1961–62 school year, public elementary schools staffed by 21,662 teachers enrolled 683,432 pupils; secondary schools with 12,666 teachers enrolled 312,116; and parochial schools with 554 teachers enrolled 17,040. Enrollment in the state's colleges and universities totaled 51,955.

Public school spending in the 1961–62 school year comprised current expenditures of $227,948,578 ($261.48 per pupil) and capital outlay of $27,318,704. Revenue was drawn chiefly from state funds ($156,550,747) and local districts ($69,944,266). Teachers' salaries averaged $4,397.01 (high school, $4,455.85; elementary, $4,362.20). Actual spending for higher education (fiscal 1961) totaled $53,208,000.

Public Assistance.—In the 1962 fiscal year, public assistance payments to a monthly average of 168,523 persons totaled $87,295,863. This amount included $53,324,924 for the aged and $17,237,222 for dependent children.

Transportation and Communications.—With 1,697 miles of highway construction and reconstruction completed in 1961, *highways and roads* on July 1, 1962, totaled 96,736 miles (34,731 surfaced). These served 1,635,453 *motor vehicles* (as registered on July 31, 1962), including 1,233,230 automobiles. Operating in the state were (Dec. 31, 1961) 28 *railroads* (using 4,008 main line miles of track); (1962) 9 regularly scheduled *airlines;* and 81 commercial and municipal *airports.*

Communications media included (1962) 111 AM and 14 FM *radio stations;* 13 VHF and 2 UHF *television stations;* 28 daily *newspapers* (circulation, 872,770) and 207 other newspapers; and (January 1) 368,400 business and 941,700 residential *telephones.*

Labor Force.—The state's labor force in June 1962 included 124,300 agricultural workers. Nonagricultural employment totaled 1,301,900, compared with 1,251,700 a year earlier and an average of 1,254,500 for the calendar year 1961. Of nonfarm employees, 26.5% were in manufacturing, 17.5% in trade, and 15.7% in government services. Unemployment in June 1962 had dropped to 79,100 from the 110,500 reported a year earlier.

Manufacturing.—Manufacturing engaged 320,036 workers in 1960, including 264,456 in production, and provided a payroll of $1,205,970,000. Adjusted value added by manufacture totaled $2,481,661,000.

LEADING GEORGIA MANUFACTURES, 1960

Industry group	Total employees	Total payroll	Adjusted value added by mfr.[1] (in thousands)
Textile mill products	96,479	$315,076	$552,701
Food and kindred products	42,145	154,163	381,648
Transportation equipment	23,907	149,083	296,457
Paper and allied products	18,088	93,695	269,762
Apparel and related products	38,802	104,798	180,092
Chemicals and allied products	10,238	47,970	153,025
Lumber and wood products	24,408	54,897	92,601
Stone, clay, glass products	10,862	40,099	91,403
Fabricated metals	9,547	38,380	76,539

[1] For definition, see footnote 1 in the article *Industrial Production.* (Source: *1960 Annual Survey of Manufactures.*)

Mining.—Georgia ranked 29th among the states in the value of its mineral output in 1961, with 0.53% of the national total. It was first in output of dimension granite, and second in bauxite, dimension marble, and scrap mica.

GEORGIA MINERAL PRODUCTION, 1961
(In short tons, except as noted)

Mineral	Quantity	Value
Barite	106,914	$ 2,046,000
Clays	3,569,000	42,025,000
Coal	4,000	22,000
Feldspar (long tons)	31,128	692,000
Iron ore, usable (long tons)	162,000	835,000
Sand and gravel	3,150,000	3,049,000
Stone	15,854,000	38,077,000
Talc and soapstone	47,950	98,000
Other minerals	...	9,457,000
Total	...	$95,256,000[1]

[1] Total adjusted to eliminate duplication in value of clays and stone. (Source: U.S. Bureau of Mines.)

Agriculture.—Cash farm income for the first nine months of 1962 (excluding government pay-

ments) totaled $565,031,000, compared with $540,195,000 for the corresponding period of 1961. For the full year 1961, income comprised $412,880,000 from livestock, $357,683,000 from crops, and $26,926,000 in government payments. Principal income sources in 1961 were broilers, $156,272,000; cotton lint, $85,956,000; eggs, $85,936,000; and tobacco, $84,066,000.

The state's 106,000 farms in 1959 had an acreage of 19,658,000 (4,918,000 in harvested cropland). Livestock on farms on Jan. 1, 1962, included 1,481,000 cattle, 1,519,000 hogs, and 15,336,000 chickens, and (1961) 1,056,825,000 commercial broilers. An average of 127,000 family and 48,000 hired workers were engaged in farming during 1961.

GEORGIA CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Corn for grain (1,000 bu.)	48,925	65,800	50,760
Cotton lint (1,000 bales)	608	512	535
Cottonseed (1,000 tons)	250	213	222
Oats (1,000 bu.)	10,888	7,568	5,560
Peaches (1,000 bu.)	3,088	5,200	4,200
Peanuts (1,000 lb.)	501,515	574,750	545,200
Pecans (1,000 lb.)	38,280	78,600	15,000
Soybeans (1,000 bu.)	742	1,360	1,280
Tobacco (1,000 lb.)	120,869	137,949	147,574
Wheat (1,000 bu.)	2,169	2,538	1,175

(Source: U.S. Department of Agriculture.)

Events, 1962.—Carl E. Sanders, a 37-year-old Augusta lawyer, scored a surprisingly easy victory over former Gov. S. Marvin Griffin in the Democratic primary on September 12. Sanders, a moderate on racial issues, keyed his campaign to charges of corruption in the Griffin administration, while his opponent, an ardent segregationist, denounced Sanders as a "tool" of Negro interests.

Sanders won the governorship in November without opposition. The Republicans had entered the race for the first time since Reconstruction days, but their candidate, A. Edward Smith of Columbus, was killed in an automobile accident on June 5.

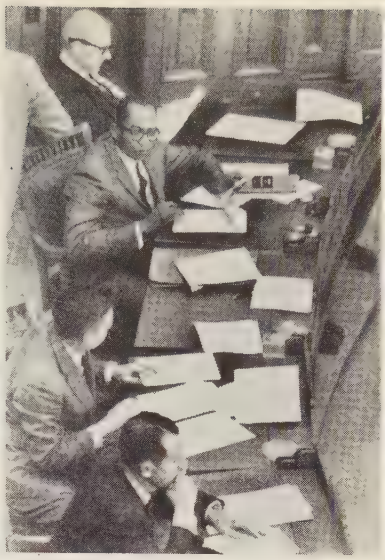
Other officials nominated or renominated in the Democratic primary (tantamount to election) included U.S. Sen. Herman E. Talmadge; Peter Zach Geer for lieutenant governor (after a runoff); and James L. Bently, Jr., for comptroller general. The primary was notable in that it was based on a popular vote (see above, *Legislation, 1962*).

A three-judge federal court on June 30 refused to order the State of Georgia to redistrict its 10 congressional seats, holding that this is a responsibility of Congress and the state legislature.

On June 3 an Air France jetliner crashed in Paris, killing 130 persons in the worst single-plane disaster in aviation history. Of the 121 Americans aboard, 115 were from Georgia, including 106 residents of metropolitan Atlanta. Most of those from Georgia were members of the Atlanta Art Association, who were completing a tour of art galleries and museums of Europe. A large arts center is to be built in Atlanta as a memorial to the dead.

In June the federal government ordered the Veterans Administration to end racial discrimination in hiring undertakers for deceased veterans. The decree affected four VA hospitals in Georgia. White families of the state, except for the most indigent, have chosen to make their own funeral arrangements, and decline the federal aid which amounts to approximately $250 for each funeral.

Archbishop Paul J. Hallihan ordered all Catholic schools in the 71-county Archdiocese of North Georgia completely integrated as of September regardless of race or color. Three high schools and 18 parochial elementary schools were affected by the edict.



UPI

Georgia's first Negro state senator since Reconstruction days, Leroy Johnson (facing camera), won seat in the November 6 election.

The city of Albany attracted national and even international attention for several months as local authorities firmly resisted a campaign by Negroes to win desegregation of some lunch counters, the city library, and other public facilities. The movement was directed by the Rev. Dr. Martin Luther King, Jr., who was twice jailed by local authorities, as were (on August 28) 70 religious leaders from the North and Midwest, following an antisegregation prayer vigil. Mass demonstrations and arrests were commonplace during the summer, which was also marked by considerable legal activity. Efforts by Negroes to register to vote and to integrate the city schools were unsuccessful, and by the end of the year the direct-action campaign had failed to achieve its goals.

Several Negro churches in south Georgia which had been used in connection with Negro voter registration were burned during the summer and fall. The arson was deplored by officials in Washington as well as by many citizens of the state.

"Legislation" and "Events" by:
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GERIATRICS. See OLD AGE.

GERMAN LITERATURE

Drama.—Attendance at the many West German theaters was not reduced by the rapid spread of television during the last season. German prewar and classic plays and modern foreign dramas predominated. Robert Thomas' *Trap for a Lone Man* led the list with 520 presentations. Lessing (*Nathan der Weise*), Ionesco (*Le rhinocéros*), Hauptmann (*Der Biberpelz*), Shakespeare (*As You Like It*), Kleist (*Der zerbrochene Krug*), Conners (*Patsy*), Sartre (*Les sequestrés d'Altona*), Levitt (*The Andersonville Trial*), Anouilh (*Becket*), and Pinter (*The Caretaker*) were much in evidence. Lawrence Durrell's new play, *Actis*, had its world première under Gustav Gründgens' direction in the Hamburg Schauspielhaus.

Noteworthy new plays and comedies were, among others, Hans Baumann's *Im Zeichen der Fische*, Mattias Braun's *Unkenpfuhl*, Joseph Breitbach's *Die Jubilarin* (after a successful première in Paris, the German playwright's home), Wolfgang Hildesheimer's *Die Verspätung* and *Rivalen* (an adaptation of Sheridan's *The Rivals*), Richard Hey's *Weh dem, der nicht lügt*, Nelly Sachs' *Eli*, Martin Walser's *Der Abstecher*, and the posthumous play by Hans Rehfisch (1891–1960), *Verrat*

in Rom, which deals with the problems of the atomic scientist.

Austria contributed Otto Zoff's *Die Geschwister Erskine,* and Alexander Lernet-Holenia's *Alkestis;* Switzerland, David Wechsler's *Weg zu Rahel.*

Poetry.—Rudolf Alexander Schröder (b. 1878), the poet and translator many of whose songs have been incorporated in Protestant hymnbooks, died on Aug. 22, 1962. One of the leading German poets, Rudolf Hagelstange, published *Die schwindende Spur* and *Lied der Jahre, 1931–1961.* (See also under *Translations,* below.) Marie Luise Kaschnitz (Weinberg), Karl Christian Müller, Johannes Poethen, Nelly Sachs, and Georg von der Vring, among other West German poets, submitted collections of their poems.

Austria was represented with volumes of poetry by Arthur Fischer-Colbrie (*Gleichenberger Elegien*), Joseph Marschall (*Flöten im Lärm*), and Conny Hannes Meyer (*Den Mund von Schlehen bitter*).

Novels and Short Stories.—The grand old man of modern German literature, Nobel Prize winner Hermann Hesse (b. 1877), died on Aug. 9, 1962.[1] Ernst Augustin (b. 1927) received the Hermann Hesse Prize for his successful novel *Der Kopf.* Another rising star on the German literary horizon is 27-year-old Uwe Johnson, who received the International Publishers' Prize for his writings, but especially for *Das dritte Buch über Achim,* his latest success. Arthur Koestler's *Von Heiligen und Automaten* was selected as the book of the month for April 1962 by the Darmstadt jury.

Statistics for 1961 show that West Germany has become one of the world's four greatest book producers, with 23,132 published titles, an increase by 6,600 items over 1959.

The Austrian Erwin Guido Kolbenheyer (b. 1878) died in 1962. Rudolf Bayr, Robert Braun, Max Brod (*Die Rosenkoralle,* "ein Prager Roman"), Jeannie Ebner, Ivo Hirschler, Othmar Franz Lang, Ilse Meidinger-Geise (*Der Mond von Gestern*), and Friedrich Schreyvogel contributed novels; Gertrud Fusseneger, a collection of short stories. Franz Kafka's collected stories, including previously unpublished works and drafts from his literary legacy, were presented in one volume.

Nonfiction.—Ludwig Marcuse, who lives in California, published his autobiography, *Mein zwanzigstes Jahrhundert;* Erich Kästner, a diary (Feb. 7—Aug. 2, 1945), in *Notabene 45;* Rolf Schroers, *Der Partisan,* a contribution to political anthropology; Max Tau, *Das Land, das ich verlassen musste.* Kasimir Edschmid collected his essays in *Portraits und Denksteine.* The literary historian Wolfgang Kayser published *Geschichte des deutschen Verses.* The poet Hans Egon Holthusen collected his literary essays in *Kritisches Verstehen.* Theodor Heuss, in *Vor der Bücherwand,* presented sketches of poets and poetry. Alfred Kantorowicz, who fled from the Eastern zone in 1959, published the second volume of his *Deutsches Tagebuch.* A *Festschrift, Nelly Sachs zu Ehren,* was published on the poetess' 70th birthday when she also received the first 10,000-mark Nelly Sachs Prize, given by the city of Dortmund. *Stefan Zweig,* a documentary account of his life, was published by his first wife Friderike. The Austrian Inge Meidinger-Geise published *Margarete Windhorst und Westfalen.*

Translations and Works in English.—*Billiards at Half-Past Nine* by Heinrich Böll (McGraw-Hill) conjures up German history through three generations. Other translations of novels were Friedrich Dürrenmatt's *The Quarry* (New York Graphic Society), Alice Ekert-Rotholz' *Marie Bonnard* (Viking), Christian Geissler's *The Sins of the Fathers* (Random House), Willi Heinrich's *The Lonely Conquerer* (Dial), and Hans Keilson's *The Death of the Adversary* (Orion). The University of North Carolina Press published the medieval minstrel epic *King Rother* and Rudolf Hagelstange's *Ballad of the Buried Life;* Pantheon in 1961 presented *Poems and Verse Plays* by the Austrian Hugo von Hofmannsthal. Among the anthologies were *German Poetry* (Appleton-Century-Crofts), *Modern German Poetry: 1910–1960* (Grove), and *Twenty German Poets* (Random House).

Translations of nonfiction included *The Letters of Beethoven* (St. Martin's Press 1961), *Last Letters from Stalingrad* (Morrow), Karl Jaspers' *Great Philosophers* (Harcourt, Brace & World), and Herbert Wendt's *It Began in Babel* (Houghton Mifflin). Barbara W. Tuchman published *The Guns of August* (Macmillan) on World War I; and Alson J. Smith, *A View of the Spree* (John Day) on Kaiser Wilhelm and the American Mary Esther Lee.

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[1] See biographical sketch in the Necrology at the end of this volume.

GERMANY

The Federal Republic of Germany (West Germany) and the German Democratic Republic (East Germany) were established as separate states in 1949, following the failure of inter-Allied cooperation after World War II. The city of Berlin, established as an inter-Allied zone according to an agreement between the occupying powers on May 1, 1945, was equally divided in 1948, though the Western powers and the Soviet Union have retained in both sections certain rights based on the original agreement. The capital of West Germany is Bonn; East Germany has its capital at East Berlin.

Through the Berlin Declaration of June 8, 1945 (reaffirmed by the Potsdam Agreement of Aug. 2, 1945) the four victorious powers established an Allied military government over Germany that was to be exercised by an Allied Control Council composed of the four commanders-in-chief. Its rule was to extend over all of the German territories of 1937 except the lands east of the Oder and Neisse rivers, which were placed under Polish rule, or in the case of northern East Prussia, Soviet administration. For reasons of military occupation, Germany was divided into American, British, French, and Soviet zones; and Berlin, as the seat of the Allied Control Council, was made an Allied zone, divided again for occupation purposes into four sectors but administered in common by a Kommandatura consisting of the four Allied commanders.

The complete breakdown of East-West cooperation after 1945 was reflected in the different policies of the Western powers and the Soviet Union in Germany. In the absence of a German peace settlement the Western powers merged their zones and created in 1949 the Federal Republic of Germany, while the Russians established in their zone the German Democratic Republic. A similar development took place within Berlin. After the Allied Control Council and the Kommandatura ceased operations, the Russians attempted to dislodge the Western powers from Berlin altogether by closing the roads from West Germany to West Berlin. The Russian blockade of West Berlin, which lasted from June 24, 1948, to May 12, 1949, was successfully broken by the American-British airlift, but the division of the city under two administrations remained.

Area and Population.—That part of Germany occupied by the four powers in 1945, including the Saarland, has a total area of 137,713 square miles, as compared with the country's area of 181,392 square miles in 1937.

AREA AND POPULATION OF GERMANY

Division	Area (sq. mi.)	Population (June 6, 1961, census)
Federal Republic	95,733.0	54,015,000
West Berlin	186.0	2,197,006
Democratic Republic	41,692.0	16,203,600*
East Berlin	155.6	1,082,300*
Total	137,766.6	73,497,906

* Est. 1960.

The population of the Federal Republic contains 9,556,000 German expellees from the territories east of the Oder-Neisse rivers and from eastern and southeastern Europe. In addition, 3,714,000 German immigrants from East

Confrontation and death at the Berlin wall. (*Left*) Taken in late 1961, this picture shows Soviet and American tanks at Friedrichstrasse checkpoint, only 240 yards apart. (*Right*) The body of 18-year-old Peter Fechter, an East Berliner who was shot by Communists at the base of the wall while trying to escape to West on August 17 and left calling for help until he died 50 minutes later, is lifted across the wire fence by East German guards.

UPI

Germany had fled to West Germany by Dec. 31, 1961. Every fourth inhabitant of the Federal Republic is a refugee.

On June 6, 1961, eleven West German cities had more than half a million inhabitants: Hamburg (1,832,400), Munich (1,084,500), Cologne (809,200), Essen (726,600), Düsseldorf (702,600), Frankfurt (683,100), Dortmund (641,500), Stuttgart (637,500), Hanover (573,100), Bremen (562,900), and Duisburg (503,000). Bonn, the capital, had 143,900 inhabitants.

On Dec. 31, 1960, ten cities in the Democratic Republic had more than 100,000 inhabitants: Leipzig (589,600), Dresden (493,600), Karl-Marx Stadt (formerly Chemnitz, 286,300), Halle (277,900), Magdeburg (261,600), Erfurt (186,400), Rostock (158,600), Zwickau (129,100), Potsdam (115,000), and Gera (101,400).

In 1959 there were 26,650,000 Protestants and 25,476,000 Roman Catholics in the Federal Republic. In 1952, 81% of East Germany's population was Protestant, and 11% was Roman Catholic. On July 1, 1961, 21,685 Jews were living in the Federal Republic; an estimated 9,000 Jews were living in the Democratic Republic.

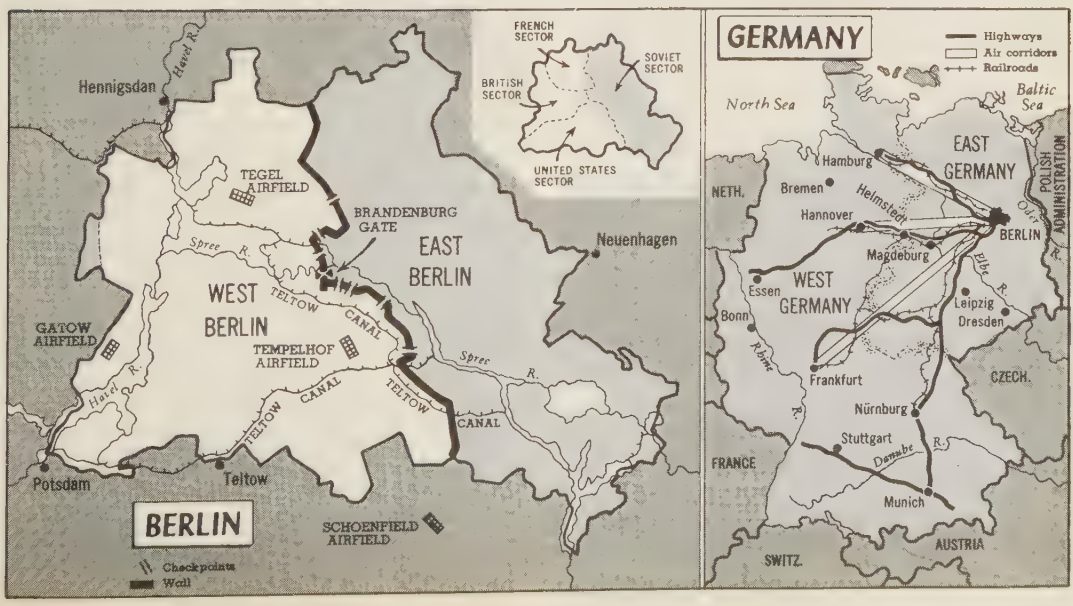
Federal Republic of Germany (West Germany)

Government.—The Federal Republic of Germany, which since May 5, 1955, has exercised full sovereign rights, is a federal state composed of ten *Länder* (states): Baden-Württemberg, Bavaria, Bremen, Hamburg, Hesse, Lower Saxony, North Rhine-Westphalia, Rhineland-Palatinate, Saarland, and Schleswig-Holstein. The constitution of May 23, 1949, divided governmental functions between the federal and *Land* (state) authorities. Public administration is largely in the hands of the state governments, whereas legislative power is divided between the federal and state governments.

The Federal Republic is headed by a president elected for five years by a special assembly of all the members of the federal parliament and an equal number of delegates from the state parliaments. His functions are largely representative, although he nominates the chancellor, who must be confirmed by a majority in the parliament. Heinrich Lübke, a member of the Christian-Democratic Union and federal minister of agriculture from 1953 to 1959, has been federal president since Sept. 15, 1959. Konrad Adenauer (q.v.) has served as chancellor since 1949.

The chief organ of popular representation is the Bundestag or Federal Diet, the national parliament of 521 delegates elected by West German citizens above the age of 21. The states participate in federal legislation through the

AMERICANA MAP BY DONALD T. PITCHER



45-member Bundesrat, in which the individual states, according to their population, have three to five votes each and are represented by members of their government.

West Berlin is closely related to the Federal Republic, and in Germany is called the eleventh *Land*. It is represented in the Bundestag by 22 deputies elected by the Berlin city parliament, and the city government has four representatives in the Bundesrat. The Berlin votes, however, are not counted in votes taken by plenary sessions of the Bundestag and Bundesrat. Federal laws in order to be effective in West Berlin must still be adopted by the West Berlin city parliament, and certain laws, including military conscription, have not been introduced in West Berlin.

Political Developments.—Political life in West Germany during the year 1962 was still dominated by the announced attempt of the Soviet Union to remove the three Western powers from Berlin, and to separate West Berlin from West Germany by turning West Berlin into an internationalized city. In domestic affairs the new West German government, formed in November 1961, was relatively inactive until late in the year, primarily because the parties of the government coalition found agreement difficult. Apart from foreign policy the

PALMER IN THE SPRINGFIELD (MO.) LEADER AND PRESS

"Ill Wind"

struggle of the parties was chiefly concerned with the readjustment of economic policy to the retarded growth of the German economy.

In the elections of Sept. 17, 1961, the Christian Democratic Union (CDU) lost the parliamentary majority which it had enjoyed during the preceding four years, and received only 45.4% of the popular vote. No government could be formed without the Free Democratic Party (FDP), which received 12.8% of the popular vote. Many voters had turned from the CDU to the FDP because they expected that such a coalition would exclude Dr. Adenauer as chancellor. However, the CDU refused to drop Adenauer, the party leader, as the head of the new government. An uneasy compromise was concluded under which Adenauer promised to resign as chancellor far enough before the next election in order to give his successor the opportunity to lead the coalition in the next federal election campaign. Dr. Erich Mende, head of the FDP, asserted that the agreement would require the chancellor's resignation in the fall of 1963, but Adenauer refused to commit himself to any specific date.

The arrest of five editors of *Der Spiegel* on Oct. 26, 1962, began a grave cabinet crisis. *Der Spiegel,* the largest German news magazine, had conducted for many years a campaign against Chancellor Adenauer and Defense Minister Franz Josef Strauss. In early October, *Der Spiegel* published an article on the fall maneuvers of the NATO forces in Germany, and the government charged that the article contained secret information. The German public, however, apparently believed the arrest of the editors was an act of personal revenge by the defense minister, and resented the methods employed by the police. The FDP ministers accused Strauss of having deliberately bypassed them and withdrew from the cabinet on November 19, after Strauss had admitted that he had played a larger role in the police action than he had originally acknowledged.

A new CDU-FDP cabinet was formed on December 11 under Dr. Adenauer, who again refused to announce a definite date for his retirement. But his own party publicly announced on December 7 that it expects him to resign by the fall of 1963. Strauss was replaced as defense minister in the new cabinet by Kai-Uwe von Hassel (CDU), the 49-year-old prime minister of Schleswig-Holstein. Dr. Heinz Starke (FDP) was succeeded as minister of finance by Rolf Dahlgrün (FDP).

The FDP has tried to steer a distinctive course by opposing the trend toward the social welfare state that large groups of the CDU favor. Former Minister of Finance Heinz Starke had successfully opposed salary increases for government officials in 1962, and a further extension of social services in the year 1963. The FDP has also exercised its influence in the direction of establishing some contacts with Germany's eastern neighbors as a prerequisite for German reunification. Like the SPD, the FDP tends to place more emphasis on Anglo-German relations, which it asserts are somewhat neglected by Chancellor Adenauer's interest in Franco-German cooperation. But differences of opinion about the conduct of German foreign policy have been of minor significance. Even the SPD supports almost without reservation the general line of German foreign policy.

There have been no important changes in the popular attitude toward the parties. On July 8, 1962, elections were held for the *Land* parliament of North Rhine-Westphalia, which comprises one third of the population of the Federal Republic. As in the federal elections of September 1961, the CDU lost its majority and had to form a government with the FDP. The only difference between the federal elections of September 1961 and the state elections of July 1962 was a somewhat larger increase in the vote for the SPD, and a somewhat smaller vote for the FDP. The elections for the *Land* parliament in Schleswig-Holstein on September 30 showed the same trend.

Under the influence of the *Der Spiegel* affair, the elections for the *Land* parliament in Hesse on November 11 showed some losses for the CDU and gains for the FDP and SPD. The SPD, for the past 12 years the strongest party in Hesse, gained the majority. In the Bavarian elections of November 25, however, the Christian Social Union (CSU), the Bavarian affiliate of the CDU, gained a larger vote than in the last Bavarian elections and won a majority of seats in the *Land* parliament. The outcome was a great personal victory for Franz Josef Strauss, the popular chairman of the CSU.

Foreign Affairs.—German foreign policy in the year 1962 was chiefly preoccupied with the Soviet threat against Berlin. Although the Federal Republic had agreed to the United States plan to explore means of a Berlin settlement in direct negotiations between Washington and Moscow, the Adenauer government was greatly perturbed that the United States might make concessions regarded as detrimental to West Germany. The principal German fear was that in order to retain unmolested access to West Berlin the Western powers might recognize the German Democratic Republic. Any move that could be construed as a step in this direction was opposed as intolerable by the German ambassador in Washington, Dr. Wilhelm Grewe. His inflexibility and, in the eyes of President Kennedy, unjustified distrust of American intentions induced the president in April 1962 to exclude the ambassador from discussions among the Western powers on the Berlin issue, thereby forcing the Bonn government to announce on May 7 that it would replace its ambassador.

Chancellor Adenauer, on his part, at the same time aroused some apprehension that he would form with President de Gaulle a "Bonn-Paris axis," as opposed to the "Washington-London axis." The idea, however, was largely exaggerated newspaper speculation. The conviction that West Germany can only be defended with the help of the United States is too deeply rooted in West Germany ever to be forgotten by the government. As a matter of fact, the friction that had developed between Washington and Bonn was easily overcome during the summer. Full agreement was reached on common plans for action in the event that the Soviet Union moved to acerbate the Berlin problem, during Foreign Minister Schroeder's visit to Washington on October 14–20, and in the harmonious conversations of President Kennedy and Chancellor Adenauer in Washington on November 14–15.

Among the major problems of German foreign policy was the further advancement of European integration. Owing to the unwillingness of President de Gaulle, the proposed establishment of a close political union was temporarily shelved. New proposals made by France and supported by West Germany for some initial steps in this direction were not approved by the Benelux countries, which have insisted that the question of political union should wait until Great Britain has joined the European Economic Community (Common Market). The Benelux countries and, to a lesser extent, Italy were worried that the European political union might be too strongly dominated by France and West Germany. With regard to the British accession to the Common Market, Chancellor Adenauer was repeatedly accused of dragging his feet. He has stanchly denied any intention of making the entry of Britain into the European Economic Community more difficult, but he has insisted that certain preliminary agreements, particularly those concerning the future of European agriculture, would have to be thoroughly negotiated. (See also EUROPE.)

The reconciliation between France and Germany, unquestionably one of the greatest achievements of Chancellor Adenauer's political career, reached a symbolic climax with his visit to France from July 2 to 8. He was received by President de Gaulle in Paris with the highest honors and, at the end of the visit, the two statesmen reviewed a parade of French and German troops in Mourmelon. President de Gaulle in turn visited Germany from September 4 to 9, touring Bonn, Cologne, Düsseldorf, Duisburg, Hamburg, Munich, and Stuttgart. He was received with extraordinary enthusiasm by the German population.

WIDE WORLD

Chancellor Adenauer of Germany (right) meets President de Gaulle of France at the chancellery in Bonn on September 5 for talks on Europe's future. Interpreter is in center.

Gerhard Schroeder was born in Saarbrücken, Germany, on Sept. 11, 1910. He studied at the universities of Königsberg, Edinburgh, Berlin, and Bonn, and took his doctorate in law in 1933. Until 1939 he taught and practiced law in Berlin and Bonn. He joined the Nazi Party in 1933—for expediency, he explained—but dropped his membership in 1941 after his marriage to a woman of part-Jewish ancestry. A denazification court cleared him of active complicity in the party's crimes after the war. Serving in the German Army in World War II, he resumed his law practice in 1947. He was elected to the first West German Bundestag in 1949, and was reelected in 1953, 1957, and 1961, as a member of the Christian Democratic Union. Appointed minister of the interior in 1953, he became minister of foreign affairs on Nov. 14, 1961, succeeding Heinrich von Brentano.

Federal Budget.—The federal cabinet agreed in September on the federal budget for the calendar year 1963. Federal Minister of Finance Heinz Starke opposed any further extension of social services in order to keep the budget in line with the actual growth of the German economy and thus avoid a further acceleration of the wage-price spiral through large public spending. He was strongly supported by Vice Chancellor Erhard, who won the endorsement of this policy by the majority of the CDU against the will of the less-determined chancellor. The budget for 1963 minimized inflationary dangers by allowing for only such additional expenditure as can safely be ex-

Discussing Britain's entry into the Common Market in Bonn on September 25 are (from left) Lord Privy Seal Heath of Britain and three West German ministers—Schwarz (agriculture), Erhard (economics), and Schroeder (foreign affairs.)

DPA FROM PICTORIAL PARADE

UPI

Kai-Uwe von Hassel (l.) replaced Franz Josef Strauss (r.) as defense minister of West Germany on December 11 following general criticism of Strauss for the *Der Spiegel* case; the magazine was accused of publishing military information.

pected to be covered by increased tax revenues provided by the growth of the national product, which is conservatively estimated to expand by 3.5% in 1963.

The estimated budget for 1963 provides for expenditures of DM2,800 million greater than those of the budget of 1962, and is balanced at DM56,800 million (4 Deutsche marks officially equal the U.S. dollar). For military and civil defense the budget provides a sum of DM18,400 million, of which DM17,000 million (2 billion more than in 1962) will be allocated to the armed forces, DM600 million on defense costs in connection with the stationing of Allied troops in Germany, and DM800 million for civil defense. In addition, DM817.5 million was provided for civilian emergency planning; the funds are to be spent in particular for storing provisions of food, fodder, and medicine.

Expenditure for improving roads and transportation facilities totaled DM4,288 million, of which more than half was earmarked for road construction. The sum of DM12,600 million is to be spent on social services. The Federal Ministry for Economic Cooperation is to receive DM936 million, of which DM670 million will be devoted to capital aid (excluding DM800 million available from earlier budgets). The federal contribution to science and research was DM327 million, and another DM332.8 million was provided for research on the peaceful use of nuclear power. Space research received DM109.2 million, more than half of which was for international projects. Another major item in the budget was aid for West Berlin; a sum of DM1,740 million was provided to cover West Berlin's budget deficit, the extension of credits, and grants of various types.

Armed Forces.—The buildup of the West German Army was continued, and on Oct. 1, 1962, the army reached an overall strength of 380,000 men in 9 divisions, comprising 5 armored infantry divisions, 2 tank divisions, 1 airborne division, and 1 mountain division. The army has about 2,000 tanks, 4,000 armored personnel carriers, and 700 self-propelled guns. A tenth division was activated by the end of the year, and two more divisions, formation of which will complete the German rearmament program, are to be organized in 1963.

The German divisions have been placed at the disposal of the North Atlantic Treaty Organization (q.v.) commander, and the German contingent is the largest in number among the NATO forces stationed in the Federal Republic. The German forces, however, are only up to 80–90% of full combat strength, have an insufficient number of junior and noncommissioned officers, and suffer from shortages in certain categories of weapons.

Education.—The aggregate enrollment in West German primary and secondary schools in 1960 was 6,452,704 pupils, which represented a substantial decrease from the 7,295,420 pupils in 1950 because of the smaller birth rate in the postwar period. The teaching force is considered to be inadequate in numbers, and state school-building programs have not produced a sufficient number of classrooms. Enrollment in institutions of higher education was 217,812 students in 1961, or more than double the number in 1950. The planned expansion of German universities has been slow. Proposals have been made to found new institutions of higher learning in Bochum, Dortmund, Bremen, and Regensburg. The largest German university is in Munich (21,406 students in 1961).

Economic Developments.—The year 1962 witnessed a decline in the economic boom that has characterized West German economic developments, particularly in the period 1959–60. National production and income continued to rise in 1962, but on a smaller scale. Real national production rose by 8.8% in 1960, 5.3% in 1961, and an estimated 3.5% in 1962. The index of industrial production (1958 = 100) was 107 in 1959, 119 in 1960, 126 in 1961, and an estimated 130 in 1962. The falling rate of growth is partly explained by the exhaustion of all labor resources.

Employment.—There are few unemployed German workers, and the age groups entering the labor market are smaller in number, due to the low birth rate in the immediate postwar period. There were in the first half of 1962 some 8.4 million employed persons, an increase of 0.8% over the first half of 1961, which by contrast showed a 1.6% increase over the comparable period of 1960. It is assumed that there will be only an additional increase of 0.2% in the number of employed workers in 1963, and only 5% for the period 1960–70. West Germany in 1962 employed 650,000 foreign workers, a number that cannot be increased because the prosperous economies in other European countries has reduced the number of foreign workers available for employment in West Germany. In 1962 there were 600,000 job vacancies in West Germany still unfilled.

Wages and Prices.—The state of the labor market has driven wages and prices up. At the same time, working hours have decreased, averaging 42 hours per week. Since 1959, wages and salaries have risen 30%, whereas the output of the individual worker has increased by only 14%. Wages in the first half year of 1962 totaled DM21,200 million, an increase of 10% over the same period in 1961, which was almost entirely due to wage increases. Between 1959 and 1961 the cost-of-production index, due to the rise in wages and productivity, increased in West Germany from 100 to 111, compared with increases of from 100 to 107 in France and from 100 to 103 in England, and decreases of from 100 to 99 in Italy and from 100 to 97 in the United States. As a consequence, the competitive position of German industries on the world market has been weakened.

The development was reflected in the changing German import-export balance. There was a favorable balance of DM4,500 million in 1960 and DM3,000 million in 1961, but only DM500 million in the first two thirds of 1962, compared with DM2,600 million in the comparable period of 1961. It is understandable that under these conditions some apprehension is felt about the state of the economy, and lively discussions are carried on about a reorientation of German economic policies. The government has made strong appeals to industrialists, merchants, labor unions, and consumers to halt any rise in prices.

Currency and Financial Policies.—The continuous growth of the gold and foreign exchange reserves of the German Federal Bank (Deutsche Bundesbank) that had taken place since 1951 was reversed for the first time in 1961 when holdings fell by DM3,200 million (excluding losses of DM1,400 million incurred as a result of the upward revaluation of the currency in March 1961). In 1962 a deficit of DM3,000 million was expected to occur in the balance of payments. The development was welcomed by international currency experts since the excessive accumulation of reserves froze a substantial part of capital that could have served to finance international trade, and increased in particular the exchange difficulties of the U.S. dollar. On the other hand, reserves of DM25,000 million and outstanding credit claims of DM28,000 million must still be considered ample protection of the German currency. There was a strong international demand for German marks in 1962, and the Deutsche mark was usually quoted at DM3.97 instead of the official rate of DM4.00 to the dollar.

Foreign Aid.—The Federal Republic has taken an active interest in the development of underdeveloped countries. By the end of 1961 it had spent $4,600 million in foreign aid, of which $2,400 million was provided from government funds and $2,200 million from private sources. In 1961 the Federal Republic granted aid amounting to $742 million, of which $457 million was under

bilateral agreements with individual countries and $285 million was for multilateral projects, including the five-year plans of India and Pakistan, and aid to Iran, Turkey, Afghanistan, and Brazil. In 1962 the total aid program amounted to $675 million.

The West German government also maintains a growing technical assistance program, under which grants totaled $70 million in 1961. Almost half of the grants were made to 26 African and Asian countries, and the remainder to 26 countries in Latin America and Europe. About 70% of expenditure for technical assistance was spent on the training of personnel, 10% on planning projects, and 6% on health programs. Plans were made to expand considerably German technical asssistance to Latin America in 1963. For this purpose, Walter Scheel, federal minister for economic cooperation, visited Latin American countries in September 1962. In early October he had discussions with United States officials in Washington and with United Nations development agencies in New York on the coordination of the foreign aid programs of the contributing governments.

Foreign Trade.—Exports amounted to $11,415 million in 1960, $12,687 million in 1961, and $6,453 million in the first half of 1962. Imports totaled $10,103 million in 1960, $10,941 million in 1961, and $6,033 million in the first half of 1962. The figures show a considerable decline in the surplus of exports over imports, but the trade balance remained favorable. West European countries in 1961 provided about 55% of West Germany's imports, and took about 65% of total exports. The United States in the same year supplied 14% of West German imports, and received 7% of total exports.

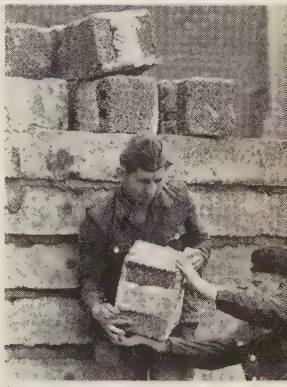
West Berlin

West Berlin has stood up well under the great difficulties which resulted from the erection of a wall between East and West Berlin by the East German Communist regime on Aug. 13, 1961, and the continued Soviet threat to block communications with West Germany. The wall separated families and friends, and cut off many inhabitants of the city from their working places. West Berliners had felt a certain pride in being "the show window of the West," and many of them had believed their actions might eventually lead not only to the full reunification of Berlin, but also to the reunification of West and East Germany.

The events of Aug. 13, 1961, have made the realization of such hopes appear remote, and the West Berliners have become conscious of their physical isolation behind the iron curtain. But they continue to stand firm, and only few individuals have moved to West Germany. Their trust in the protection afforded by the Western powers has not been shaken, although occasional doubts have been expressed whether the Western powers will use their potential power early enough, or whether, by overlooking small advances of the Soviets, will allow the Russians and East Germans to take West Berlin by so-called "salami tactics" (a steady sequence of small steps, none by itself seemingly important enough to call for strong counteraction).

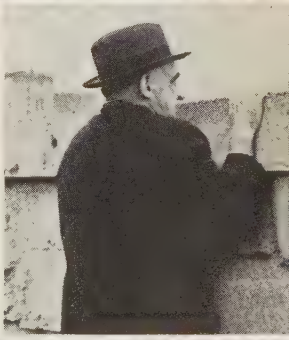
Particular indignation is constantly engendered by the ruthless shooting of escapees from East Berlin. The shooting by East German border guards on Aug. 17, 1962, of an 18-year-old building worker, Peter Fechter, who was left dying for one hour on the eastern side of the wall, aroused tremendous indignation. An irate crowd of about 400 West Berliners on August 18 threw stones at a bus carrying Soviet soldiers and also uttered scornful jibes at the American soldiers who had to refuse to go to the assistance of the helpless victim. During the next two days the stoning of the Soviet bus bringing the daily honor guard to the Soviet war memorial west of the Brandenburg Gate continued. The Russians then began to use

WIDE WORLD



The wall dividing Berlin continued to be a major source of friction between East and West in 1962. (*Above*) Mayor Willy Brandt (right) and Chancellor Adenauer prepare to address a rally in West Berlin on June 17 in commemoration of unsuccessful East German revolt in 1953. (*Right*) East German border guards reinforce the wall near Bernauerstrasse in July.

WIDE WORLD



(*Above*) U.S. State Secretary Rusk (left) and Mayor Brandt inspect the wall at Potsdamer Platz on June 21. (*Right*) General Clay, President Kennedy's adviser on Berlin, peers over the wall near the Brandenburg Gate on November 17. (*Below*) Angered West Berliners throw rocks at a bus carrying Soviet soldiers into West Berlin on August 20, in a demonstration following the death on August 17 of an East Berlin boy, left to die at the wall's base.

EASTFOTO

Touring Polish leaders appear in East Berlin on October 17. Three leading figures shown here are (from right) Communist party secretaries Władisław Gomułka (Poland) and Walter Ulbricht (Germany) and Polish Premier Józef Cyrankiewicz.

armored cars instead of a bus, and later were accompanied by jeeps carrying Allied soldiers. The good relations between the West Berlin population and the Allied troops were not affected by the incident of August 17, however.

The protests of the three Western commandants in Berlin to the Soviet commandant over the killing of Peter Fechter was not accepted. Moreover, on August 22, the Soviet government announced that it had abolished the post of Soviet commandant in Berlin and that the police power in East Berlin belonged to the East German government. On the following day the East German government announced the appointment of Maj. Gen. Helmut Poppe, a 36-year-old Communist, as city commandant. The Western powers refused to recognize the transfer of Russian authority to the East Germans, and considered the commander of the Soviet forces in East Germany responsible for the obligations which the Soviet Union had assumed by the four-power agreement of 1945 for the occupation of Berlin.

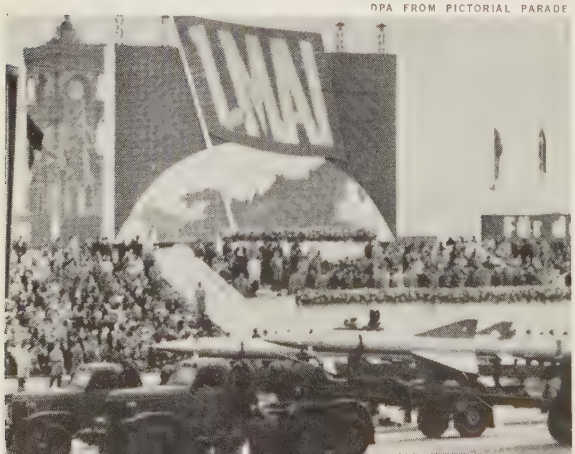
Gen. Lucius D. Clay left Berlin on May 8 after serving for nearly eight months as President Kennedy's personal representative in the city. The general declared on leaving that he had agreed to end his mission because he believed that West Berlin was in no immediate danger from possible Soviet actions. He retained an advisory position as the president's special consultant on Berlin, and he returned to the city for a three-day visit in early July.

Economic Conditions.—The economy of West Berlin has done well since Aug. 13, 1961. Unemployment in 1962 averaged only 11,000 persons, compared with 13,000 in 1961. Before Aug. 13, 1961, 60,000 workers entered West Berlin from East Berlin and adjacent districts in East Germany to work, and 20,000 others came to West Berlin for household and other occasional work. The loss of at least 60,000 workers out of an employed total of 900,000 seemed initially to be a terrific loss to the economy. The industrial labor force of about 340,000 workers was reduced by 27,000, but 4,000 absent workers managed to return after a few days, and by the end of August some 8,000 others were replaced. Labor-saving devices and overtime work enabled a smaller work force to produce somewhat more in July 1962 than in the same month of the previous year.

Industrial production in West Berlin, which depends for the vast majority of its products on West German and Western markets, cannot be maintained without substantial aid from West Germany. In addition to large credits and substantial special gifts, West Berlin receives cash aid equivalent to about $250,000 yearly, and its residents and business enterprises are exempted from paying $100,250,000 in annual taxes that they would pay if they were in West Germany.

Soviet-type air defense rockets are hauled past viewing stand in East Berlin's Marx-Engels Place in May Day parade.

DPA FROM PICTORIAL PARADE



German Democratic Republic (East Germany)

With the erection of the wall in Berlin on Aug. 13, 1961, the last exits from the Democratic Republic to the West were for all practical purposes closed. The East German government has not hesitated to have its military and police forces shoot escapees attempting to pass the frontiers of the republic. In spite of these cruel methods, 13,000 persons managed to escape from the Democratic Republic and East Berlin between Aug. 13, 1961, and Oct. 1, 1962. About 52,000 East Germans visiting West Germany and other Western countries in August 1961 preferred not to return to the East German Republic.

After the closing of the escape hatches the East German government increased political pressure on those groups of experts and intellectuals who were essential for the effective management of the East German economy and the maintenance of cultural life. They were mainly scientists, doctors, engineers, and artists. The relative freedom and material inducements formerly granted to them in order to keep them from fleeing to the West were withdrawn.

The East German regime also introduced, on Jan. 24, 1962, universal conscription. Soldiers were formerly inducted on a voluntary basis, although tremendous pressures were exerted on young persons to make them volunteer for military duty.

The damage done by earlier political acts of the government could not be undone, however. Nearly every fifth inhabitant of the German Democratic Republic has left the republic, particularly young people and professional and highly trained persons.

Economic Conditions.—Although some of the gaps in the labor force were closed by the automatization of some industries, the government admitted that it lacked sufficient experts to undertake a drastic automatization. The announced building of an airplane industry in the Dresden area was abandoned altogether. A governmental program for nuclear research was sharply reduced.

The standard of living seriously declined in the last half of 1961 and in 1962. Grave shortages developed in the supply of food and consumer goods. Reports indicated that even in agricultural districts butter was rationed on a weekly basis of less than 3 ounces, and margarine and other vegetable oils were scarce and of poor quality. Meat was also hard to come by, and milk and eggs were in limited supply. For the first time since the end of the war, the population of East Germany, which formerly produced large potato surpluses, did not receive adequate supplies of potatoes. As a consequence, rationing cards were reintroduced for meat, butter, and potatoes.

The principal reason for the decreased food supplies was the rapid collectivization of agriculture. Many, and perhaps most, of the peasants who were forced into collectives were promised that they would not have to work more than eight hours a day, and they stubbornly insisted on keeping this promise even at planting and harvesting time. Moreover, they concentrated on cultivating the small private plots which they have retained. The fields were in-

adequately attended, and the harvest was not brought in on time. The result has been tremendous waste.

According to an East German government statement of Sept. 18, 1962, a million tons of grain and 5 million tons of potatoes were lacking in 1961, and the shortages had resulted in 1962 in a loss of 2.5 million tons of fodder. The delay of the harvest in 1962 worsened agricultural conditions. According to critical observers in West Berlin, the shortage of fodder caused a decline in meat and milk production in the first six months of 1962 to a level 12% below that of 1961.

The economic policy of the Democratic Republic was revised. It was admitted by the ruling Communist Party that the seven-year economic plan initiated in 1959, which had counted on large annual rates of economic growth, was unrealistic. The government stated that only an annual growth of 6.4% in industrial production, or about half of what the seven-year plan had envisaged, could be realized, but even this may prove to be too optimistic an assumption.

Apart from agricultural difficulties, the government's large expenditures for forced rearmament have proved to be a serious handicap. East Germany does not produce modern arms, which have to be bought from the Soviet Union. Electrical and optical equipment for communications are produced in East Germany and apparently are delivered to the Soviet bloc. In order to expand exports, the greatest emphasis was placed on raising the production of the engineering and optical industry, whose actual output in 1962 reportedly rose by 11–18% over the previous year. No longer is any hope expressed that the production of consumer goods will be raised in the foreseeable future.

The disappointments in economic planning have led to a certain reorganization of technical personnel. East German Communist leader Walter Ulbricht has followed the example of Premier Kadar in Hungary in strengthening the influence of the technicians and expert managers over the ideologists. Herbert Weiz, a director of the Zeiss works in Jena, was named a secretary of state for research and technology, and the position of the chief economic coordinator, Bruno Leuschner, was visibly strengthened.

(For further references, see the Index entry, *Germany.*)

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GERONTOLOGY. See OLD AGE.

GHANA

A republic in western Africa, Ghana is situated on the Gulf of Guinea and bordered by the republics of Ivory Coast, Togo, and Upper Volta. It has an area of 91,863 square miles and a population (est. 1962) of 7,150,000, including Ashanti, Ewe, Fanti, and numerous other tribes and tribal groups. Principal cities and populations (1960 census): Accra, the capital, 337,770; Kumasi, 190,323; Takoradi (with Sekondi), 75,513; Cape Coast, 41,143; and Tamale, 40,327. English is the official language; Fanti, Twi, and Ga are among the major vernacular languages.

Government.—Formed by the union of a British colony (Gold Coast) and a United Nations trust territory (British Togoland), Ghana became a self-governing dominion in the Commonwealth of Nations on March 6, 1957. Following a constitutional plebiscite and a presidential election on April 19 and 26, 1960, Ghana was declared a republic within the Commonwealth on July 1, 1960. Kwame Nkrumah, the nation's first president, combines the functions of head of state and chief executive. Parliament consists of a unicameral National Assembly of 104 members elected directly for 5-year terms and 10 women members specially elected. Number of seats held in the National Assembly (elected July 1956; mandate extended by referendum until July 1, 1965): Convention People's Party (founded by Nkrumah), 100; United Party, 9; vacancies, 5.

Education and Religion.—School enrollment, 1961–62: 875,000 (over 60% of the school-age population). Number of schools, 1961–62: 6,000 primary, 1,600 middle, 68 secondary, 8 technical, 32 teacher-training, 2 higher. Principal religions: almost two thirds animist; 20% Christian, mainly along the coast; 14% Muslim, mainly in the hinterland.

Finance.—Government revenue, 1961–62 est.: £G94,000,000 (£G75,500,000 in 1960–61); expenditure, £G127,700,000 (£G123,300,000 in 1960–61). The Ghanaian pound equals U.S.$2.80. National debt: £G87,800,000 at the end of 1961. Gold and foreign exchange holdings of the Bank of Ghana: £G35,400,000 as of June 30, 1962 (£G37,981,000 on June 30, 1961).

Transportation and Communications.—Transport networks (miles, 1961): railways, 762, with progressive replacement of steam with diesel-oil locomotives; roads (public), 4,792 of which 2,014 are paved. State-owned merchant fleet: 70,000 gross registered tons (May 1962). On Feb. 10, 1962, the £G27 million port at Tema, 17 miles east of Accra, was officially opened. Accra, Winneba, Cape Coast, and Keta ceased operations as ports of entry and have been declared "sufferance ports" to be used only in emergencies. National airline: Ghana Airways; the international airfield at Accra is used by 13 foreign airlines. Other communications data, 1961: passenger cars, 23,439; trucks, 17,235; buses, 3,237; radio receivers, 160,000; telephones, 25,488. A "Voice of Ghana" transmitting station was inaugurated on Oct. 27, 1961.

Economic Indicators.—Gross national product was £G580.4 million in 1961 (current prices), up 9% from 1960. Index of agricultural production (1952–54 = 100): 148 in 1960 (129 in 1959); cost-of-living index (1953 = 100): 121 in 1961 (113 in 1960). In 1961 the labor force totaled over 3,000,000, of which 70% were in farming, herding, fishing, and forestry. Total wage earners at the end of 1960: 332,898.

Manufactures and Minerals.—Chief products, 1961: gold, 833,500 fine troy ounces (down 5.2% from 1960); diamonds, 3,213,600 carats (down 2.1%); manganese ore, 431,500 tons (down 20.8%); bauxite ore, 200,800 tons (up 5.4%); electric power, 389.6 million kw.-hr. (up 4.3%).

Agriculture and Forestry.—Agricultural land accounts for 22% of total area. Chief crops (tons), 1960: cocoa, 432,243 in 1960–61 (317,000 in 1959–60), 30% of world supply, providing livelihood for one-third of Ghana's population; sorghum and millet, 220,000 (207,000 in 1959); plantains, 1,500,000 (1,500,000); corn, 191,000 (191,000); logs, 64.8 million cubic feet (62 million); sawn timber, 13.3 million cubic feet (11.4 million in 1959).

Foreign Trade.—Total exports, 1961: £G114 million (down less than 1% from 1960); imports, £G140.7 million (up 9%). Principal exports (in £G million, 1961): cocoa, 69.3 (66.4 in 1960); gold, 10.1 (11.0); diamonds, 7.2 (9.8); manganese, 5.8 (6.4); wood, 14.9 (15.9). Principal imports (in £G million, 1961); manufactured goods, 57.8; machinery and transportation equipment, 33.2; food and live animals, 24.9; chemicals, 10; mineral fuels and lubricants, 6.4; beverages and tobacco, 3.6. Chief customers (with percentage of total Ghanaian exports, 1961): Great Britain (28.9%); United States (23.6%); Netherlands (12%). Principal suppliers (with percentage of total Ghanaian imports, 1961): Great Britain (36.8%); United States (8.3%); Japan (7.9%); Netherlands (7.9%); West Germany (7.6%); Sino-Soviet bloc (4.6%).

Events, 1962.—Ghana's most ambitious economic development project—the harnessing of the Volta River for hydroelectric power and for the smelting of aluminum—was officially launched on January 23, following the signing of the Volta River Project Master Agreement by President Nkrumah and Edgar Kaiser, representing the Volta Aluminum Company (Valco). Previously, on Dec. 16, 1961, the United States government announced the loan of $37 million for construction of the Akosombo Dam and the adjoining power station and grid lines, and a $54 million investment guarantee to Kaiser and Reynolds covering their investment in Valco. The United States government also approved a loan of up to $110 million to Valco for the construction of an aluminum smelter. On Feb. 8, 1962, the World Bank announced a $47 million loan to the Volta project, which will cost a total of $324 million and take five years to complete.

During 1962, Ghana's economy was characterized by continued substantial excessive buying demand over productive capacity, resulting in rising prices and a balance of payments deficit. Although cocoa production was at record level, foreign exhange earnings showed no significant increase because of low world cocoa prices. In an effort to reverse the deficit payments position, Ghana borrowed £G5 million from the International Monetary Fund on August 17.

On January 25 the government announced the suspension of the second 5-year plan; a new 7-year plan was being drawn up in 1962 and was scheduled to come into effect on Jan. 1, 1963. On May 8, Ghana signed an agreement with the United States for the survey of a Ghana investment bank. On October 2, President Nkrumah expressed his appreciation for the completed survey and singled out the United States for appreciative

remarks for economic assistance rendered. Military cooperation with Great Britain was continued with the signing, on May 1, of an agreement for a training mission consisting primarily of naval and air elements to assist in the development of the Ghanaian armed forces.

Friendly relations with the Sino-Soviet bloc continued to expand during 1962. On February 1 the Soviet Union and Ghana exchanged ratifications of an agreement to build a 540-mile railroad from Kumasi to Ouagadougou, the capital of Upper Volta. On March 28, ratifications were exchanged with Communist China for trade, technical assistance, and cultural cooperation. On June 1 it was announced that a Ghana State Farms Corporation would be established, with Soviet aid, to set up state-owned farms.

The easing of the internal political situation, evident at the beginning of 1962 with the release of several hundred persons detained under the 1958 Preventive Detention Act and the declaration of a general amnesty for political exiles, was sharply reversed with the outbreak of terroristic attacks on President Nkrumah. On August 1, a grenade was thrown at Nkrumah in Kulungugu, near the Ghana–Upper Volta border, resulting in slight injury to the president, the killing of 4 bystanders, and the injuring of 56 others. Other bomb attacks in September resulted in 15 dead and more than 250 injured. Many hundreds were arrested, including Ako Adjei, minister of foreign affairs, Tawia Adamafio, minister of information, and H. H. Cofie-Crabbe, executive secretary of the Convention People's Party. A state of emergency was declared on September 22, accompanied with a curfew and press censorship. On October 17 the curfew was lifted.

On August 13, Richard Roseveare, Anglican bishop of Accra, was expelled from Ghana for criticizing as "godless" the Young Pioneers Movement, the youth arm of the Convention People's Party. He was allowed to return on November 7.

In a speech before the National Assembly on October 2, Kwame Nkrumah rejected the Parliament's offer (passed on September 7) of a lifetime presidency. Among the highlights of his speech were the reassertions that Ghana would become a one-party state, private property would be guaranteed against expropriation, and the budget would be more pragmatic, involving a more equitable distribution of the burden of taxation.

In the area of foreign affairs, Ghana's relations with Niger, Ivory Coast, and Cameroun improved during 1962. A series of misunderstandings between Ghana and Nigeria arose in June, however, leading to sharp exchanges. Nigerian leaders accused Ghana of carrying out subversive activities in their country, a charge that Ghana vehemently denied. Ghana was the host to several international conferences during 1962, including All-Africa Farmers' Conference in March, the African Freedom Fighters' Conference in early June, and a World Without the Bomb Conference at the end of June. On July 2, President Nkrumah received the 1961 Lenin Peace Prize.

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GIBRALTAR

Comprising a peninsula extending southward from Spain and commanding the western entrance to the Mediterranean Sea, Gibraltar is the smallest of Britain's crown colonies (area, 2¼ square miles). It consists primarily of a long mountain called the Rock of Gibraltar (1,408 feet above sea level), and has a deep harbor of 440 acres at its base. The civilian population (1961 census) totals 24,075.

The governor of the colony and commander in chief of the military installations (since 1955 a subcommand of the North Atlantic Treaty Organization) is Gen. Sir Dudley Wood, who succeeded Gen. Sir Charles F. Keightly in August 1962. The governor is assisted by an 8-member Executive Council and a 12-member Legislative Council, 7 of whom are elected. Government revenue in 1961 totaled £2,144,963; expenditure, £2,134,460. In 1961 there were 16 kindergarten and primary schools (with 2,812 pupils), and 8 secondary schools (1,816 pupils).

The economy of the colony revolves around the port and the naval and air force base. Manufactured products include tobacco, roasted coffee, ice, mineral water, candy, and canned fish and fruit. In addition to 6,000 British workers, the labor force in 1961 included 7,774 men and 3,133 women who commuted between Spain and Gibraltar. Exports (including re-exports) in 1961 were valued at £4,841,810; imports, £13,176,622, principally from Great Britain. The tourist industry served 413,276 visitors in 1961.

GILBERT AND ELLICE ISLANDS. See WESTERN PACIFIC ISLANDS, BRITISH.

GLAND DISEASES. See ENDOCRINOLOGY.

GLASS. See CERAMICS and the Index entry, *Glass Industry.*

GLENN, John Herschel, Jr. See biographical sketch under SPACE FLIGHT.

GOLD

World production of gold in 1961 rose (for the eighth consecutive year) to a record 47,700,000 fine (troy) ounces, valued at $1.7 billion, according to the U.S. Bureau of Mines. The increase of 2.7 million ounces exceeded the 1960 increase (2.3 million), and was again attributed to expansion in South Africa and an estimated gain in the USSR.

United States output of gold totaled 1,548,270 fine ounces in 1961, compared with 1,666,772 in 1960, a loss of 7%. South Dakota (leading by a large margin) and Utah provided nearly 60% of total domestic output. The Homestake mine in South Dakota contributed more than one third of the national gold production. Much of the domestic gold (39% in 1961, compared with 35% in 1960) is recovered as a byproduct of base metals.

In the first nine months of 1962, United States gold output was about 1,116,538 ounces, compared with 1,138,162 ounces in the same period of 1961.

A record outflow of gold valued at $775 million was the salient feature in United States foreign trade in 1961. President Eisenhower's order prohibiting American citizens from holding gold abroad, and President Kennedy's statement that the official price would be maintained contributed to price stability in the London gold market.

Canada.—In the first half of 1962, gold output totaled 2,097,000 ounces, compared with 2,270,000 in the first half of 1961. Production in the year 1961 totaled 4,425,000 ounces.

South Africa.—In the first nine months of 1962, gold output was 18,898,681 ounces, against 17,065,213 ounces in the 1961 period. Production in the year 1961 totaled 22,946,294 ounces.

(For gold production in other countries, see MINERAL PRODUCTION.)

GOLDBERG, Arthur Joseph

U.S. Supreme Court justice: b. Chicago, Ill., Aug. 8, 1908.

Graduating from Northwestern University Law School in 1929, Arthur Goldberg was associated with several Chicago law firms, where he built up a reputation as a skillful lawyer in handling equity and corporate issues. He established his private practice in 1933, and by 1938 had begun to specialize in labor law. In World War II he served as assistant to the director of the Office of Strategic Services (1942–43), and undertook several overseas missions to help organize an underground intelligence network among European workers. In 1948 he was appointed general counsel of the Congress of Industrial Organizations (CIO) and of the United Steelworkers of America. He played a significant role in the institution of pension and insurance plans in the steel industry, and in the trials which led to the expulsion of Communist-dominated unions from the CIO.

In 1955 he helped to work out the complex details of the merger of the American Federation of Labor and the CIO, and became the special counsel of the united labor federation. He formulated the Code of Ethical Standards for labor unions, and played a key role in the AFL-CIO's expulsion in 1957 of certain members accused of corruption and malpractices.

Sworn in as President Kennedy's secretary of labor on Jan. 21, 1961, Goldberg departed from tradition with his personal participation during 1961 in the settlement of a number of major labor-management disputes. The president appointed him to the Advisory Committee on Labor-Management Policy and the Committee on Equal Employment Opportunity.

Secretary of Labor Goldberg continued his active mediatory role in 1962. He mediated a Studebaker-Packard Corporation–United Auto Workers strike in Washington, D.C., and a new 3-year contract was announced on February 8. Addressing the Executive Club in Chicago on February 23, he asserted that the government must "give more help in the collective bargaining process," and must "increasingly provide guidelines" to ensure that settlements are "in the public interest." His efforts to settle a west coast maritime strike in March failed, but he worked with President Kennedy to help bring the steel industry negotiations to a new, "noninflationary," two-year contract, which was signed on April 6. (See also IRON AND STEEL; LABOR.)

On Aug. 29, 1962, when Felix Frankfurter had retired from the U.S. Supreme Court, President Kennedy nominated Goldberg as Frankfurter's successor, recommending him for his "scholarly approach to the law, combined with his deep understanding of our economic and political system." On September 25 the Senate confirmed Goldberg's nomination, and when the fall term of the court opened on October 1, he was sworn in as the 94th justice in the court's history.

GOLF. See SPORTS, GAMES, AND SHOWS.

GOVERNMENT DEPARTMENTS AND AGENCIES. See UNITED STATES; also articles on the major government agencies and bureaus.

GRAINS

Reduced acreage resulting from United States government programs held grain production in 1962 below the record levels of recent years. The use of grain continued to increase, and stocks carried over from previous crops were reduced. This was the first significant decrease in the nation's grain surpluses in a decade.

Production of the four feed grains in 1962—corn, oats, barley, and sorghum—totaled 143,093,000 tons, compared with 140,626,000 the preceding year, and well below the record 155,618,000 tons of 1960, according to the Statistical Reporting Service of the U.S. Department of Agriculture. The reduced production of the last two years resulted from government programs under which farmers received payments for diverting land from production of feed grains to soil-conserving uses. About 31 million acres were diverted from corn, oats, and barley under the 1962 program. This was about 6 million acres more than under the 1961 program, which did not include barley. However, record yields for each of the four grains in 1962 resulted in higher production than in 1961.

National average price support rates for feed grains produced in 1962 were $1.20 per bushel for corn, 93¢ per bushel for barley, $1.91 per cwt. for sorghum grain, 62¢ per bushel for oats, and $1.02 per bushel for rye. A feed grain program for 1963, similar to those of the two previous years, was provided in the Food and Agriculture Act of 1962.

In addition to the 1962 crops, the feed grain supply included 71 million tons of grain carried over from preceding years. This was 14 million tons less than the record carry-over of 1961, and the first reduction in stocks since 1952. The carry-over included (1961 figures in parentheses): corn, 1,613 million bushels (2,008 million); sorghum grain, 658 million bushels (702 million); oats, 277 million bushels (325 million); and barley, 123 million bushels (153 million).

The use of feed grains has been increasing steadily, reaching a record 155 million tons in 1961–62. This was 9 million tons more than in 1960–61, and 40 million more than five years earlier.

Food grain production—wheat, rye, rice, and buckwheat—dropped for the second consecutive year in 1962. The total was 37,147,000 tons, compared with 40,542,000 in 1961 and 44,392,000 in 1960. The decline from 1961 resulted mainly from lower production of wheat—by far the leading food grain—caused by reduced acreage allotments and voluntary diversion of land under the 1962 wheat program, coupled with heavy acreage losses in winter wheat. Support prices for the 1962 wheat crop were at a national average rate of $2 per bushel, and conservation payments were made for land taken out of production.

The carry-over of wheat on July 1, 1962, totaled 1,304 million bushels, 107 million less than the record set a year earlier. Wheat production exceeded use during most of the years from 1951 to 1961, and heavy surpluses accumulated. The drop in stocks from 1961 to 1962 was due mainly to smaller production, coupled with record exports of 718 million bushels. Prospects for supply and use for 1962–63 indicated the likelihood of a further drop in the carry-over by July 1, 1963.

Wheat.—The 1962 United States crop of 1,091,787,000 bushels was 12% less than that of 1961, and the smallest since 1957. Farmers planted 49,100,000 acres to the crop, the smallest acreage on record (going back to 1919), and harvested 43,545,000 acres, the least since 1934. Yields per acre averaged 25.1 bushels, 1.1 bushels more than in 1961, and the third highest on record.

The 1962 crop included 816,379,000 bushels of winter wheat and 275,408,000 of spring wheat. Included in the spring wheat total were 71,809,000 bushels of durum wheat. This was the largest durum crop since 1928, and more than three times the 1961 output of 21,185,000 bushels. Durum wheat, which is used in making macaroni and spaghetti products, had been in short supply.

World wheat production in 1962 rose 7% over 1961 to 8,390 million bushels, second only to the 1958 record crop of 8,700 million.

Rye.—Production in the United States increased sharply in 1962. The crop of 41,175,000 bushels was 50% larger than that of 1961 and the largest in 20 years. Acreage harvested for grain increased 30% over 1961 to 2,014,000, and yield per acre rose 15% to 20.4 bushels.

WORLD PRODUCTION OF GRAINS BY LEADING COUNTRIES
(1,000 bushels)

	Average 1955–59	1961	1962[1]
Wheat:			
USSR	1,910,000	1,900,000	...
United States	1,095,357	1,234,743	1,091,787
India	330,926	403,900	434,000
France	358,210	351,800	424,200
Italy	329,880	305,000	338,000
Canada	452,595	283,394	530,654
Australia	168,320	246,300	...
Turkey	232,000	225,000	245,000
Argentina	225,676	190,000	...
West Germany	138,676	148,000	162,000
Rumania	118,600	145,000	...
Pakistan	133,192	141,300	144,000
Yugoslavia	102,000	116,500	...
Poland	83,900	103,500	...
Rye:			
USSR	635,000	600,000	...
Poland	285,280	328,500	...
West Germany	147,130	98,900	115,500
East Germany	81,152	59,200	...
Czechoslovakia	38,140	37,750	...
United States	27,030	27,476	41,175
Turkey	24,086	24,000	24,500
Argentina	31,816	20,900	...
Denmark	10,946	20,200	17,900
Austria	16,254	18,590	17,800
Rice:[2]			
India	43,293	51,270	51,800
Pakistan	12,828	16,132	16,000
Japan	14,810	15,523	16,255
Indonesia	12,019	14,000	...
Thailand	7,005	7,845	8,000
Burma	6,985	7,600	7,800
Brazil	4,057	5,300	...
South Vietnam	4,100	4,600	4,900
Philippines	3,447	3,909	...
South Korea	3,029	3,706	3,400
Taiwan	2,415	2,730	...
United States	2,238	2,433	2,886
Corn:			
United States	3,234,891	3,625,530	3,643,615
USSR	320,000	500,000	...
Mexico	190,630	220,000	...
Republic of South Africa	141,946	220,000	...
Rumania	180,000	215,000	...
Argentina	173,710	210,000	...
Yugoslavia	185,502	179,000	189,000
India	128,100	160,000	165,000
Italy	139,282	155,100	130,000
Hungary	115,600	107,000	112,000
Oats:			
United States	1,278,145	1,011,398	1,031,743
USSR	845,000	610,000	...
Canada	424,690	283,965	484,354
Poland	168,640	190,000	...
France	224,270	178,500	167,900
West Germany	156,630	131,800	165,000
United Kingdom	163,310	127,540	122,500
Sweden	58,750	93,300	76,000
Australia	63,630	71,500	...
Czechoslovakia	64,800	66,000	...
Barley:			
USSR	439,000	590,000	...
United States	424,448	395,669	429,495
France	197,890	248,600	260,000
Canada	241,295	122,640	163,816
Turkey	139,000	142,500	147,000
India	125,356	131,630	143,100
Denmark	110,090	129,000	130,500
West Germany	111,700	125,000	173,000
Japan	93,528	82,970	72,400
Czechoslovakia	61,700	73,000	...

[1] Preliminary estimates for Northern Hemisphere countries; for Southern Hemisphere countries, preliminary forecasts based largely on acreage and weather conditions. Years shown refer to years of harvest in Northern Hemisphere. Harvests in Southern Hemisphere occur in early part of following year. [2] Figures are in thousand metric tons and exclude Communist areas. (Source: Foreign Agricultural Service, U.S. Department of Agriculture.)

A world crop of 1,350 million bushels was produced in 1962, slightly above 1961, but below the 1955–59 average of 1,440 million.

Rice.—A record United States crop of 64,458,000 bags (100 pounds each) of rough rice was produced in 1962, 19% more than a year earlier. Yields averaged a record 3,653 pounds per acre, 242 pounds more than in 1962, while the acreage harvested rose to 1,764,000 from the 1,588,900 of 1961.

World production, excluding Communist countries, also reached a new high. The 1962–63 crop was estimated at 153,191,800 metric tons, compared with 150,397,800 in 1961–62.

Buckwheat.—Production in the United States continued its 14-year downtrend, dropping to 729,000 bushels in 1962, only 35% of the 1951–60 average. Production in 1961 was 864,000 bushels.

Corn.—American farmers harvested corn from the smallest acreage since records were begun in 1919—56,842,000 acres—but yields rose to a record 64.1 bushels per acre, 2.1 bushels more than in 1961. Production of grain totaled 3,644 million bushels, slightly more than in 1961 and above the 1951–60 average of 3,128 million bushels. In addition to grain, 74,046,000 tons of silage were produced in 1962, and 1,569,000 acres planted to corn were used for forage.

World corn production in 1962–63 fell slightly below the preceding year to 7,310 million bushels, but was above the 1955–59 average of 6,465 million.

Oats.—The United States crop of 1962 was 1,031,743,000 bushels, 2% more than in 1961, but otherwise the smallest since 1939. Yields set a record of 45 bushels per acre, compared with 42.2 in 1961, but the 22,934,000 acres harvested was the least since 1884.

World production fell to the lowest level in 40 years —3,720 million bushels—as acreage continued its downward trend.

Barley.—The 1962 crop in the United States rose 9% from 1961 and 17% from average, to 429,495,000 bushels. The 12,443,000 acres harvested in 1962 fell 4% below 1961, but the average yield per acre rose nearly 4 bushels, to a record 34.5.

A new world record was set in 1962–63 when production reached 3,720 million bushels, 310 million more than a year earlier.

Sorghum Grain.—United States yields set a new record for the sixth consecutive year in 1962, reaching 44.1 bushels per acre. The acreage harvested rose 5% over 1961, to 11,547,000. The 1962 crop of 509,137,000 bushels was 6% more than in 1961, but 18% below the 1960 record.

(See also AGRICULTURE.)

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GRAPEFRUIT. See FRUITS.
GRAPES. See FRUITS; WINE.
GRAPHIC ARTS. See BOOK PUBLISHING AND SALES; MAGAZINES; NEWSPAPERS.
GRAPHITE. See MINERAL PRODUCTION.

GREAT BRITAIN

The United Kingdom of Great Britain and Northern Ireland (area, 94,516 square miles) is an island group lying off the northwest coast of Europe, bounded on the south by the English Channel, on the north and west by the Atlantic Ocean, and on the east by the North Sea. England (50,327 square miles), Wales (8,017 square miles), and Scotland (30,411 square miles) form Great Britain, the largest island; the remainder consists of Northern Ireland (5,459 square miles), the Isle of Man (227 square miles), the Channel Islands (75 square miles), and about 500 smaller islands.

Population.—At the census of April 23, 1961, the population of the United Kingdom totaled 52,834,249 (preliminary figures), including 46,071,604 in England and Wales, 5,178,490 in Scotland, 1,425,462 in Northern Ireland, 110,543 in the Channel Islands, and 48,150 in the Isle of Man; in mid-1961 it was estimated at 53,082,000. The census population of Greater London was 8,171,902 (County of London, 3,195,114; Outer Ring, 4,976,788), and those of other principal cities were as follows: Birmingham, 1,105,651; Glasgow, 1,054,913; Liverpool, 747,490; Manchester, 661,041; Leeds, 510,597; and Sheffield, 493,954. In addition to London, Liverpool, Manchester, and

Glasgow, the chief ports are Bristol, 436,440; Belfast, 416,094; Hull, 303,268; Newcastle-upon-Tyne, 269,389; Cardiff, 256,270; and Southampton, 204,707.

Government.—The United Kingdom is a constitutional monarchy, with its executive drawn from Parliament. Queen Elizabeth II (acceded Feb. 6, 1952) is sovereign. Charles, elder son of the queen and her husband, Philip, Duke of Edinburgh, is Prince of Wales and heir apparent.

The House of Lords, upper house of the bicameral Parliament and chiefly a revisionary body, consisted in August 1962 of 923 members, including, in addition to 4 peers of the blood royal, 2 archbishops and 24 bishops of the Church of England, 22 dukes, 26 marquesses, 136 earls, 111 viscounts, 592 barons and baronesses, and 16 representative Scottish peers. Included in the House of Lords are a number of judges given life peerages to enable the House to function as the final court of appeal. Eight peers were minors, who could not sit until of age.

The strengths of the parties in the lower house, the House of Commons, after the general election of Oct. 8, 1959, were as follows: Conservatives and their supporters, 365; Labour and Cooperative Party members, 258; Liberals, 6; and independents, 1. In 40 by-elections to Dec. 1, 1962, the Conservatives gained 2 seats from, and lost 3 to, Labour, and the Liberals gained 1 from the Conservatives; 1 by-election was pending. One Labour member became an independent on March 22, 1961.

The leading members of the government in December 1962 were Harold Macmillan (q.v.), prime minister; Reginald Maudling (appointed July 13, 1962), chancellor of the exchequer; the Earl of Home (q.v.), foreign secretary; Henry Brooke (appointed July 13), home secretary; Peter Thorneycroft (appointed July 13), minister of defense; and Duncan Sandys (appointed July 13), who was already secretary of state for Commonwealth relations, colonial secretary. Richard Austen Butler, previously home secretary, was appointed to a new post, first secretary of state, on July 13.

Finance.—Revenue in the financial year 1961–62 amounted to £6,645 million, and expenditure to £6,235 million, giving a surplus of £410 million (£1 equals U.S.$2.80). In the 1962–63 budget revenue was estimated at £6,807 million, and expenditure at £6,364 million, giving a surplus of £443 million. Defense expenditure was estimated at £1,721 million; expenditure on local government, housing, and social services, at £2,290 million; that on agriculture, at £401 million; on industry, trade, and transport, at £449 million; and interest on the national debt, at £600 million.

Britain's balance of payments in 1961 showed a marked improvement on 1960, and the improvement was continued in the first half of 1962. The current account in 1961 showed a deficit of £70 million, compared with a deficit of £288 million in 1960. The surplus on the long-term capital account was £8 million, representing a rise of £210 million compared with 1960. In the first half of 1962 there was a surplus on the current account of £96 million, the first half-yearly surplus since 1959. Long-term capital movements showed an outflow of £41 million, but items in the invisible account (banking, shipping, and the like), showed a surplus of £112 million, while foreign holdings of sterling fell by £194 million, and the gap between exports and imports declined to £16 million. By July 31, Britain repaid all of the $1,500 million received from the International Monetary Fund (IMF) on Aug. 4, 1961.

On Dec. 31, 1961, the sterling area's gold and dollar reserves stood at £1,185 million; by Sept. 30, 1962, they had fallen to £997 million, but by November 30 they had risen to £1,030 million. On March 8, 1962, the bank rate, which had stood at 6% since Nov. 2, 1961, was lowered to 5½%; it was lowered to 5% on March 22, and to 4½% on April 26.

Taxation.—The standard rate of income tax for both individuals and corporations in the financial year 1962–63 remained at 38¾%. Individuals can deduct two ninths of the first £4,005 earned and one ninth of the balance up to £9,945 in calculating taxable income. Exemptions of £140 for single persons, £240 for married couples, and £100 to £150 for children, according to age, are allowed, as are deductions for dependent relatives, widows' or widowers' housekeepers, and persons over 65 years of age. The tax rate varies from 8¾% on the first £60 of taxable income to the standard rate on taxable income over £360.

Queen Elizabeth of Great Britain and her youngest child, Prince Andrew, age two, are seen in the garden of Windsor Castle.

WIDE WORLD

Surtax varies from 10% on unearned income over £2,000 (on earned income over £5,000) to 50% on income over £15,000. Corporations pay a profits tax of 15% on profits over £2,000, but an abatement is allowed if profits are less than £12,000. Among other taxes are purchase tax at rates of from 5 to 50% of the wholesale value, estate duty, and customs and excise duties.

Defense.—The basic objectives of Britain's defense policy in the next five years were outlined in the annual defense white paper published on Feb. 20, 1962. This policy was to be based on continuing support of the North Atlantic Treaty Organization (NATO) as a primary responsibility; a continuance of Britain's own contribution to the Western deterrent in the form of nuclear capability; the need to create more flexible and mobile units out of Britain's new all-professional forces; and the acceptance of the principle of joint task forces outside Europe. Defense expenditure in 1962–63 was estimated at £1,721 million, representing 7% of the gross national product, and £65 million higher than in 1961–62. In 1962 about 85% of the Royal Navy's active and operational reserve fleet, over 50% of the front-line aircraft of the Royal Air Force (RAF), and 40% of all army formations were assigned to NATO. Britain's forces in West Germany totaled 45,000 to 55,000 men.

By the end of 1962 all men called up under compulsory military service, which commenced in 1939 and has now ceased, were to have left the armed forces. The estimated strengths of the forces on April 1, 1962, were as follows: army, 200,600; Royal Navy, 94,600; and RAF, 148,200; for a total of 443,400, including 16,200 women.

In 1962–63 the operational strength of the Royal Navy consisted of 3 aircraft carriers, 2 commando ships, 4 cruisers, 2 guided missile destroyers, 20 other destroyers, 32 frigates, 2 dispatch vessels, 1 ice patrol ship, 30 submarines, 37 minesweepers, and 7 amphibious warfare vessels, for a total of 140 ships. In addition, 37 ships were on trials and training; there were 71 fleet support and auxiliary vessels; and 296 ships were either being refitted or modernized, or were in reserve.

Atomic Energy.—Atomic research and development has been the responsibility of the United Kingdom Atomic Energy Authority (UKAEA) since Aug. 1, 1954. The UKAEA's estimated expenditure in 1962–63 was £67,850,000, or £10 million less than in 1961–62. The authority's capital assets were valued at £560 million on March 31, 1962. Commercial sales in 1961–62 amounted to over £20 million, including £10 million from fuel elements for power stations, £6 million from electricity, and £1.4 million from isotopes.

Britain's first purely commercial nuclear power station, built by the Central Electricity Generating Board (CEGB) at Berkeley, Gloucestershire (total output, 275,000 kilowatts), began feeding electricity into the national electricity grid system on June 15, 1962. The CEGB station at

Bradwell, Essex (capacity, 300,000 kilowatts), was expected to be in operation by the end of the year. Six more stations were being built by the CEGB at Hinkley Point, Somerset (500,000 kilowatts), Trawsfynydd, Merionethshire (500,000 kilowatts), Dungeness, Kent (550,000 kilowatts), Sizewell, Suffolk (580,000 kilowatts), Oldbury, Gloucestershire (550,000 kilowatts), and Wylfa Head, Anglesey (800,000 kilowatts), under a nuclear power program to be completed in 1968. Application has been made to build a second station, with a capacity of 1,000,000 kilowatts, at Hinkley Point. The South of Scotland Electricity Board was building a nuclear power station at Hunterston, Ayrshire, due to start operating in 1963.

Education.—Expenditure on education from central government funds in 1962–63 was estimated at £137 million. The bulk of educational expenditure is from local authority funds; in 1960–61 it totaled £704,554,000 in England and Wales and £87,174,000 in Scotland.

In 1962 there were 24 universities in the United Kingdom (18 in England, 4 in Scotland, 1 in Wales, and 1 in Northern Ireland). University income in 1960–61 amounted to £67,467,000, of which £49,037,000 came from parliamentary grants and £1,327,000 from local authorities. At the beginning of the academic year 1961–62 there were 111,385 full-time university students, including over 6,000 from the Commonwealth and over 4,000 from foreign countries. More than 80% of the total are aided by scholarships.

There were 7,657,566 children and 318,120 full-time teachers in schools in England and Wales, 906,922 children and 38,327 teachers in Scottish schools, and 282,928 children in schools in Northern Ireland in January 1961. In the school year 1960–61 there were 481,783 part-time students in England and Wales and 261,439 in Scotland.

Religion.—The Church of England, organized into the provinces of Canterbury (29 dioceses) and York (14 dioceses), each under an archbishop, is the established church. Baptized membership in the Church of England in 1961 was estimated at 27,000,000. The Episcopal Church in Scotland had 108,000 members in 1961; the Church in Wales (disestablished in 1920), 200,000 members; and the Church of Ireland (disestablished in 1869), 354,000 members.

The established (Presbyterian) Church of Scotland had an estimated membership of 1,307,000 in 1961. Methodists numbered 728,600; Congregationalists, 211,300; and Baptists, 321,000. Roman Catholics were estimated at 5,000,000, and the Jewish community at 450,000.

Social Services.—The estimated cost of social and community services from central government funds in 1962–63 was £2,290 million.

On Oct. 1, 1961, there were 46,263,297 persons registered under the National Health Service in England and Wales, and there were 22,058 doctors providing general medical services in England and Wales and 2,864 in Scotland. Dentists in the service in Great Britain numbered 17,667, and there were 7,180 opticians in England and Wales. On March 31, 1962, there were 541,600 staffed hospital beds in Great Britain; full-time nursing staff on Sept. 30, 1961, totaled 176,011. In 1961, 225,988,000 prescriptions were dispensed under the health service in Great Britain.

In May 1962, family allowances were being paid to 3,625,000 families in respect of 9,525,000 children. On June 30, there were 5,725,000 retirement pensioners, 122,000 noncontributory old age pensioners, 588,000 widows receiving pensions or allowances, and 1,863,000 persons receiving National Assistance grants. Claims for unemployment benefits averaged 185,000 a week in 1961–62, and new claims for sickness benefits and injury benefits averaged 176,000 and 16,000, respectively.

Agriculture.—Agricultural production rose slightly in 1960–61 over the previous year, the increase being spread fairly evenly over the whole range of agricultural products. A similarly evenly spread rise took place in 1961–62, except for the output of sugar beets and potatoes, which suffered from a prolonged cold spell in the summer of 1962. Acreage and production figures are shown in Table 1.

Table 1—AGRICULTURAL PRODUCTION
(Years beginning June 1)

Crop	1960–61	1961–62
Acreages (thousands):		
Wheat and rye	2,121	1,846
Other grains	5,548	5,697
Potatoes	829	701
Sugar beets	436	427
All tillage	11,182	10,858
Production (thousand long tons):		
Wheat and rye	3,010	2,597
Other grains	6,518	6,964
Potatoes	7,158	6,196
Sugar beets	7,215	5,936
Milk (million gallons)	2,460	2,566
Eggs[1]	725	759
Beef and veal	772	865
Mutton and lamb	243	267
Pig meat[1]	687	745
Net agricultural output (1936–1939 = 100)	178	183

[1] Includes estimated production from units of under 1 acre.

Minerals.—Coal production totaled 190,476,000 long tons in 1961 and 126,773,000 tons in the first 8 months of 1962. Output per man-shift rose to 4.18 tons at the coal face and 1.45 tons overall in 1961, and was running slightly higher in 1962. In August 1962, 547,000 persons were employed in the industry. Iron ore production totaled 16,536,000 long tons in 1961 and 8,903,000 tons in the first 7 months of 1962. British refineries processed 49,105,200 long tons of crude and shale oil in 1961 and 29,318,300 tons in the first 7 months of 1962.

Industrial Production.—For 1961 as a whole, production was about 1% higher than in 1960. The index for the year stood at 113.9 (1958=100), compared with 112.5 in the previous year. In the first quarter of 1962 it averaged about 113, and in the second quarter about 116; by September, it had risen to 118. A rise in the first half of 1961, mainly the result of increased output in the construction industries and in the production of engineering capital goods, was counterbalanced by a general decline in the second half of the year. In 1962 production in the engineering industries in the first 6 months was 3% higher than in the first half of 1961. Steel production, at 10,630,000 long tons (full year 1961, 22,086,000 tons) fell considerably, as did that of textiles. Production of synthetic fibers rose strongly, and output in June 1962 was 12% above the 1961 level. Motor vehicle production, at 876,000 units, was 125,000 units above the corresponding 1961 figure. The working population in June 1962 totaled 24,809,000, compared with 24,650,000 a year earlier. Of this total, 23,995,000 were in civilian employment, 442,000 in the armed forces, and 372,000 unemployed (compared with 251,000 in June 1961). The output of selected industries is shown in Table 2.

Table 2—OUTPUT OF SELECTED INDUSTRIES

Commodity	1960	1961
Synthetic fibers:		
Staple fibers (million lbs.)	323.4	305.6
Continuous filament yarn (million lbs.)	268.6	263.9
Cotton and cotton waste yarn (million lbs.)	595.9	554.3
Woven cotton cloth (million linear yards)	1,294.8	1,237.6
Woven synthetic fiber and mixture cloth (million linear yards)	618.8	608.4
Woolen and worsted yarn (million lbs.)	548.4	527.0
Woven woolen and worsted cloth (million linear yards)	367.1	352.0
Merchant ships completed (thousand gross tons)	1,303	1,390
Radio and television sets (thousands)	4,648.8	4,328.4
Passenger cars and chassis (thousands)	1,352.7	1,003.9
Commercial vehicles and chassis (thousands)	458.0	460.2

External Trade.—The value of British exports in 1961 was 4% higher than in 1960, totaling £3,682 million (f.o.b), compared with £3,555 million in the previous year. Reexports, at £158 million, were £17 million higher. Imports in 1961 were valued at £4,398 million (c.i.f.), £143 million, or 3%, lower than the 1960 figure of £4,541 million. The apparent trade deficit was

thus £558 million, an improvement of £288 million on 1960. Exports to the sterling area totaled £1,401 million in 1961, or 2% less than in 1960; imports from the area also fell by 2%, to £1,479 million. Trade with North America showed a fall of £38 million, a rise of 3% to Canada being more than counterbalanced by a drop of 14% (to £283 million) in exports to the United States. Imports from North America fell by 11%, to £833 million. While imports from western Europe showed only a 1% rise, exports to that area rose by 16%. Exports to Japan increased by 51%, but imports from it fell by 7%.

Engineering products, which made up 46% of the total value of exports in 1961, rose by 6%, to £1,674 million. Motor vehicle exports fell by 14%, and textiles by 4%. There were no marked changes in the pattern of imports in 1961. Statistics of British trade in 1960 and 1961 are shown in Table 3.

Table 3—BRITAIN'S IMPORTS AND EXPORTS, 1960 AND 1961

Commodity group	1960	1961
Principal Imports	(£ million, c.i.f.)	
Food, beverages, and tobacco:		
Cereals and cereal preparations	219.0	213.3
Meat and meat preparations	343.7	311.5
Dairy produce	172.6	158.2
Sugar and sugar preparations	81.4	74.8
Fruits and vegetables	240.3	251.0
Tobacco	103.6	100.7
Materials and manufactures:		
Wood and cork	186.4	177.1
Raw cotton	73.5	62.4
Raw wool and other animal hair	149.3	144.6
Rubber (including synthetic and reclaimed)	77.7	72.0
Petroleum and petroleum products	480.3	483.6
Iron and steel manufactures	100.6	49.0
Nonferrous base metals and manufactures	276.6	245.5
Machinery (nonelectric)	200.4	251.6
Textile yarns and manufactures	135.6	146.3
Chemicals	175.5	167.2
Exports of British Products	(£ million, f.o.b.)	
Iron and steel	215.4	211.7
Nonferrous base metals	98.4	102.8
Road vehicles and aircraft	505.3	439.7
Machinery (nonelectric)	712.0	816.3
Electrical machinery, apparatus, and appliances	233.2	259.0
Chemicals	316.7	325.0
Textile yarns and manufactures	261.0	249.4
Metal manufactures	157.8	159.5
Ships and boats	52.4	88.7
Food, beverages, and tobacco	196.7	207.4
Coal, coke, etc.	28.4	29.3
Petroleum and petroleum products	104.2	94.2
Basic materials	125.7	134.5

Exports in the first 9 months of 1962 totaled £2,816 million. The rapid expansion of the first 6 months slackened in the third quarter. Exports to western Europe showed the greatest rise, with a 15% increase over the 9-month period. After a rise in the first quarter of the year, exports to North America fell by 4% in the second quarter, but much of the loss was recovered in the third. Exports to the sterling area were 15% lower than a year earlier in the first quarter, 2% lower in the second, and 4% lower in the third. Imports in the first 9 months of 1962 totaled £3,355 million, showing a steady rise throughout the period. By the summer of 1962 the decline in imports from the sterling area had been reversed, and the third quarter figures showed an 11% rise over the second quarter. In the first 6 months of the year, imports from western Europe increased by 16% over the last quarter of 1961, but they fell by 4% in the third quarter. After a steady first two quarters, imports from North America rose by 3% in the third quarter, most of the increase coming from the United States. (See also INTERNATIONAL TRADE.)

Communications.—The British Transport Commission operated 48,889 miles of railroad track on Jan. 1, 1962, and owned 15,961 locomotives (13,276 steam), 37,849 passenger-carrying and 14,551 non-passenger-carrying vehicles, and 956,284 freight cars. During 1961, British Railways carried 1,024,951,000 passengers and 238,177,000 tons of freight. British Road Services owned 16,066 road haulage vehicles and 14,171 passenger vehicles on Jan. 1, 1962. British Railways showed an operating deficit of £86.9 million in 1961, but a surplus of £33.5 million on other activities reduced the commission's overall working deficit to £53.4 million. Gross receipts from carrying activities in 1961 were £710,862,883. On Aug. 31, 1962, there were 9,913,000 cars, 1,692,000 motorcycles, 84,600 public passenger vehicles, and 1,300,000 trucks on British roads.

British Overseas Airways Corporation (BOAC) carried 983,027 passengers and 16,326 tons of freight in 1961–62, with a traffic revenue of £92,713,807 and an operating deficit of £5,005,170. British European Airways (BEA) carried 4,393,378 passengers and 41,042 tons of freight, with a traffic revenue of £44,545,944 and a loss of £1,488,065 on the year's working. (See also AERONAUTICS.)

The British Broadcasting Corporation (BBC) operated 1 long-wave, 56 medium-wave, and 25 VHF transmitting stations and 28 television stations in 1962. Its income in 1961–62 was £37,788,540, including £36,731,867 from licenses and £606,524 from publications. Television programs (under controlled sponsorship) were also provided by the Independent Television Authority (ITA), which in 1962 had 22 transmitting stations in operation or under construction. Its revenue in 1961–62, consisting largely of payments from 13 program companies, was £4,879,380. On Sept. 30, 1962, licenses for television and sound broadcast receivers held by the public totaled 12,110,000 and 3,460,000, respectively.

Cable and Wireless Ltd.'s overseas telecommunications services carried 482 million words and 3,060,000 minutes of telephone traffic in 1961–62, at a revenue of £18,214,149 and a profit of £4,575,282.

On Sept. 30, 1962, the total tonnage of the British merchant fleet was 20,468,000, including a tanker tonnage of 7,255,000. In 1961, 113,892,000 tons of shipping in the foreign trade entered, and 118,884,000 tons cleared, British ports.

Events, 1962.—Britain's decision to apply for membership in the European Economic Community (EEC; Common Market) was, as in 1961, the dominating event of 1962. Negotiations at either the ministerial or the deputy's level, backed up by the work of officials and experts, continued throughout the year, and by the end of the ministerial meetings in Brussels on August 1–5 provisional agreements had been reached on a number of major points. These included (1) association for British colonies and ex-colonies dependent on the British market; (2) separate arrangements, through trading agreements, for India, Pakistan, and Ceylon; (3) abolition of the market's external tariff on tea; (4) application of the common external tariff on cotton textiles by stages over a period of four years instead of three; (5) suspension of duties on some items and a delay in bringing the tariff on processed products into effect; (6) the promotion and encouragement of worldwide trade agreements relating to temperate agricultural products; (7) reasonable opportunities for non-European temperate foodstuffs in the enlarged community; and (8) specific agreements, transitional arrangements, and the phasing out of British tariff preferences in the case of some products and manufactures. It was at this stage that the Commonwealth governments once again expressed

THE TIMES, LONDON; LONDON DAILY EXPRESS

(*Left*) Queen Elizabeth and the archbishop of Canterbury leave new Coventry Cathedral on May 25 after consecration of the building. The old cathedral was destroyed by bombs in 1940. (*Right*) Bishop Cuthbert Bardsley and architect Basil Spence.

anxieties about the possible effects on the Commonwealth of Britain's entry at the prime ministers' conference held in London on September 10–20 (see COMMONWEALTH OF NATIONS).

Negotiations between the ministers at Brussels on November 15–17 cleared the way on a number of remaining problems, including those relating to the less-developed countries not ready to join immediately in the proposed arrangements for association. Proposals were also put forward concerning tariff reductions on some processed foodstuffs, and on pulp and paper, timber products, aluminum, and other nonferrous metals. These proposals were passed to the deputies for examination before the ministerial meetings on December 15–17 and 20–22. Meanwhile, on October 4, Britain also commenced negotiations with a view to joining the European Coal and Steel Community, and negotiations with the European Atomic Energy Community opened on November 14.

The division of opinion within Britain over entry into the Common Market was illustrated at the political party conferences. At its conference in Llandudno on September 18–22, the Liberal Party expressed itself as overwhelmingly in favor. The Labour Party, meeting at Brighton on October 1–5, adopted a statement critical of the negotiations, emphasizing the importance of the Commonwealth, and suggesting the outline of new terms of membership. The Conservative Party conference, held at Llandudno on October 8–13, gave overwhelming endorsement to the government's declared intention of carrying the present negotiations to a successful conclusion.

At the meeting in Oslo on October 22 of the European Free Trade Area (EFTA; Outer Seven), all the members of which have applied to the Common Market for either membership or association, progress in reducing tariffs (which would reach 50% by the end of 1962) and abolishing quotas was reported to be well ahead of schedule. The ministers also reported progress on their negotiations with the Common Market. (See also EUROPE.)

In internal affairs, loss of the Conservative government's popularity was shown at by-elections in reduced majorities, and, in the five held on November 22, the loss of two seats to the Labour Party. The gain in Liberal strength, shown in 1961, was maintained. An extensive reconstruction of the government between July 13 and July 18 did little to change popular feeling. The main reasons for this loss of popularity were controversy over Britain's application to join the EEC, the government's wage policy (designed to counteract inflation), and rising unemployment.

The Commonwealth Immigrants Act, designed to control immigration from the Commonwealth into Great Britain, came into force on July 1. Important legislation during the year included a Road Traffic Act and a Transport Act (both August 1). The Committee on Broadcasting, appointed in 1960 under the chairmanship of Sir Harry Pilkington, issued its report on June 27. In general, the report's recommendations confirmed the position of the BBC and suggested that it should be given a second television channel, and proposed a drastic reorganization of the ITA designed to strengthen its control at the expense of the programming companies. In a white paper issued on July 4, the government postponed decision on the committee's proposals pending further study and debate. Among other reports issued during the year was that of the Royal Com-

(*Left*) The *Dreadnought*, Great Britain's first nuclear submarine, stands out from Barrow-in-Furness on December 12 for sea trials. (*Right*) Demonstrators stage 30-minute "lie-down" strike in London on June 16, protesting American and Soviet nuclear tests.

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mission on the Press, 1961–62 (chairman, Baron Shawcross), on September 19. As a result of a spate of rumors following the conviction of William J. C. Vassall, an Admiralty clerk, on charges of spying for the USSR, an independent tribunal, with quasijudicial powers, was set up under the chairmanship of Baron Radcliffe on November 14 to inquire into the affair.

Britain's support for the United States position on Cuba was demonstrated by a Foreign Office statement on October 23 supporting President John F. Kennedy's action, confirmed by Prime Minister Harold Macmillan's statement in the House of Commons on October 25, and support of the United States resolution in the UN Security Council by the British delegation. The general identity of approach to world problems of the two countries had been underlined earlier in the year, when the prime minister visited New York and the United Nations (April 25–26) and Washington (April 27–29), by the Earl of Home's address to the UN General Assembly on September 27, and in the Bahamas meeting of Macmillan and Kennedy on December 18–21. At this meeting it was decided to furnish Britain with Polaris rather than Skybolt missiles, and to develop a NATO nuclear force.

Edward Heath visited New York and Washington for discussions in connection with the Common Market on January 5–11, and Anglo-American discussions on defense took place when Peter Thorneycroft, minister of defense, visited the United States on September 10–16. Prince Philip visited the Seattle World's Fair on June 1–2, during the course of a Canadian visit from May 12 to June 6. He also visited New York on June 7, and again on November 12, en route to San Francisco (November 12–14) and Australia, where he arrived on November 21.

Relations with the Communist countries were uneventful until the development of the Cuban situation and the Chinese invasion of India on October 20. In the latter situation, Britain's support of the Indian position was apparent in the quick supply of arms to India and the dispatch of an aid mission on November 21. In Europe, Britain's relations with the NATO powers remained generally good, though complicated at times by the EEC negotiations. Prime Minister Macmillan visited Bonn on January 8–9, accompanied by Lord Home, to discuss common problems. One of the results of this meeting was an agreement on foreign exchange problems arising out of the stationing of British forces in Germany, announced on March 19. Macmillan also visited Rambouillet for discussions with President Charles de Gaulle on December 15–16.

Visitors to Britain during the year included U Thant, acting United Nations secretary general, on an official visit on July 4–7; President and Mrs. William V. S. Tubman of Liberia on an official visit on July 10–13, followed by a short private visit; and the prime minister of Japan, Hayato Ikeda, on a visit on November 12–15, during the course of which a commercial treaty between the two countries was signed (November 14). King Olav V of Norway paid a state visit to Scotland on October 16–19.

The first international earth satellite, the British-built Ariel, was launched by an American Delta rocket from Cape Canaveral on April 26. (See also Space Flight.) On March 29, Britain, West Germany, and Italy signed a convention for the formation of the European Launcher Development Organization for the development and construction of space vehicle launchers. The British Blue Streak rocket was to be the basis of the first stage of the launcher. A convention setting up the European Space Research Organization was signed by Britain and 12 other nations on June 14. A Space Research Management Group was set up under the minister of science on May 1 to manage programs of experiments in rockets and satellites.

On June 6, it was announced that BOAC and the Cunard Steam-Ship Company had formed a new joint company, BOAC-Cunard Ltd., to operate air services to and in the Western Hemisphere.

(For additional references, see the Index entry, *Great Britain.*)

Richard E. Webb,
Director, Reference and Library Division, British Information Services.

GREECE

The southernmost country of the Balkan Peninsula in southeastern Europe, Greece is a constitutional monarchy bordering on Albania, Yugoslavia, Bulgaria, and Turkey. It has an area of 51,182 square miles, including the island of Crete (3,235 square miles) and the Dodecanese (1,035 square miles). Its population (1962 est.) is 8,409,603, including Crete (482,021) and the Dodecanese (122,346). Principal cities and populations (1961 census): Athens, the capital, 621,741 (Greater Athens, including port of Piraeus, 1,837,041); Salonika, 377,026; Patras, 94,758; Volos, 67,314; Iraklion (Candia) on Crete, 64,492; Larisa, 55,733; and Kavalla, 44,406. Despite the emigration of more than 200,000 persons in 1955–61, the overall decennial increase in population amounted to 9%.

Government.—Greece is a constitutional monarchy under King Paul I (b. 1901; acceded 1947). The constitution of 1911, amended in 1951, provides for a 300-member unicameral Parliament (Vouli or Chamber of Deputies), elected for 4 years by a system of proportional representation. Following the election of Oct. 29, 1961, the Parliament was constituted as follows: National Radical Union (conservative), 176; Union of Center, 100; and Pan-Democratic Agrarian Union (leftist), 24. Executive power is vested in a cabinet, headed by a premier (Constantine Karamanlis, since Oct. 5, 1955).

Education and Religion.—Education is free and compulsory for all between 6 and 14 years of age; about 54% of the school-age population is in school. Number of schools (with enrollments), 1958–59: 10,638 primary (945,192); 781 secondary (273,390 in 1960–61); 15 teacher-training (2,366); higher (26,703 in 1959–60). In 1962, a serious economic crisis forced the University of Athens to mortgage its real estate endowment in order to meet pressing needs. The Eastern Orthodox Church is the established church, claiming more than 98% of the population. Chrysostomos II was elected primate of the national church on Feb. 14, 1962 (see below *Events, 1962*). Islam is the chief minority religion.

Finance.—Government revenue, 1962 est.: 19,065 million drachmas (up 7.4% from 1961); expenditure 18,065 million (up 12.2%); 30 drachmas equal U.S.$1. Chief components of 1962 budget expenditure: defense, 3,350 million drachmas; education, 1,772 million; social welfare and public health, 1,612 million; agriculture, 3,680 million. In 1962 it was planned to spend 6,000 million drachmas on economic investment and development (up 19% over 1961); 3,490 million was to come from domestic sources, 2,510 million from foreign sources. Expenditures by public corporations, such as the Agricultural Bank, the Economic Development Finance Organization, the Public Power Corporation, and the Telecommunications Organization, were expected to amount to 3,560 million drachmas, bringing the total expenditure for development in 1962 to 9,560 million drachmas.

Defense.—Military service is compulsory for men from 21 to 50 years of age, for a normal service period of 2 years. The army has a strength of 120,000 men. The air force comprises 23,000 men and 300 operational aircraft. The navy consists of 1 cruiser, 3 destroyers, about 20 escort destroyers, about a dozen submarines, and a number of auxiliary ships. Greece has been a member of the North Atlantic Treaty Organization (NATO) since 1951. A $50 million NATO guided missile training center was being established in 1962 on Crete.

Transportation and Communications.—Transport networks (miles, 1961): railroads, 1,683; roads, 23,000. Principal airports: Ellinikon (near Athens) and Micra

(near Salonika), served by Olympic Airways and 22 foreign airlines. In 1962 merchant shipping totaled 1,213 vessels with 6,687,889 gross registered tons (5.8 million in 1961). Other communications data (1961): passenger cars, 43,224; buses, 6,364; trucks, 30,683; telephones, 195,242; radios, 743,000 (in 1959).

Economic Indicators.—Gross national product, 1960: 95.78 billion drachmas (90.21 billion in 1959). National income, 1960: 80.51 billion drachmas (75.69 billion in 1959). Index of industrial production (1958 = 100): 117 in 1961; 111 in 1960. Cost-of-living index (1958 = 100): 106 in 1961; 104 in 1960. Number of unemployed workers: 76,000 in 1961; 86,700 in 1960.

Manufactures and Minerals.—Chief industrial products (metric tons, 1961): cement, 1,830,000 (1,630,000 in 1960); lignite, 2,520,000 (2,556,000); cotton yarn, 26,400 (29,560); wool yarn, 8,000 (5,000); electric power, 2,496 million kw.-hr. (2,208 million). Index of manufacturing production (1953 = 100): 180 in 1961; 172 in 1960.

Agriculture.—Greece's economy is primarily agrarian; agriculture yields about 32% of the gross national product. Chief food crops (in 1,000 bu., 1962 est.): barley, 11,900 (10,800 in 1961); oats, 10,900 (10,550); corn, 11,780 (11,330); wheat, 58,500 in 1961 (62,200 in 1960). Chief cash crops (tons, 1962 est.): raisins, 90,000 (64,500 in 1961); dried currants, 115,000 (98,000); dried figs, 31,000 (31,000); tobacco, 216,687,000 pounds (162,287,000); table olives, 98,500 in 1961 (24,000 in 1960); wool, 25.6 million pounds (25.5 million).

Foreign Trade.—Total exports, 1961: 6,700 million drachmas (6,096 million in 1960); imports, 21,422 million (21,061 million in 1960). In 1961, tobacco exports accounted for 2,487 million drachmas (2,188 million in 1960); currants, 884 million (866 million in 1960). The trade deficit is made up in part by tourism (399,438 visitors in 1960, spending $51.4 million), merchant shipping income ($88.6 million first 11 months 1961), and remittances from Greek emigrants ($90 million in 1960). Chief trading partners: West Germany, the United States, Great Britain, and countries of eastern Europe.

Events, 1962.—The problems of the Greek economy increased in number and complexity in 1962. On June 30, economic aid from the United States, which amounted to $3.42 billion from 1947 to 1962, came to an end. While per capita income was expected to rise about 3% ($320 in 1961), agricultural income fell below expectations, as much of the agricultural produce remained unsold as the year approached its end. Unemployment continued to be high, relieved in part by government doles and continued emigration to West Germany and Belgium. Mass demonstrations and clashes of peasants with police occurred during the year at Agrinion, Kavalla, Salonika, and Iraklion.

The big test for the Greek economy started on November 1, when Greece started her associate membership in the European Economic Community. The association with the European Common Market will entail the expansion of certain industries and products and the curtailment of others, with resulting economic dislocations. Previously, on July 31, a consortium of Belgium, Canada, West Germany, Great Britain, Italy, Luxembourg, Netherlands, and the United States, in conjunction with the Organization for Economic Cooperation and Development (OECD), was formed to provide economic aid to Greece.

At Greek Orthodox wedding ceremony in Athens on May 14, King Paul of Greece places crowns on his daughter, Princess Sophia, and Prince Juan Carlos of the Spanish Bourbons.

WIDE WORLD

Religious controversy flared up in January with the election of Iakovos, metropolitan of Attica and Megara, as primate of the Greek Orthodox Church to succeed Archbishop Theoklitos, who died on January 8. On January 25, Iakovos abdicated after a public clamor against his election and a threat from the government to remove him from his office. On February 14, Chrysostomos, metropolitan of Kavalla, was elected archbishop. On April 4 the supreme canonical court cleared Iakovos of the charges brought against him.

Relations with other Orthodox Churches improved during the year. On April 13 the newly recognized patriarch of Bulgaria visited Athens, followed by the patriarch of Rumania in June. On June 25 it was announced that Greece had rescinded its ban on visiting Mount Athos by Archbishop Nicodemus of the Russian Orthodox Church.

The political life of the country was characterized by unrest, emanating from the vehement criticism of ex-premier George Papandreou, leader of the Union of the Center. Violence broke out in Athens on April 20, during a demonstration protesting alleged electoral fraud and other abuses in the elections of Oct. 29, 1961. Scores were injured and many arrested. A motion of no confidence, sponsored by the Union of the Center, failed to pass the Chamber of Deputies on May 15. Parliament was in adjournment most of the year, leaving the work to a legislative committee. The committee discussed government proposals for relaxing the security measures which have been in force since the civil war (1946–49). The opposition held that the proposed government plans were inadequate and not sufficiently democratic, and abstained from voting. Among the acts of leniency initiated by the government was the release of a number of Communists and other leftists from concentration camps, although the Communist Party remained outlawed.

Greece's membership in NATO continued to be the pivot of its foreign policy during the year. On January 4, Greece rejected a Soviet protest against the alleged stockpiling of nuclear weapons in Greece. At the NATO conference held in Athens in May, Greece pointed out that her military expenditure was excessive in proportion to her resources, and asked, unsuccessfully, for $100 million in aid from NATO.

Greece's relations with Albania and Turkey improved during the year. In June, Albania freed some 40 Greeks that had been held captive since the 1946–49 Greek civil war (see also ALBANIA). Relations with Turkey were reportedly improved, following the visit of Greek Foreign Minister Averoff-Tossitsas on August 4–7. Relations with the Communist bloc showed no improvement, although a somewhat more cordial atmosphere prevailed in official contacts with Rumania.

Relations with Yugoslavia, however, became cooler because of the raising by Yugoslavia of the question of Slavic-speaking people in northern Greece. As a precaution, Greece suspended the provisions of the Greco-Yugoslav agreement concerning frontier travel between Florina, Greece, and Bitolji, Yugoslavia.

On February 16, Greece protested to the United Arab Republic against the delay in answering the Greek request for prompt payment of indemnities for confiscated Greek property in Egypt. Most of the property of the formerly prosperous Greek community in Egypt, estimated at £120

million, has been confiscated under the UAR's nationalization program. It was estimated that in 1962 about 500 Greeks were being repatriated from Egypt each week.

The visit of U.S. Vice President Lyndon B. Johnson on August 31–September 3 occasioned demonstrations of goodwill toward the United States. Similarly, the marriage of Princess Sophia, eldest daughter of King Paul, to Don Juan Carlos, son of the pretender to the throne of Spain, on May 14, brought forth expressions of goodwill for the monarchy.

G. G. Arnakis,
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GREEK ORTHODOX CHURCH. See Religion.

GREEN, Howard Charles

Canadian secretary of state for external affairs: b. Kaslo, British Columbia, Nov. 5, 1895.

A lawyer and member of the Progressive Conservative Party, Howard Green has represented Vancouver in Canada's House of Commons since 1935. After the elections of June 10, 1957, when his party came to power, he was named minister of public works in the cabinet of Prime Minister John Diefenbaker, and served as acting minister of defense production for almost a year. He was named to his present post on June 4, 1959.

As head of the Canadian delegation to the 17-nation Disarmament Committee, which met in Geneva on March 14, 1962, Green proposed (March 28) a ban on the launching of nuclear weapons into space and an agreement to give notification of all missile launchings; this suggestion was rejected by Soviet delegate Valerian A. Zorin. On June 14, Green rejected as an unwarranted interference in Canadian internal affairs a note from the Soviet ambassador in Ottawa charging that Canada was preparing to arm itself with nuclear weapons. The note was generally interpreted as an attempt by the USSR to discredit the Conservative Party just before the Canadian elections of June 18, in which the foreign secretary was returned to his seat in Parliament.

Green addressed the House of Commons in 1962 on two major issues affecting Canada's relations with the United States. On April 9 he assured Parliament that the controversial Columbia Basin Treaty (signed Jan. 17, 1961, but not ratified by Canada) would be referred to the House Committee on External Affairs. He also told Parliament (October 4) that the government would take no steps to prevent Canadian ships from carrying cargoes between the Soviet Union and Cuba. Canada, however, fully supported the United States position during the Cuban crisis of October 1962. At the end of October, Green announced that his government had offered arms and transport aircraft to India in her border war with Communist China. (See also Canada.)

GREENLAND

Situated northeast of Canada, Greenland is an island department of Denmark. It has an estimated area of 840,000 square miles, of which about 58,000 square miles may be classified as inhabited. The population (1961 est.) is 35,000, mostly of Eskimo descent, with an admixture of Europeans. Godthaab (pop. est., 3,000) is the capital and main settlement. Greenland is administered by an appointed governor (N. O. Christensen), assisted by an elected 13-member Provincial Council (Landsraad). The United States maintains a military airbase at Thule, and has other military installations on the island.

The population is mainly engaged in fishing, processing of fish products, hunting, and mining. In 1960 the fish catch totaled 35,200 metric tons. Principal minerals (metric tons, 1960): coal, 30,000; lead ore, 6,900; zinc ore, 10,100. Total exports, 1960: 58,340,000 Danish kroner; imports, 112,010,000 (the Danish krone equals U.S.$0.148). Trade is conducted mainly with Denmark.

GRENADA. See West Indies Federation.

GROMYKO, Andrei Andreyevich

Soviet minister of foreign affairs: b. Starye Gromyki, near Minsk, Belorussian SSR, July 6, 1908.

After graduating from high school and a teachers college in Minsk, Gromyko was graduated in 1936 from the Institute of Economics in Moscow with a master's degree in foreign politics and economics. In 1939 he entered the Commissariat of Foreign Affairs as head of the American desk, and later that year joined the Soviet embassy in Washington, D.C., as counselor. In 1943 he succeeded Maxim Litvinov as ambassador to the United States. He participated in the Teheran, Dumbarton Oaks, Yalta, and Potsdam conferences and the founding conference of the United Nations Organization in San Francisco (1945). As permanent Soviet representative to the United Nations from 1946 to 1948, he vetoed 25 proposals in the Security Council.

Gromyko was recalled to Moscow in 1948 as deputy foreign minister; he subsequently served as first deputy foreign minister (1949–52 and 1953–57) and ambassador to Great Britain (1952–53) before succeeding Dmitri T. Shepilov as foreign minister in February 1957. A member of the Communist Party of the USSR, Gromyko has been a deputy to the Supreme Soviet since 1946. He was elected to the Central Committee of the party as an alternate member in 1952 and as a full member in 1956.

Gromyko participated in the 17-nation disarmament talks in Geneva in March, and on July 23 in Geneva he signed the 14-nation agreement guaranteeing the freedom and neutrality of Laos. He discussed Berlin with U.S. Secretary of State Dean Rusk in Geneva (July 21–24) and New York (September 24 and October 6), and with British Foreign Secretary Home in New York (October 1), without reaching accord.

Visiting President Kennedy in Washington, D.C., on October 18, Gromyko insisted that Soviet assistance to Cuba "pursued solely the purpose of contributing to the defense capabilities" of the island. Four days later, in his radio-television address announcing the naval quarantine of Cuba, the president described this statement as false. Immediately afterward, Gromyko returned to Moscow by way of East Berlin. Addressing the Supreme Soviet on December 13, he said there was no inevitable cause of conflict between the United States and the USSR.

GROUP INSURANCE. See Insurance.

GUADELOUPE

Situated southeast of Puerto Rico in the Caribbean Sea, this French overseas department is comprised of Guadeloupe proper (the islands of Basse-Terre and Grand-Terre), and several island dependencies (Les Saints, Marie-Galante, Petite Terre, Désirade, Saint Barthélemy, and Saint Martin, part of which belongs to the Netherlands). The total area is 687 square miles; population (1961 est.), 276,000. The people are of Negro-Carib-European descent and speak a French patois. Pointe-à-Pitre (est. pop., 45,000) is the chief port; Basse-Terre (est. pop., 15,000) is the capital.

The department is administered by a French-appointed prefect (Albert Bonhomme), who is assisted by a 36-member General Council elected by universal suffrage. In

1961–62 there were 285 primary schools (with 63,773 pupils), and 2 secondary schools (2,211). Raizet Airport, near Point-à-Pitre, handles jet aircraft.

The economy of the department is based on the export of sugar (159,276 metric tons in 1961) and bananas (122,363 metric tons). Guadeloupe is one of the world's major producers of rum (39,689 metric tons exported in 1961). Total exports in 1961 were valued at 17,812 million francs; imports, 25,858 million francs. Trade is mainly with France.

Guadeloupe was the site of a major air disaster on June 22, 1962, when a Boeing 707 jet airliner crashed near Pointe-à-Pitre and all 113 persons aboard were killed.

GUAM

The largest and most populous of the western Pacific islands known as the Marianas, Guam is an organized but unincorporated territory of the United States. Most southerly of the group, it lies 13° north of the equator, approximately 6,000 miles southwest of San Francisco, Calif. Thirty miles in length and 4 to 8½ miles in width, the island has an area of 209 square miles.

Population.—The population (May 1962) is 43,798, excluding transient United States military personnel and their families. The military community is estimated at approximately 30,000 persons. The local Guamanians are a mixture of native Chamorro stock with outside strains and are predominantly Roman Catholic in religion. Although English is the official tongue, the Chamorro dialect is widely used.

Places with populations of 2,500 or more Guam citizens in 1962 were Agaña Heights, 2,603; Agat, 3,202; Dededo, 3,187; Sinajana, 4,737; and Tamuning, 4,518. Agaña, with a population of 1,443, is the capital.

Government.—Guam is administered under the Organic Act of 1950, as amended. The island's relationship with the United States government comes under the general supervision of the U.S. Department of the Interior. Guamanians are citizens of the United States without the right to vote in United States elections and with no representation in the U.S. Congress.

The local government comprises executive, legislative, and judicial branches, with the executive branch of 10 departments headed by a civilian governor appointed by the president of the United States. A 21-member unicameral legislature, biennially elected at large, is empowered to pass laws on local matters, including taxation and appropriations measures.

The District Court of Guam has jurisdiction in all federal cases and in many others arising under the laws of Guam. Its decisions may be appealed to higher United States courts. Lesser courts may be created by the Guam legislature to have jurisdiction over cases arising in Guam; the Island Court is the ultimate local court.

Finances.—The operating budget for Guam is derived largely from taxes on personal income, specific sales, and business gross receipts. Banking facilities are provided by two bank branches, one of the Bank of America and one of the Bank of Hawaii, and by the Guam Savings and Loan Association.

Education and Social Welfare.—School attendance is compulsory between the ages of 6 and 16, inclusive. As of January 1962 there were 14,002 pupils enrolled in Guam's 20 elementary schools, two junior high schools, and two junior-senior high schools. The tuition-free College of Guam, which was made a four-year college in 1961, had an on-campus enrollment of 1,326 in the school year 1961–62, with an additional 745 enrolled in its extension facility at Guam's Andersen Air Force Base and 320 in that at the U.S. Naval Station.

The Guam Memorial Hospital and the naval hospital serve the major health needs of the residents. Public and private health clinics are located throughout the island.

Transportation and Communications.—Pan American World Airways makes three scheduled weekly passenger flights in and out of Guam, plus two regular weekly cargo flights, and United States Overseas Airlines makes one flight weekly. Vessels of the American President Lines call at Guam on an average of two times a month, and those of the Pacific Far East Line call on an average of three times a month. Guam is also the home port of the Pacific Micronesian Line, under contract to the Trust Territory of the Pacific, and of the locally owned Pacific Navigation System. Land transportation consists mainly of taxicabs and private automobiles, served by about 183 miles of paved and 47 miles of improved roads.

The Radio Corporation of America provides overseas telephone and radio dispatch facilities. Chief news media include the *Guam Daily News;* the associated *Territorial Sun,* a Sunday publication; and the military daily, *Stars and Stripes,* which is made available to the public. There are also local radio and television facilities.

Economy.—Guam's economy is undergoing a transition marked by the decline in military construction and some military activities. A concerted effort is being made to further develop the island's natural resources, which are relatively limited.

Agriculture and inshore fishing are the two principal supports of the civilian economy. Productive acreage is being increased under an intensified program sponsored by the territorial government.

Commercial farm income from truck crops, field crops, fruits and nuts, poultry products, and cattle increased greatly from 1960 to 1962. For example, egg production was increased from 34,320 dozens per month in 1960 to 53,807 dozens per month during the fiscal year 1962. The Department of Agriculture has greatly increased and improved its breeding stock, and is sponsoring a program to upgrade private cattle and swine herds.

Nonfarm production activities are largely limited to quarrying of crushed coral limestone and light manufacturing of food and beverages. A tourist industry is beginning to develop, and the island's first 100-room resort hotel is scheduled for completion in 1963.

Foreign Trade.—Guam is a duty-free port and levies no customs duties on imports. Its commercial port area occupies 24.5 acres and has 2,160 linear feet frontage of deep-water docking space, sufficient for the berthing of three large cargo vessels, and 100,000 square feet of warehouse space. For the fiscal year 1962, imports totaled 101,487 revenue tons valued at $20,717,723; exports, 37,201 revenue tons valued at $6,352,605; and transshipments, 14,751 revenue tons.

Events, 1962.—On August 21, President Kennedy revoked a 1941 presidential executive order which had required that all persons entering Guam undergo a lengthy security investigation by the Navy. Entry of United States citizens is now unrestricted; entry of foreign nationals is governed by the normal regulations of the Immigration and Naturalization Service imposed in all other parts of the United States. President Kennedy also modified restrictions on entry to the islands of the Trust Territory of the Pacific, opening them to United States citizens. These actions are expected to remove Guam from the "military bastion" category and encourage the growth of the civilian economy, especially in the field of tourism.

Typhoon Karen, the worst storm in the island's history, struck Guam on November 11–12, killing eight persons, injuring hundreds, and causing damage to homes, commercial buildings, and government structures estimated at over $100 million. More than 90% of the homes and about 50% of the commercial buildings were demolished. President Kennedy declared Guam a major disaster area, and the military and other federal organizations poured in millions of dollars in relief funds. The island's government immediately organized a gigantic rehabilitation program, including urban renewal and other plans which will rebuild the island according to higher standards. The rebuilding is expected not only to create a better community, but to pump millions of dollars into the island's economy in the next two years.

MANUEL F. L. GUERRERO,
Acting Governor of Guam.

GUATEMALA

Guatemala is the northernmost, most populous (official mid-1962 est., 3,980,000), and third largest (42,042 square miles) of the six republics of Central America. Its racial distribution is 67% Indian, 30% mixed (mestizo, called ladino in Guatemala), and 3% white. The capital, Guatemala City, with nearly 450,000 inhabitants in 1961, is the only large city.

Government.—Guatemala is a unitary republic headed by a president elected for a term of 6 years by an absolute majority of the popular vote. Under the constitution of 1956, if no candidate receives such a majority, the unicameral National Congress of 66 members (serving 4-year terms, with half being renewed every 2 years) elects the president. President Miguel Ydígoras Fuentes began his term on March 2, 1958. There is no vice president, but the first designate succeeds to the presidency. No president may be reelected until two terms have intervened. Although

municipal offices are elective, the president appoints governors for the 22 departments. The constitution provides formally for separation of powers and checks and balances, but the authority of the executive is great, and in practice strong presidential government prevails. The judges of the Supreme Court of Justice and six appellate courts are elected by Congress for 4-year, renewable terms.

Education and Religion.—School enrollment (1960): 315,075 pupils in 3,902 primary schools; about 60,000 in secondary schools. Guatemalans have long recognized the need to make education available to the illiterate Indians and ladinos in the rural areas. In 1960, President Ydígoras began a determined effort to build rural schools; 116 new schools were constructed in 1961, and the program continued in 1962. The second largest amount in the 1961–62 budget, 14,476,495 quetzales (1 quetzal equals U.S.$1) was allotted to education. The University of San Carlos, with more than 5,000 students in 10 faculties (1961), has long provided distinguished instruction, though in the arts and humanities rather than in science, technology, and agriculture. Rafael Landívar University was inaugurated in 1961.

Almost all Guatemalans are Catholics, and the Roman Catholic Church exercises a constructive influence on social and economic life.

Finance.—The 1961–62 budget was fixed at 121,028,834 quetzales, but actual expenditures were estimated at 115,000,000. Nevertheless, because of low tax collections, a deficit of 8,000,000 quetzales was reported. In the budget adopted by Congress for 1962–63, revenues and expenditures were expected to be balanced at 106,000,000 quetzales. Gold and foreign exchange holdings of the Bank of Guatemala rose from $51 million on Dec. 31, 1961, to $64.7 million on March 31, 1962, but declined thereafter, to $50.3 million on July 31. A drawing of $3 million was made from the International Monetary Fund late in March and another of $2 million early in June under a $15 million standby agreement. A further decline in reserves caused the cabinet, effective October 13, to approve exchange controls for the quetzal, which had been freely convertible since 1925.

Transportation and Communications.—Transport networks (miles): International Railways of Central America, 510; Verapaz Railroad, 29; United Fruit Company, 180 (plantation lines); roads, over 5,000, including the 306-mile Inter-American Highway, the parallel 204-mile Pacific Highway, and the intersecting Interoceanic Highway. Air services: 7 international airlines, including the government-owned AVIATECA, which schedules flights to the United States in addition to its domestic services. Communications facilities (1961): 17,900 telephones; 18 radio stations; 2 television stations.

A mountainous terrain makes the construction and maintenance of adequate roads and railroads difficult and costly. Guatemalans realize the necessity of improving transportation facilities if the country is to achieve rapid economic development, however, and the 1961–62 budget provided 30,573,277 quetzales for communications and public works, much of which was earmarked for roads.

Production.—The Guatemalan government estimated the gross national product at 634.5 million quetzales at the end of 1961, as compared with 646.5 million a year earlier. In contrast, the general industrial production index (1958 = 100) rose from 106 in 1960 to 112 in 1961. Among the developing industries are canning, meat packing, and the production of glass, fertilizers, and insecticides. There are well-established clothing and tobacco industries, and the construction industry has been furthered by lumber, paper and paperboard, and furniture establishments, by the manufacture of cement (126,000 metric tons in 1961), brick, and tile, and by a new structural steel plant. The output of electricity exceeded 2 billion kw.-hr. in 1961. During 1962 the Inter-American Development Bank approved loans of $3.5 million to help finance 51 water supply and 31 sewer projects (March 19) and $5.3 million for housing (August 7).

The principal export crops are coffee (which supplies three fourths of foreign exchange earnings), bananas, cotton, essential oils, and chicle. Corn, beans, sugar, rice, wheat, cacao, potatoes, and plantains are produced mainly for domestic consumption. The new five-year International Coffee Agreement, which was opened for signature on Sept. 28, 1962, allocated to Guatemala a quota of 1,344,500 bags (132.276 pounds each). Since exportable production for 1961–62 amounted to 1,450,000 bags and the 1962–63 exportable crop was forecast at a record 1,650,000 bags, Guatemala had been reluctant to sign the new agreement, but did so after the National Congress, on September 27, reduced the coffee export tax.

After suffering losses of about $2 million as a result of a hurricane in October 1961, the Standard Fruit Company withdrew from banana cultivation in Guatemala in 1962. Production of other crops was as follows in 1961–62, in thousands of metric tons: corn, 506 (1960–61); cotton, 38; cottonseed, 65; dry beans, 30; and centrifugal sugar, 103.

Foreign Trade.—In 1961, Guatemala exported goods worth $115.2 million ($119.4 million in 1960) and imported goods worth $133.9 million ($137.8 million). As in previous years, the United States was the country's chief supplier, furnishing 47.8% of the total, and its principal customer, accounting for 55% of all sales. Other leading suppliers were West Germany, the Netherlands Antilles, El Salvador, Japan, and Great Britain; other major customers, West Germany, Japan, El Salvador, the Netherlands, and Sweden.

Under the General Treaty of Central American Economic Integration, which went into effect in June 1961, progress has been made in strengthening the legal and technical bases of the common market of its signatories. On Aug. 23, 1962, Congress approved (32–15) President Ydígoras' recommendation for the creation of a Ministry of Central American Economic Integration.

Events, 1962.—The progovernment coalition of three parties won 26 of the 33 congressional seats at stake and three fourths of the municipal offices in the elections of Dec. 3, 1961. Although the Partido de Unión Democrática (PUD) later withdrew from the coalition, President Ydígoras retained a majority of 41 of the 66 congressional seats in 1962. The opposition charged the government with *imposición* (rigged elections) and fomented disorder, while the government repeatedly imposed a state of siege (January 24–May 19).

On February 6, about 60 army exiles entered the country from Honduras and stole 18,000 quetzales from the United Fruit Company headquarters at Bananera. Loyal armed forces and the secret police suppressed student-led demonstrations in Guatemala City (March 9–19) and violent political activity in the countryside. At least 25 persons were killed, 500 wounded, and more than 1,000 arrested before order was restored.

Student strikes reached a peak on March 15–16, when the army was compelled to assume control of the capital city, including public transportation, electric services, and the telegraph system. Further violence occurred in April and May. The president blamed the Communist-oriented Partido Guatemalteco del Trabajo (PGT); other leftist,

President Manuel Ydigoras Fuentes (at left, carrying machine gun), checks defenses of Guatemala City on November 25 after brief revolt by members of the Guatemalan Air Force.

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Communist, and front groups; and, in a note of March 20 to the Organization of American States, the government of Cuba.

A large bomb was detonated on June 12 at a barracks about 350 feet from the National Palace in Guatemala City. Other bombs were exploded in June and July, one of which caused considerable damage to the West German embassy. Leftist forces were heartened by the decision of former President Juan José Arévalo to return to Guatemala to campaign for the presidency in 1963. On the morning of November 25, units of the air force revolted and strafed military installations and the presidential palace in Guatemala City for three and one-half hours before being crushed by troops loyal to the government.

The dispute with Great Britain over British Honduras (Belize), which Guatemala claims, was the subject of Anglo-Guatemalan talks in San Juan, Puerto Rico, on April 16–20, 1962. Some agreement was reached on economic matters but not on the basic political issue.

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GUIANA. See BRITISH GUIANA; FRENCH GUIANA; SURINAM.

GUINEA

The Republic of Guinea, formerly one of the eight territories of French West Africa, is situated on the west coast of Africa. Its area of 97,000 square miles is about the size of Oregon. There are no reliable population figures; the best present estimate is slightly less than 3 million. Conakry, capital and largest city, has a claimed population of 80,000. The only other sizable towns are Kankan (30,000) and Kindia (25,000). The people of Guinea are divided into numerous tribes, all speaking different languages. The language of government and business is French. There are three main tribes: Fullah (also known as Peuhls), 1.1 million; Malinke (or Mandingo), 525,000; Soussou, 225,000.

Government.—Guinea attained independence by refusing to accept membership in the Fifth Republic in September 1958. It is governed by a single political party, the Democratic Party of Guinea (PDG). The Political Bureau of the PDG is in effect the national executive. The government is the administrative arm of the party. The unicameral National Assembly gives legal effect to party decisions. The president of the republic, who is also secretary general of the PDG, is (Ahmad) Sékou Touré. He was elected to a constitutional seven-year term in January 1961 after serving by acclamation from independence. The Republic of Guinea has formed a loose political union with Ghana and Mali (the Union of African States).

Education and Religion.—The literacy rate is estimated at 10% of the population, and about 15% of school-age children attend school. All schools since August 1961 are state-operated. Number of schools (with enrollments), December 1961: 420 primary (84,000); 14 secondary (5,500); 4 technical (1,650). Over 80% of the population profess Islam; another 15% are animists, and the remainder Christian, mostly Catholic.

Finance.—In March 1960, Guinea left the franc zone and instituted its own currency, the Guinean franc, which has a legal rate of exchange of 247 francs to U.S.$1. Total circulation was 12.3 billion francs on Dec. 31, 1961. The ordinary budget estimate for 1962 was balanced at 9.7 billion Guinean francs. Development budget expenditures for 1960–63 were estimated at 45.2 billion, of which approximately 27 billion was being financed from foreign loans and grants, and the remainder from internal resources. Loans and grants from foreign sources total about $180 million from 1958 to 1962. Total external indebtedness is estimated at $62 million, of which about $42 million is to Sino-Soviet bloc countries and $12 million to France.

Transportation and Communications.—Transport networks (miles): classified roads, 4,000 (125 miles paved); state-owned railway, 400. National airline: Air Guinée, which operates an internal network and international service to Mali, Senegal, Liberia, and Ghana. Six foreign airlines serve Guinea. Passenger and freight service is provided by United States, French, Ghanaian, and Soviet ships. The state operates a 100-kw. short-wave transmitter, which was built by Soviet technicians under the development plan.

Mining and Industry.—Gross national product in 1961 was estimated at $182 million. Guinea possesses over a quarter of the world's known bauxite reserves. The only important industry is the Fria Company (owned by United States, French, British, Swiss, and German interests), which converts bauxite to alumina. Current production, which began in mid-1960, is 480,000 tons annually. In addition, another 360,000 tons of unprocessed bauxite are produced annually by a state enterprise. Iron ore produced in 1961 from a deposit near Conakry was 535,000 tons. Extensive iron ore deposits in the Nimba Mountains are to be developed by a consortium of European banks. Industrial diamond production by a state monopoly in 1961 was over 1 million carats, valued at $7.8 million. Output of electric power in 1960 totaled 35 million kw.-hr.

Agriculture.—About 90% of the population depend on agriculture directly or indirectly for their living. Production of subsistence crops in 1961 (thousands of metric tons): rice, 320; cassava, 350; potatoes, 125; millet, 120; corn, 60; taro, 40. Production of crops raised mainly for export (thousands of metric tons, 1961): bananas, 72; palm kernels, 23; coffee, 16; shelled peanuts, 9; pineapples, 5. Cattle raising is of importance in the north. The state has attempted to develop a fishing industry with Polish technical cooperation. The fish catch in 1961 was estimated at 11,000 tons (up 50% from 1960).

Foreign Trade.—Total exports, 1961: 18 billion Guinean francs (up 15% from 1960); imports (excluding capital imports under the development budget): 18 billion (up 50%). Origin of imports: Sino-Soviet bloc, 41%; franc zone, 18%; other countries, 41%. Destination of exports: Sino-Soviet bloc, 18%; franc zone, 31%; other countries, 51%. Alumina and bauxite account for over 50% of exports.

Events, 1962.—Late 1961 and early 1962 were marked by a weakening of the close relations between Guinea and the Soviet Union that had commenced with independence, and an attempt to reestablish close relations with the West and the moderate African states. In November 1961, after a strong protest against the government by the teachers' union and a strike by students, Sékou Touré accused "certain Eastern embassies" of sowing unrest among the population. He requested the recall of the Soviet ambassador. A visit to Conakry by Soviet Deputy Premier Mikoyan in January was not notably successful in re-establishing cordial relations. Since then, enthusiasm for the Communists has cooled, but the Soviet bloc continues to supply the bulk of foreign development funds and technicians.

In April a high-level Guinean mission visited the United States and negotiated an enlarged aid and surplus commodity program. Relations with the United States were also improved by the visit of Sékou Touré to Washington in October. He conferred with President Kennedy on October 10, and asked the United States government to expand its economic assistance programs in Guinea.

Recent Guinean diplomatic activity in Africa was directed at bringing about a rapprochement between the "radical" Casablanca powers and the "moderates" of the 12-nation African and Malagasy Union. Tentative steps were also taken toward easing Guinean relations with France that have been strained since independence.

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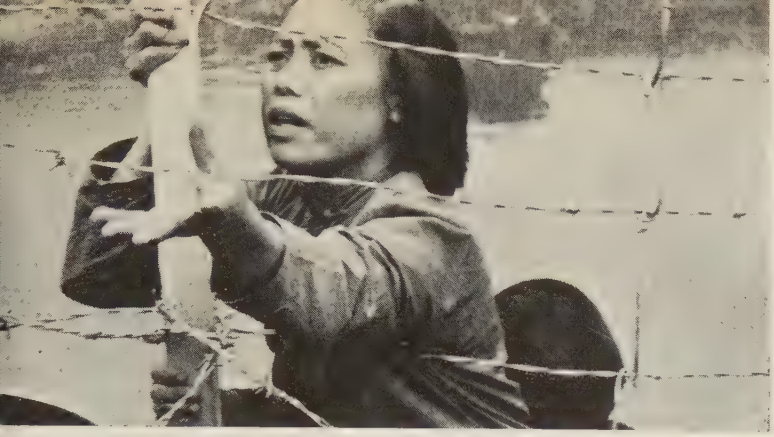
GUINEA, Portuguese. See PORTUGUESE TERRITORIES.

GUINEA, Spanish. See SPANISH TERRITORIES.

GYMNASTICS. See SPORTS, GAMES, AND SHOWS.

GYPSUM. See MINERAL PRODUCTION.



HONG KONG—Girl from Communist China holds hand out to Hong Kong residents for food, at border on May 22.

WIDE WORLD

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HAITI

The Republic of Haiti shares the Caribbean island of Hispaniola with the Dominican Republic. Haiti comprises the western third of the island and has a total area of 10,714 square miles. The population of about 4,346,000 (1962 est.) is over 85% rural, chiefly Negro, with a small mulatto elite. Haiti has the greatest average population density of any Latin American republic (405.6 per square mile), and the lowest average life expectancy (32 years). The language is French, but most of the people speak Creole, a related dialect. The only large city is Port-au-Prince, the capital (1961 est. pop., 250,000). Other principal cities, with urban populations (1961 est.) are Cap Haïtien, 30,000; Les Cayes, 14,000; Gonaives, 12,000; and Jérémie, 12,000.

Government.—Following a period of political strife bordering on civil war, Dr. François Duvalier became president in October 1957. The new president used terrorist tactics to maintain himself in office, but his measures to liquidate opposing groups did not prevent repeated attempts at revolt, and, in April 1961, Duvalier sought to strengthen his hold on government by dissolving the congress. Rigged elections followed, with Duvalier in effect choosing the 58 members of a new unicameral legislature and naming himself as president for another 6-year term two years before his first term had expired. The United States expressed official displeasure at this turn of events, and unrest continued as cuts in American aid rendered the dictator's position more precarious. (See also below, *Events, 1962*).

Education and Religion.—The illiteracy rate in Haiti stands at about 90%, the worst among the Latin American republics. Since Duvalier came to power in 1957, statistics on primary and secondary education have become nonexistent. Available information (1957) indicates 1,447 primary schools with 203,032 students; 47 secondary schools with 8,990 students; and a few technical, teacher-training and special schools, with 4,433 students. The University of Haiti in 1961 had 1,500 students. Roman Catholicism is the chief religion, although voodooism is practiced as a folk religion.

Finance.—The budget estimate for the fiscal year beginning Oct. 1, 1962, amounted to $28.8 million ($30.4 million in 1961–62). There is some indication that the government maintains a secret fund to retain its support among the presidential police, some elements of the military, and other key groups. The United States has been channeling an average of over $12 million annually in aid to Haiti. Approximately half of this aid goes to balance Haiti's budget, and half is used for various social and economic programs. The unit of exchange is the gourde, equal to U.S.$0.20.

Transportation and Communications.—Haiti had about 1,900 miles of roads and approximately 220 miles of railways in 1959. The Haitian Air Force maintains a domestic air service, and several international airlines provide services. Motor vehicles numbered 8,100 in 1960; telephones, 4,400 (1960); radio licenses, 21,000 (1959). A television station was established in 1959, and sets were estimated at 2,500 in 1962. Haiti has 4 daily, 2 weekly, and 1 biweekly newspaper (1962) with a total circulation of about 20,400.

Production.—A large majority of Haitians live in extreme poverty. Annual per capita income in 1957 was estimated at $72. Daily caloric intake was reported at 1,875 (1958), as compared with 3,100 for the United States. Over 90% of the jobs are in agriculture. Coffee is the chief crop. Principal cash crops and yields, 1961–62, were: coffee, 700,000 bags of 60 kilograms (about 132 pounds) each (up 65% from 1960–61); sisal (1961), 86 million pounds (up slightly); sugar, 74,000 short tons (down 7.5%); and cocoa beans, 5.3 million pounds (up 18%). Subsistence crops include corn, rice, beans, manioc, yams, avacados, mangoes, and other fruits.

Manufacturing is on a small scale. The chief products are denim cloth, soap, cement, lumber, tobacco, and sisal bags for coffee. Production of electrical energy increased from 26.6 million kw.-hr. in 1956 to 52.9 million in 1959. Some copper is produced, and 375,000 long tons of bauxite were mined in 1960–61. Revenue from the tourist trade averages about $8 million annually.

Foreign Trade.—Haiti's exports in 1961 totaled $32 million ($33.1 million in 1960); imports, $34.7 million ($36.1 million). Coffee provided 42.1% of the total value of 1961 exports; sisal, 9.9%; and sugar, 15.8%. Imports are chiefly wheat and other foodstuffs, petroleum products, cotton goods, and a few other manufactures. The United States, Haiti's principal trading partner, purchased $19.1 million in Haitian exports in 1961 and provided $25.9 in imports.

Events, 1962.—Actions of President Duvalier's secret police prompted protests over incidents of extortion and physical violence against foreign nationals. Great Britain withdrew its ambassador on March 10, and the United States did likewise on May 21, though both countries left a token diplomatic force to operate their embassies.

Economic aid from the United States was suspended in May when the Duvalier government rejected various United States conditions for continuing assistance under the Alliance for Progress, including reduction of Duvalier's personal secret police and militia, publication of nonfiscal accounts, arrangements for a presidential election in 1963, and detailed specifications concerning projects for which aid might be given. Military aid declined to a bare minimum, although a small advisory mission maintained liaison with Haitian Army leaders who might form the core of an opposition capable of ousting Duvalier.

In September, Duvalier assumed direct control over the economy and was empowered to issue treasury certificates for compulsory loans from wage earners, importers, exporters, and insurance companies. Major United States concern centered around the determination that violence directed at Duvalier should not result in establishment of a pro-Communist government. In November the government deported a Roman Catholic bishop and three priests, and the Vatican excommunicated all Catholics responsible for the deportation.

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HANDBALL. See SPORTS, GAMES, AND SHOWS.
HARNESS RACING. See SPORTS, GAMES, AND SHOWS.

HAWAII

Admitted to the Union on Aug. 21, 1959, Hawaii is a large archipelago of volcanic origin lying in the Pacific Ocean 2,090 nautical miles southwest of San Francisco. The "Aloha State" constitutes the newest and southernmost of the United States and (as of January 1962) ranks 43d in population (631,682 residents, not including some 59,000 military personnel) and 47th in area (6,415 square miles of land and 9 of inland water).

Area and Population.—The eight major islands of the state and their areas and populations are as follows:

Island	Land area (sq. mi.)	Population (Jan. 1962)
Hawaii	4,021	61,487
Maui	728	34,266
Oahu	589	500,337
Kauai	551	27,708
Molokai	259	5,336
Lanai	141	2,289
Niihau	72	259
Kahoolawe	45	0

Honolulu (1962 est. pop., 317,890), on Oahu, is the capital, largest city, and principal port. Other unincorporated places of more than 10,000 population (1960) are: Hilo, 25,966; Kailua-Lanikai, 25,622; Wahiawa, 15,512; Kaneohe, 14,414; and Aiea, 11,826.

The population is of diverse racial extraction and is characterized by a high ratio (about one third) of intermarriages between the various ethnic stocks. Persons of Japanese and Caucasian origin (each about 33%) constitute the two largest groups; others include Hawaiians, Chinese, Filipinos, Koreans, Puerto Ricans, and Samoans. Approximately 97% of the entire population are United States citizens. It is a young population (median age of 24, compared with 30 for the mainland) with a preponderance of men (53%).

In addition to the eight major islands listed above, the state includes the Leeward Islands (except Midway), a chain of small islands, shoals, and reefs extending some 1,250 miles northwestward from Niihau and forming the Hawaiian Islands Bird Reservation, uninhabited (except for a few Coast Guard and other official personnel). The Leeward group includes the following: Nihoa, Necker, French Frigate Shoal, Gardner Pinnacles, Maro Reef, Laysan, Lisianski, Pearl and Hermes Reef, and Kure (or Ocean) Island. Other small bodies of land within the archipelago which may be exposed at low tide are deemed part of the state.

Palmyra Island (area about 1 square mile), formerly part of the Territory of Hawaii, was excluded from the jurisdiction of the state under the statehood act.

Government.—Hawaii's constitution (1959) provides for the election of the governor and lieutenant governor (not necessarily of the same political party) for four-year terms. All other state officers are appointed.

The Hawaii Legislature comprises a Senate of 25 members (15 Democrats and 10 Republicans) serving four-year terms, and a House of Representatives of 51 members (40 Democrats and 11 Republicans) serving two-year terms, elected on Nov. 6, 1962 (see below, *Events, 1962*). It convenes annually starting on the third Wednesday in February—for regular sessions in odd-numbered years and for budget sessions in the alternate years.

The state's judiciary is headed by a 5-member Supreme Court and also includes 11 Circuit Court judges and a tax appeals court, all appointed by the governor, and district court magistrates, appointed by the chief justice of the Supreme Court. Hawaii is in the 9th District of the federal court system.

Chief state officers in 1962 were William F. Quinn (Republican), governor; James K. Kealoha, lieutenant governor; Shiro Kashiwa, attorney general; R. Burl Yarberry, superintendent of public instruction; Lawrence H. Kam, director of budget and review; and Wilfred Tsukiyama, chief justice of the Supreme Court.

The only major units of local government are the three counties of Maui, Kauai, and Hawaii, and the city-county of Honolulu, each governed by an elected board (and, in Honolulu, by a mayor).

Legislation, 1962.—The first state legislature met in a limited (budget) session between Feb. 23 and April 17, 1962. Thirty-two bills were enacted (none vetoed), including the following measures: revision of the laws governing state-owned land for the first time in 40 years; reduction of taxes on sugar and pineapple production; increase in minimum wages to $1.15 and on Jan. 1, 1964, to $1.25 per hour; and financing of Hawaii's participation in the New York World's Fair of 1964–65. A record appropriation—$116.7 million for the general fund budget, $66.5 million for capital improvements—stressed increased expenditures for education. Funds were appropriated for the retraining of persons deprived of employment in rural areas of the state, recognizing the continued movement of population to Honolulu.

Finance.—Hawaii has a centralized system, wider in scope than most mainland states. Chief revenue sources are the general excise (a comprehensive turnover) tax; personal and corporate income taxes; gasoline, liquor, and tobacco taxes; and a real property tax collected by the state for the counties. The net assessed valuation of real property for the calendar year 1962 was $2,146 million. The average property tax was $14.06 per $1,000 of assessed value.

During the fiscal year ended June 30, 1962, state receipts to the general fund totaled $163 million, and payments totaled $167 million. State bonded indebtedness was $179 million on June 30, 1962; the general fund then had a balance of $10 million.

Education.—Expenditures for public education during the fiscal year 1962 approximated $50 million for a program administering to 215 public schools with an enrollment of 149,554 and a teaching staff of 6,514. Fifty-six private schools enrolled some 31,000 pupils.

Five colleges were in operation in 1962, four on Oahu and one on the island of Maui. The University of Hawaii, a land-grant college (founded 1907), with campuses at Honolulu and Hilo, had a student enrollment of 10,229.

Public Assistance.—During the fiscal year 1962 the state Department of Health and Social Services expended $9,888,000, exclusive of administrative costs, for public assistance programs. Slightly less than half of these costs was borne by the federal government.

Labor.—The civilian labor force for all industries in August 1962 was estimated to be 256,110. Aside from workers on sugar and pineapple plantations, agriculture employed 9,760 persons. Manufacturing of food, textiles, chemicals, and other nondurable goods gave employment to 23,430. Wholesale and retail trade employed 44,820, and services, 30,740.

The largest single employer in the state, the federal government, employed 25,580 civilians plus approximately 59,000 military personnel as of August 1962. In the same month, 23,890 persons were employed by state and county governments. In all, government jobs comprised about one fifth of total employment.

Unemployment in 1962 averaged about 4½% of the labor force. Unemployment benefit payments in the fiscal year 1962 aggregated $13,961,000. Uniquely among the states, Hawaii's employment security program has included agricultural workers since 1957.

Industry.—The production of cane sugar and the production and processing of pineapple, both highly mechanized, are the two most important industries in Hawaii. The combined value of these two crops in 1961 ($145 million for sugar and $117 million for pineapple) constituted about 80% of total agricultural income. In 1961, 227,000 acres of sugarcane were cultivated, producing 1,092,000 short tons. During 1962, 27 plantations and about 2,000 independent planters employed some 13,500 year-round workers. For the crop year ending May 1961, pineapple products totaled 30,759,000 cases of canned fruit and juices. The industry provides year-round employment for about 9,000 persons, with some 21,000 on the payroll in the summer canning season.

Diversified agriculture (including coffee, macadamia nuts, papayas, bananas, livestock, milk, and fisheries) produced an aggregate product of about $44 million in 1961.

A rapidly expanding tourist industry in 1961 brought to Hawaii 319,422 visitors who spent about $140 million in the state. Some 365,000 tourists were estimated for 1962.

Construction leveled off from the record highs of the post-statehood boom. The value of com-

pleted buildings and other improvements approximated $269 million in 1961 and was estimated at $230 million for 1962. Most of the state's mineral output, valued at $14.6 million in 1961 (up from $9.3 million in 1960), comprises sand, gravel, and stone used in domestic construction. The first full year of portland cement production, at new plants on Oahu, accounted for the increase.

Economic Level and Balance of Payments.—Hawaii's gross product (aggregate value of all goods produced and services rendered) in 1961 was estimated at $1,800 million. Personal income totaled $1,545 million, with per capita income amounting to $2,407, an average which ranked Hawaii 11th among the states.

The state in 1961 experienced an almost even balance of payments in trade with the mainland United States and other areas. Income from without the state approximated $1,084 million; expenditures going outside the state, $1,076 million. Federal expenditures, mostly military, amounted to $530 million, or almost half of the mainland dollars received by the state's economy. Payments (tax and other) to the federal government totaled $278 million.

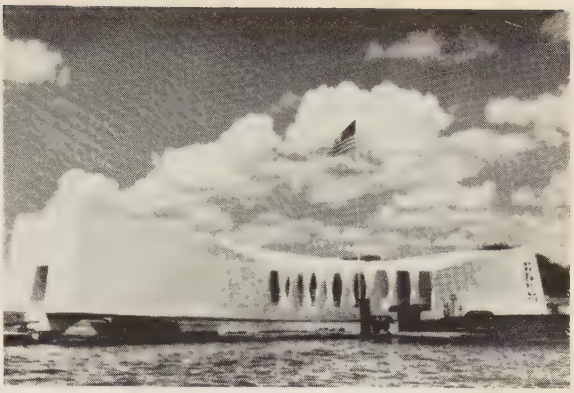
Transportation and Communications.—Honolulu is a regular port of call for several steamship lines, connecting the islands with the United States mainland and with Canada, Australia, New Zealand, the Philippines, Taiwan, Japan, Samoa, Tahiti, and Fiji. Other deepwater ports are Hilo and Kawaihae (Hawaii), Kahului (Maui), and Nawiliwili (Kauai). During 1961, 1,518 overseas vessels entered the ports of Hawaii with 4,168,411 tons of cargo and cleared with 1,289,723 tons. Freighters and barges provide transportation between the islands of Hawaii, but almost all passenger travel (926,000 interisland trips in 1961) is by air. Seven major and four supplemental airlines connect Hawaii with the United States and foreign nations, carrying 1,692,742 passengers to and through Hawaii in 1961.

In 1962 approximately 250,000 motor vehicles were locally registered. Interisland communications, as well as communications with the continental United States, are facilitated by radiotelephone service. Wireless telegraph service is maintained between the six largest Hawaiian islands, and underseas cables connecting Point Reyes, Calif., and Oahu provide telephone connections to the mainland of North America.

Other communications facilities in 1962 included some 230,000 telephones, 18 radio stations, and 4 television stations in Honolulu, with 4 satellite stations on other islands. Six daily newspapers are published in Honolulu (2 in English, 2 in Chinese, and 2 in Japanese and English); the other three counties are each served by one English-language newspaper. Thirteen other newspapers and 20 magazines were published in the state in 1962.

Events, 1962.—The November 6 elections brought a Democratic sweep of all major public offices for the first time in Hawaii's history. Congressman Daniel K. Inouye was elected to the U.S. Senate, the first person of Japanese ancestry to serve in that body. Spark M. Matsunaga and Thomas P. Gill were elected to the national House of Representatives. John A. Burns and William S. Richardson became governor and lieutenant governor, respectively, supported by large Democratic majorities in both houses of the state Legislature.

Construction was begun in October on "Magic Island," an area of some 200 acres to be formed on the coral reefs lying eastward of Waikiki in Honolulu. When completed in about six years, Magic Island will provide space for hotels and other facilities used by vacationers, as well as public beaches for Honolulu's rapidly growing population.



UPI

Memorial to the U.S.S. *Arizona* in Pearl Harbor, Hawaii, is shown on Dec. 7, 1962, 21 years after the ship went down with more than 1,100 sailors in the Japanese surprise attack.

Thomas H. Hamilton, president of New York State University, was selected in August to head the University of Hawaii. Anthropologist Alexander Spoehr was appointed first chancellor of the federally supported Center for Cultural and Technical Interchange between East and West (East-West Center) at the university. The first buildings of the center were completed at the close of 1962.

ROBERT M. KAMINS,
Professor of Economics, University of Hawaii.

HEALTH, Public. See PUBLIC HEALTH.
HEALTH INSURANCE. See INSURANCE.

HEART DISEASE

The recorded mortality from heart disease in the United States has increased somewhat in the past decade, but statisticians of the Metropolitan Life Insurance Company point out that the rise reflected merely the growing proportion of older people in the population.

Recent studies of the lungs of cigarette smokers have shown tissue changes which may place an increased load on the heart while curbing its oxygen supply; these lung changes may explain the higher death rate from coronary disease reported in cigarette smokers. The U.S. Public Health Service announced that an advisory committee would make a scientific study of the effects of tobacco on health.

In 1962 much new information was reported about heritable types of congenital heart disease. Studies of the chromosomes have shown abnormalities which frequently accompany certain types of congenital heart disease. Either too many or too few chromosomes, or an abnormality in their structure, may be responsible for the defects.

There is still much controversy over the effects of diet in causing hardening of the arteries. A current large-scale study of the dietary habits of thousands of Americans may help to solve this extremely important problem. At present there is insufficient evidence to justify general recommendation of radical changes in dietary pattern of fat intake, although most heart specialists believe that "unsaturated" fats derived from vegetables and fish are preferable to "saturated" fats of animal origin. There is unanimous agreement that overweight predisposes individuals to heart disease. A diet low in fat is now considered by most cardiologists more important than a diet low in cholesterol in reducing the blood cholesterol levels.

Sudden death has been reported in children

with impaired oxygen uptake secondary to upper respiratory infection. These deaths are due to hemorrhage in the specialized conduction tissue in the heart, which transmit the waves causing the heart beat.

Remarkable progress has been made in the treatment of attacks of rapid heart action which respond unfavorably to drug treatment. The attacks have been successfully terminated by the application of high-voltage electrical countershock applied for a fraction of a second to the chest over the heart. Both alternating and direct current have been used.

Triparanol (MER 29), a drug which can reduce cholesterol level of the blood, has been withdrawn from the market because loss of hair, severe skin eruptions, and occasional cataracts have occurred in a small number of patients taking this medication.

Anticoagulants.—Over the past 15 years there has been widespread use of anticoagulants (blood-clotting inhibitors) in treatment of patients with heart attacks due to acute coronary artery occlusion. The effectiveness of this treatment has been questioned in a recent report from four large municipal hospitals in Copenhagen; the authors concluded that "anticoagulant therapy is not indicated in acute myocardial infarction." Their conclusions have been challenged by the majority of cardiologists in the United States, who believe that, following heart attacks, anticoagulant treatment prevents clots from being formed and dislodged to obstruct the arteries supplying vital organs. They concede that mortality from heart attacks and recurrences are reduced by the use of anticoagulants only when good laboratory facilities are available to measure the effect of these drugs, since too great lowering of the blood-clotting mechanisms may cause hemorrhage and too little decrease in these factors is valueless.

Surgical Treatment.—Brilliant advances continue to be made in cardiac surgery with improved techniques for the substitution of artificial valves, or valves removed from healthy individuals following accidental death, for badly damaged aortic and mitral valves of the heart. Many patients incapacitated by severe heart failure have been restored at least temporarily to essentially normal activity. However, these operations are frequently dangerous, and it is still unknown how long the replacement materials will continue to function.

Direct surgical attack on occlusion of coronary arteries has proved disappointing because of high operative mortality and frequent failure of vessels to remain open. An interesting new experimental approach to coronary artery disease includes grafting into the aorta a third coronary artery in order to bypass an occluded area.

William J. Kolff of the Cleveland Clinic has developed an artificial heart which can replace a dog's heart successfully for as long as ten hours. The reasons for subsequent deterioration and death of the animals have not been clarified. Whether such mechanical hearts can be improved technically so that they can be of practical use in man is still speculative.

New evidence suggesting that the thymus gland is possibly the master organ in the development of immunity may eventually make possible transplantation of such organs as the kidney and heart from one individual to another. Successful organ transplants at the present time are possible only in identical twins.

JOHNSON MCGUIRE, *Director, Cardiac Laboratory, and Professor of Medicine; and* ARNOLD IGLAUER, *Assistant Professor of Medicine, College of Medicine, University of Cincinnati.*

HEATING. See Index entry.

HEBRIDES, or WESTERN ISLANDS. See SCOTLAND.

HIGH-FIDELITY RECORDINGS. See RECORDINGS.

HIGHWAYS

Highway expenditures in the United States again reached new levels in 1962. Estimates indicate that $11.38 billion was spent during the year on all levels of government for improvement, maintenance, highway police, administration, and interest on highway debt of the nation's roads and streets. Of this total, capital outlay accounted for $7.30 billion, including $5.65 billion for construction and $1.65 billion for preliminary engineering and planning and for right-of-way purchases. This capital outlay involved the improvement of 29,000 miles of principal highways at a cost of $5.57 billion and of 69,000 miles of local roads and streets at a cost of $1.73 billion.

There are 3,698,000 miles of roads and streets in the United States. Motor vehicle registrations in 1962 were expected to reach 78.6 million, 3.7% above the previous year. Total highway travel in 1962 was expected to be about 767 billion vehicle-miles, a gain of 4% over 1961.

Federal-Aid Program.—Federal aid to the states for highway improvement is administered by the Bureau of Public Roads, U.S. Department of Commerce. The program is a cooperative one, with the states doing the actual work and retaining responsibility for the roads and their maintenance.

A major objective of the federal-aid program is completion by 1972 of the National System of Interstate and Defense Highways. This 41,000-mile network of controlled-access superhighways will serve practically every city of 50,000 or more inhabitants, and many smaller towns. It is designed to handle adequately the traffic anticipated in 1975, when over 100 million motor vehicles will be traveling more than a trillion miles a year. The federal government is paying 90% of the $41 billion cost of the Interstate System. The safety features of the system are expected to save 5,000 lives a year in 1972.

In the older, continuing so-called "ABC" federal-aid program for the improvement of primary highways, secondary roads, and arterial streets, federal funds are matched evenly by the states. The networks eligible for federal aid in 1962 totaled 879,539 miles, of which 266,344 miles were in the federal-aid primary system of main rural roads and major streets (including the Interstate System mileage), and 613,195 miles in the federal-aid secondary system of farm-to-market and feeder roads. Urban portions of these systems totaled 40,823 miles.

Federal-aid funds authorized by Congress are apportioned among the states according to methods prescribed by law. The accompanying table shows the apportionment of funds for fiscal year 1964. The $3.55 billion total includes $2.6 billion for the Interstate System and $950 million for the regular ABC federal-aid program.

Federal funds for the federal-aid highway program come from a special highway trust fund in the U.S. Treasury. The money for this fund comes wholly from certain federal highway-user taxes, the principal one being the motor-fuel tax. Net revenue of the trust fund in the fiscal year 1962 was $2.96 billion.

Federal-Aid Work in 1962.—By June 30, 1962, a total of 12,550 miles of the Interstate System were open to traffic. This included 7,225 miles completed to the ultimate standards for 1975 traffic needs and 3,024 miles improved at least to capability for handling current traffic but needing

APPORTIONMENT OF FEDERAL-AID HIGHWAY FUNDS AUTHORIZED FOR THE FISCAL YEAR 1964

Political unit	Primary, secondary, and urban program	Interstate System program	Total
Alabama	$ 17,456,913	$ 53,635,075	$ 71,091,988
Alaska	38,321,282	...	38,321,282
Arizona	11,969,274	36,407,150	48,376,424
Arkansas	12,243,727	27,138,475	39,382,202
California	57,338,338	247,917,800	305,256,138
Colorado	14,122,278	34,378,825	48,501,103
Connecticut	9,284,141	36,612,550	45,896,691
Delaware	4,062,426	9,653,800	13,716,226
Florida	19,263,760	53,789,125	73,052,885
Georgia	22,617,653	47,781,175	70,398,828
Hawaii	4,398,251	20,360,275	24,758,526
Idaho	8,612,070	12,169,950	20,782,020
Illinois	39,947,516	135,255,900	175,203,416
Indiana	21,953,544	64,213,175	86,166,719
Iowa	19,274,552	32,812,650	52,087,202
Kansas	18,559,277	20,103,525	38,662,802
Kentucky	15,165,936	52,890,500	68,056,436
Louisiana	14,675,074	74,893,975	89,569,049
Maine	6,335,139	12,246,975	18,582,114
Maryland	11,229,975	47,498,750	58,728,725
Massachusetts	15,954,444	55,560,700	71,515,144
Michigan	32,315,636	101,031,125	133,346,761
Minnesota	22,188,827	67,063,100	89,251,927
Mississippi	13,572,769	31,503,225	45,075,994
Missouri	24,250,343	66,318,525	90,568,868
Montana	13,790,802	24,262,875	38,053,677
Nebraska	14,529,216	15,148,250	29,677,466
Nevada	8,469,891	13,068,575	21,538,466
New Hampshire	4,145,316	11,630,775	15,776,091
New Jersey	18,197,560	67,602,275	85,799,835
New Mexico	11,978,747	25,880,400	37,859,147
New York	54,820,725	122,854,875	177,675,600
North Carolina	21,927,832	21,207,550	43,135,382
North Dakota	9,747,086	11,451,050	21,198,136
Ohio	37,415,935	176,952,100	214,368,035
Oklahoma	17,026,791	31,195,125	48,221,916
Oregon	13,073,193	45,033,950	58,107,143
Pennsylvania	40,888,962	115,973,975	156,862,937
Rhode Island	4,943,937	9,551,100	14,495,037
South Carolina	11,834,675	22,388,600	34,223,275
South Dakota	10,673,728	17,022,525	27,696,253
Tennessee	18,269,201	65,342,875	83,612,076
Texas	55,234,589	117,309,075	172,543,664
Utah	8,899,173	37,536,850	46,436,023
Vermont	3,847,637	17,895,475	21,743,112
Virginia	18,838,641	78,796,575	97,635,216
Washington	14,904,707	54,045,875	68,950,582
West Virginia	9,128,534	39,026,000	48,154,534
Wisconsin	20,764,263	22,927,775	43,692,038
Wyoming	8,373,265	24,879,075	33,252,340
Dist. of Col.	5,006,756	37,280,100	42,286,856
Puerto Rico	6,280,693	...	6,280,693
Total	$950,000,000	$2,600,000,000	$3,550,000,000

further work to reach 1975 standards. Toll roads, bridges, and tunnels totaling 2,301 miles are included in the system, as permitted by law, but no federal aid is spent on such facilities.

During the fiscal year 1962, 1,675 miles of the Interstate System were completed to the 1975 standards. Work accomplished on the system during the year cost $1.79 billion, of which $1.59 billion was in federal aid. Construction was under way at the end of the year on 4,801 miles; preliminary engineering and planning and right-of-way acquisition was in progress on another 10,927 miles. Projects under way at the close of the year were estimated to cost $6.78 billion.

In the ABC federal-aid program, improvement projects were completed during the year on 18,375 miles of roads and streets at a cost of $1.48 billion, of which $796 million was federal aid. At the end of the year work was under way on 25,477 miles at an estimated cost of $3.58 billion.

In addition to administering the federal-aid program, the Bureau of Public Roads builds roads in national parks and forests and other public lands. During the fiscal year 1962, projects were completed on 695 miles of such roads at a cost of $57 million in federal funds. At the close of the year, work was under way on 1,593 miles of roads at an estimated cost of $169 million.

Research and Planning.—During 1962 the Bureau of Public Roads intensified its activities in research and planning. A major accomplishment of the year was completion of the $27 million American Association of State Highway Officials (AASHO) Road Test, sponsored by the Bureau of Public Roads, the states, and others. The results of the test will aid in development of scientific structural design methods for highway pavements.

The problems of urban transportation were the subject of a joint report to the president by the Department of Commerce and the Housing and Home Finance Agency (HHFA), which formed the basis for part of the president's transportation message of April 5, 1962. At the president's request, Congress enacted legislation providing that, beginning in 1965, approval of federal-aid highway programs in metropolitan areas will be contingent on their consistency with the results of a continuous, cooperative planning process being carried on by the state and the local communities.

The Bureau of Public Roads and HHFA joined with the national organizations of city, county, and state highway officials during 1962 in launching a long-range program to initiate urban transportation planning studies in every city in the country. (See also URBAN TRANSIT.)

Safety.—In 1962 the president established an Interdepartmental Highway Safety Board, comprising the heads of seven major federal agencies, to provide leadership for a national highway safety program. The Bureau of Public Roads established the Office of Safety to intensify its activities in this field. The bureau's driver register service, inaugurated in 1961, reported to the states on 5,700 persons who were applying for new state driver's licenses and had lost their licenses in another state for drunken driving or conviction of a violation involving a traffic fatality.

View of upper Manhattan shows intricate configuration of approach roads to the George Washington Bridge over the Hudson River.

PORT OF NEW YORK AUTHORITY

The Inter-American Highway.—Since 1930 the United States, through the Bureau of Public Roads, has aided the six Central American republics in building the 3,142-mile Inter-American Highway from Laredo, Texas, to Panama City, Panama. Completion of 39 bridges in Costa Rica late in 1962 was scheduled to close the last gap in the route. Paving was under way at a number of locations. Plans were being made to survey a route through the Darien Gap jungle in the Isthmus of Panama for a highway linking North and South America.

Foreign Assistance.—The Bureau of Public Roads has assisted many countries in the establishment of highway departments and highway programs since World War II. Such work is financed by the Agency for International Development (AID) or by loans from the Export-Import Bank of Washington or the World Bank. During the fiscal year 1962 the Bureau of Public Roads had missions in 15 countries. The bureau also arranged study programs in the United States for 221 highway officials from 50 countries.

E. A. STROMBERG,
Special Assistant to the Federal Highway Administrator, Bureau of Public Roads.

HISPANIOLA. See DOMINICAN REPUBLIC; HAITI.
HOCKEY. See SPORTS, GAMES, AND SHOWS.
HODGES, Luther Hartwell. See biographical sketch under UNITED STATES.

UPI

President and Mrs. José Ramón Villeda Morales of Honduras (at left) stand with President and Mrs. Kennedy at welcoming ceremonies on the White House lawn on November 30.

HOLLAND. See NETHERLANDS.

HOME, Earl of (Alexander Frederick Douglas-Home)

British foreign secretary: b. London, England, July 2, 1903.

Retained as foreign secretary by Prime Minister Macmillan during the July 1962 reorganization of the cabinet, Lord Home became a leading exponent of the British policy which emphasized the need to work out a modus vivendi on the status of Berlin. In 1962 much of his effort was spent in an attempt to formulate a united approach to the Berlin problem with the United States, France, and West Germany.

Educated at Eton and Christ Church, Oxford, he represented South Lanark and Lanark in the House of Commons (1931–45, 1950–51), acting also (1937–39) as parliamentary private secretary to Neville Chamberlain. He was elevated to the House of Lords in 1951, and became its leader in 1957. He was also minister of state for Scottish Affairs (1951–55) and secretary of state for Commonwealth relations (1955–60). He was appointed foreign secretary on July 27, 1960.

In an attempt to bring about an agreement with the Soviet Union on the future of Berlin, Lord Home participated in a series of ministerial parleys in 1962, beginning with the foreign ministers conference (March 11–22) in Geneva. Later, on September 30, he conferred with President Kennedy at the White House on this question. He stressed the desirability of arriving at a temporary arrangement, but advocated German self-determination as the only permanent solution of the Berlin question. His efforts to bring about the neutralization of Laos came to a successful conclusion when he participated on July 23 in the signing of the Geneva pacts guaranteeing that country's independence and neutrality, after a civil war which had been going on since 1960.

Lord Home survived the major reorganization of the Macmillan government on July 16, 1962. Earlier, in February, a motion of censure by Labour Party leaders for his criticism of United Nations "double standards," was defeated in the House of Commons by 326 votes to 228.

His duties as foreign secretary also took him to the 17-nation disarmament conference (Geneva, March 11–27), and the councils of CENTO (London, April 30–May 1), NATO (Athens, May 4–6; Paris, December 13–15), and SEATO (New York, September 29). He also headed the British delegation to the UN General Assembly in the fall, and accompanied Prime Minister Macmillan to a meeting with President Kennedy (December 18–21) in the Bahamas.

HOME BUILDING. See BUILDING AND CONSTRUCTION; HOUSING.

HOME ECONOMICS. See AGRICULTURAL RESEARCH SERVICE.

HOME FURNISHINGS. See INTERIOR DECORATION.

HONDURAS

This Central American republic is bounded on the northwest by Guatemala, on the southwest by El Salvador and the Pacific Ocean, on the south by Nicaragua, and on the east and north by the Caribbean Sea. The area, more than 80% of which is mountainous and forested, is 43,277 square miles; and the population (1961 census), 1,883,173 (1962 est., 1,939,300). The capital, Tegucigalpa (elevation about 3,200 feet) has a population of 129,540 (1962 est.). San Pedro Sula has a population of about 77,000 (1962 est.). Other important cities (with 1962 est. pop.) are: La Ceiba (46,800), Santa Rosa de Copán (20,800), and Choluteca (20,850). Official data reveal ethnic distribution to be as follows: mestizos, 91%; Indians, 6%; Negroes, 2%; and whites, 1%.

Government.—Honduras is a unitary state with a presidential structure in the central government which exercises great control over the departmental and local units. There are 278 municipalities. Governed under the constitution of 1957, Honduras has a president (Dr. José Ramón Villeda Morales, a Liberal, elected in 1957 for a 6-year term); 3 presidential designates elected by congress; a 58-member single-chamber Congress of Deputies elected by popular vote for a 6-year term; and a 5-man Supreme Court elected by the congress for a 6-year term. Congress is constituted as follows: Liberals (36), Nationalists (18), and Reformists (4). Administration of the country's 18 departments is conducted through governors appointed by the president.

Education and Religion.—Honduras, with the aid of the United Nations Educational, Scientific and Cultural Organization (UNESCO), showed a 40% increase in enrollment in elementary education in the years 1957–60. In 1962, the Agency for International Development (AID) approved a $1.2 million allocation (one half of the amount a 40-year, no-interest loan, the other half a gift) for the construction of 96 school buildings. Public education was allocated 16,505,385 lempiras in the 1962 budget (about 16% of the total), as compared with 14,739,360 lempiras in 1961. However, probably at least 40% of the children do not attend any kind of school, and illiteracy of those 10 years of age and over is estimated at about 60%. The only institution of higher learning, the National University of Honduras, at Tegucigalpa (with a branch in San Pedro Sula) had about 1,300 students in 1962. The Pan American School of Agriculture at Zamorano graduated 632 students from 1946 to 1959.

Although over 95% of the population is nominally Roman Catholic, the 1957 constitution recognizes divorce and provides that members of the hierarchy may not hold elected public office.

Finance.—The budget for 1962 set expenditures at 100,441,599 lempiras (2.02 lempiras equal U.S.$1), compared with 93,772,988 in 1961. Debt service for 1962 was 10,985,610 lempiras, or 10.9% of the budget. Receipts of the central government, excluding borrowings, amounted to $20.4 million during the first 6 months of 1962, suggesting another budgetary deficit for the year. From March 3, 1961, to Feb. 28, 1962, Honduras received $5,076,000 in Alliance for Progress aid.

Transportation and Communications.—Inadequate roads have long retarded economic progress in Honduras. The largest single item in the 1962 budget was for transportation and communication (27,016,214 lempiras, 23.3% of the total). However, there are only about 100 miles of paved roads in the entire country, and less than 1,000 miles of roads in use. The Inter-Oceanic Highway crosses the country from north to south, but parts of it are passable only in dry weather. The International Development Association in 1961 extended a 50-year, $9 million interest-free credit to assist in a $13.5 million highway development and maintenance project. The Inter-American Development Bank also approved a $2.5 million loan for the project, in addition to a loan of $960,000 for highways and air transport.

The government operates a small railway of some 60 miles which runs from Puerto Cortés to Potrerillos. The United Fruit Company owns two railroads and the Standard Fruit Company one, which service mainly the banana industry. A total of about 580 miles of railroad are in use. Ships call at Puerto Cortés and La Ceiba on the Atlantic coast and at Amapala on the Pacific coast. Only Toncontín airport in Tegucigalpa meets international standards among Honduras' 30 airfields.

The government's domestic telephone service covers the most important population centers, with 5,862 telephones in use in 1960. There are 17 radio stations and a television station in Tegucigalpa; radios numbered 72,000 in 1959, television sets 2,000 in 1960.

Economic Indicators.—Gross national product, 1960: $389.5 million; national income, $334.55 million. Index of agricultural production in 1961 (1952–7 = 100): 112 (110 in 1960); cost of living index in 1961 (1958 = 100): 101 (99 in 1960).

Manufactures and Minerals.—Although richer in minerals than any other Central American country, Honduras lacks the iron and coal for heavy industry. Light industry developed rapidly after World War II but later flagged. The Lake Yojoa hydroelectric project was scheduled to be finished by 1963 and to supply 30,000 kilowatts to the north and central zones. Silver is the chief mineral resource; the value of exports in 1960 was over $3 million. The only other minerals being exploited, lead and zinc, each had an export value of about $1.4 million in 1960.

Agriculture.—About 83% of the population is engaged in agriculture. A new agrarian law which took effect in 1962 permitted the government to impose heavy taxation on uncultivated land, expropriate private property (when no state property is available or where the National Agrarian Institute has an otherwise insoluble problem in distributing land), and plan agricultural diversification. Banana exports of the United Fruit Company for the first 6 months of 1962 declined 40% from the same period in 1961, due to the blowdown in late 1961 and the loss of 4,000 acres to Panama disease. The total production of the United Fruit Company for 1962 was estimated at 6.5 million stems, or 24% less than in 1961. The company planted 5,600 acres of the disease-resistant Valerey strain in 1962. The Standard Fruit Company had exported 3.6 million boxes of bananas by May 18, 1962, an increase of nearly 20% over the same period in 1961.

Although prices for coffee were off 3 to 4 cents per pound, an estimated 20% increase in volume over the 217,000 bags exported in 1961 increased the total export value for 1962. An estimated 16,736 bales of cotton were produced in 1962, compared with 5,201 in 1961. The value of the crop was placed at about $2.28 million, with cotton seed estimated at $400,000. The tobacco crop in 1961 rose to 7.5 million pounds from 5 million in 1960. Successful pilot plantings of Havana-type wrapper leaf tobacco in 1961 led to expansion in 1962. On Sept. 3, 1962, the Inter-American Development Bank announced a loan of $2,500,000 to help raise agricultural productivity; $2 million was to be used to extend credits to low-income farmers, and the rest to construct silos and purchase small machinery.

Foreign Trade.—Total imports, 1961: $72 million ($71.8 million in 1960); exports: $72.9 million ($63.05 million in 1960). The rise in exports was due largely to the increase in banana shipments, more than offsetting sales drops in coffee and lumber. Banana exports totaled $33.3 million in 1961 ($28.7 million in 1960); coffee, $9 million ($11.8 million); lumber, $7.5 million ($8.2 million). The United States is the principal trading partner.

Events, 1962.—The influence of Castroism among students, faculty, and labor unions, mainly in the banana-producing areas of the north coast, along with early preparations for the 1963 presidential elections, produced political unrest and sporadic violence during the year. The National University was plagued with student disorders, some Communist led. On September 18, President Villeda Morales declared in Tegucigalpa that Castroism was a cancer which must be removed from the Western Hemisphere as soon as possible by whatever means necessary.

Honduras was host to the successful "Operación Fraternidad" (September 4–5) in which the United States, Guatemala, Honduras, Nicaragua, El Salvador, and Colombia defended Tegucigalpa from mock invaders. The exercise was part of the program of defense against infiltration.

At San Pedro Sula, an epidemic of gastroenteritis killed over 100 children in May and June.

President Villeda Morales, while on a visit to the United States, discussed economic and political matters with President Kennedy in Washington on December 1.

WILLIAM S. STOKES,
Senior Professor of Comparative Political Institutions, Claremont Men's College.

HONDURAS, British. See BRITISH HONDURAS.

HONG KONG

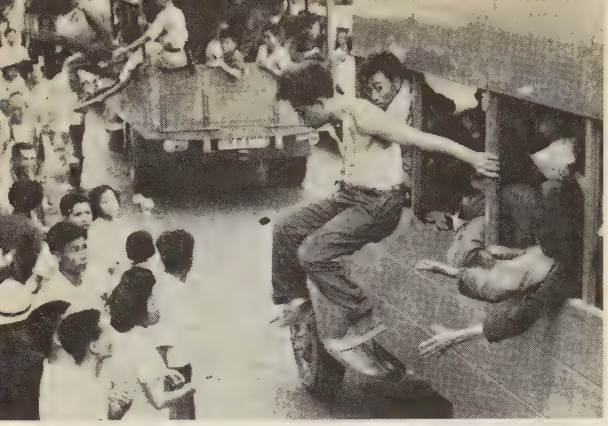
Under British sovereignty since 1841, the crown colony of Hong Kong consists of numerous small islands off the southeastern coast of China and a small strip of China's Kwangtung Province. With a total land area of 398¼ square miles, it comprises the island of Hong Kong (29 square miles), on which is located Victoria, the capital; the New Territories (365½ square miles), leased from China in 1898 for 99 years; and Kowloon and Stonecutters Island (aggregate area, 3¾ square miles), ceded by China in 1860. The total population is 3,226,400 (1962 est.); the non-Chinese population is 49,747, mainly British. The great majority of the people live in Victoria and Kowloon. English is the official language; Chinese is the principal spoken language. A major seaport, Hong Kong serves also as the main point of contact between the free world and Communist China.

Government.—The administration is in the hands of a governor (Sir Robert Black, who took office in 1958), assisted by a 13-member Executive Council and a 19-member Legislative Council.

Education.—About half of the school-age population attends school; schooling is not compulsory. Number of primary and secondary schools, 1962 (with enrollments): 1,993 (685,728). Higher education is provided by the University of Hong Kong (1,596 students) and the Tech-

Returning to Communist China on May 23 after unsuccessful attempt to settle in Hong Kong, refugees reach out for food thrown onto truck by citizens of Hong Kong.

JP



WIDE WORLD

Resident of Communist China, being returned from Hong Kong, May 19, leaps from bus in bid for freedom. Mass exodus to Hong Kong was halted because of overcrowding.

nical College (7,945). About 1,000 primary school teachers are prepared annually by Northcote, Grantham, and Sir Robert Black teacher-training colleges.

Finance.—Government revenue, fiscal year 1962: HK$1,030,447,880 (HK$859,234,131 in fiscal 1961); expenditure, HK$953,205,237 (HK$845,297,629). The Hong Kong dollar (HK$) equals U.S.$0.175.

Transportation and Communications.—Transport networks (miles, 1961): railroad (Kowloon to Shumchun, China) 22; roads, 524. Merchant marine tonnage, 1961 est., 601,000. Ship arrivals, fiscal 1962: 37,062 vessels (tonnage, 40,048,760); passengers, 1,119,406. Principal airport: Kai Tak, served by 22 international airlines. Other data for 1960: passenger cars, 32,500; commercial vehicles, 9,600; radio receiver licenses, 165,000; television set licenses, 7,000; and telephones, 126,000 (1961).

Economy.—In 1961 the industrial labor force comprised 271,729 workers, of whom 25% were engaged in textile manufacturing. Other major industries were shipbuilding and repairing, iron foundries, and rolling mills. Private building construction was valued at HK$271 million in 1961 (HK$273 million in 1960). Chief subsistence crops (metric tons, 1961): vegetables, 116,464 (91,076 in 1960); rice, 20,326 (18,647). Hong Kong's fishing fleet, largest of any port in the Commonwealth, comprised 9,980 vessels in 1962. Tourists numbered 138,235 in 1961 (163,500 in 1960).

Manufactures and Minerals.—Chief manufactures for export, with 1961 values: clothing, HK$862 million (HK$1,010 million in 1960); textiles, HK$669 million (HK$554 million). Principal minerals (metric tons, 1961): iron ore concentrate, 119,242; kaolin, 8,565; quartz, 4,110; graphite, 1,227; feldspar, 1,225; wolframite, 17. Cement production (1961): 185,000 metric tons (up 23% from 1960); electricity, 1.3 billion kw.-hr. (up 16%).

Foreign Trade.—Total exports, 1961: HK$3,930 million (down 0.2% from 1960); imports, HK$5,970 million (up 1.8%). Textiles and clothing account for about half of total export value; chief imports are food, textile fibers, yarn, fabrics, base metals, machinery, building materials, and pharmaceuticals. The United States remained the colony's principal customer in 1961, receiving 23% of Hong Kong's exports; Great Britain took 20%. Communist China continued in 1961 as Hong Kong's chief supplier, providing 17% of total imports (mainly foodstuffs); other important suppliers were Japan, Great Britain, and the United States.

Events, 1962.—In March the Hong Kong government imposed export controls on the textile industry in response to a request from the United States to keep textile exports at the 1961 level. The quota system on cloth and clothing exports to the United States went into effect on April 1. This action forestalled imposition of tariffs by the United States on Hong Kong's low-priced clothing exports. Fears were expressed by the Hong Kong business community as to the effect of the export restrictions on the economy, as well as the effect of Great Britain's proposed entry into the European Common Market.

In May there was a sudden increase of illegal immigration into Hong Kong from Communist China. It was estimated that 70,000 Chinese attempted to enter the colony during the month. About 60,000 were apprehended and returned to China. The government explained that it had accepted about 1 million refugees from China during the preceding 12 years, and that it was unable to accept any significant number without disrupting the life of the colony. Toward the end of May, Chinese Communist frontier guards began again to intercept refugees, although the regular flow of refugees continued. It was estimated that about 70,000 Chinese entered the colony in the year 1961. (See also China; Refugees and Displaced Persons.)

In an effort to ease the situation, President Kennedy announced on May 23 that the United States would expedite the admission of "several thousand" Chinese refugees outside of the regular annual immigration quota of 105. On July 26 the first group of 43 refugees arrived in San Francisco. Nationalist China also offered to help solve Hong Kong's refugee problem by accepting all Chinese refugees who wished to come to Taiwan. On June 25 the first group of 65 refugees sailed to Taiwan.

On September 2 a typhoon struck the colony, leaving more than 100 dead and 500 injured.

J. L. L.

HORSE RACING. See Sports, Games, and Shows.

HORTICULTURE AND GARDENING

Extensive horticulture is a $20 billion-a-year industry in the United States, based on retail value of commodities. Production of fresh and processed fruits and vegetables accounts for the major portion, followed by landscape plant usage, including turf and floral items. The landscape industry, including turf developments, in 1962 was an important part of the $50 billion outdoor recreation activity. The number of golf courses in the nation has increased to an all-time high of about 7,000. In addition, popular interest in home gardening and community beautification is resulting in much increased activity.

Fruits and Vegetables.—Labor-saving devices were being improved for fruit and vegetable harvesting, especially for processing. The University of Arizona was developing mechanical harvesting of head lettuce, and released a commercial type of head lettuce, Sunbright, which is resistant to tipburn. Appropriate varieties for uniform maturity are being developed by plant breeders. Mechanized size selection of harvested cantaloupes and automatic packaging is being accomplished by industry developments. The potato, onion, and tomato industries continued to experience dramatic changes toward further mechanization of precision production, harvesting, and processing. In 1962, consumer acceptance of fruits and vegetables continued at a high level in relation to the trend of the American public demands for low-calorie salad diets.

The national citrus industry was rapidly expanding, and special emphasis was placed on processing juice concentrates. Breeding programs and better cultural management led to the development of improved citrus varieties of high nutritional value. More efficient cultural management of orchards was being accomplished by use of new herbicides and improved irrigation. Mechanical pruning was becoming more acceptable from the point of view of reduced labor costs.

Improvements in handling fresh table grape vineyards in the Southwest to improve the quality of Cardinals and Thompson Seedless grapes include the use of gibberellin and floral cluster tipping as developed by the universities of Arizona and California.

Chemical Advances.—The dramatic use of growth regulators in horticulture proceeded rap-

idly. More recent developments, including the use of growth retardants, such as phosfon, accompanied by cyclic lighting effects, paved the way for far-reaching horticultural applications with special reference to producing compact flowering and landscape plants. The application of maleic hydrazide proved effective in preventing sprouting of potatoes during storage. Intensive investigations revealed the role of phytochrome in controlling flowering with special reference to chrysanthemums. The University of Wisconsin was developing the use of anthogen, a natural lipid hormone, for earlier and more uniform flowering and fruiting.

Landscape Horticulture.—Home owners were becoming especially interested in using technical developments for better lawns. Crab grass control was accomplished by pre-emergency application of appropriate chemicals. Tifgreen Bermuda grass proved widely adaptable, and lawn breeding included development of dwarf types.

The usage of plastics in horticulture and gardening expanded rapidly with special reference to greenhouses, plant containers, mulching, and prepackaging of horticultural items.

Dwarf fruit trees for home gardens were developed by using appropriate rootstocks, interstocks, and genetically developed dwarfing characteristics designed for patio use and for portable planters. A new superior rootstock was developed for Florida rose culture. A breakthrough in the dwarfing phenomenon was accomplished by the U.S. Department of Agriculture by holding germinating peach seeds at 27°C. for a specified period. The peach seedlings thus become permanently dwarfed, a highly desirable characteristic in horticulture.

Landscape horticulture expansion was due especially to pressures of urbanization, the increase in leisure time for outdoor living, and the higher living standards of the American public. This expansion created new professional fields of endeavor in horticulture, resulting in specialized college and university training.

Due to the rapidly increasing home landscape developments, many garden centers and other informational headquarters have been developed and are contributing greatly to a better appreciation and understanding of landscape gardening. The rapidly increasing numbers of arboretums, parks, and golf courses contributed to healthier outdoor activities. Exchange of gardening information was being enhanced by the increasing number and expanding memberships in a wide variety of horticultural organizations.

The current dramatic interest in horticulture from the standpoint of the American public was enhanced by the development of new roses and other floral items. An attractive phase of home gardening is the newness of varieties resulting from hybridization.

New Horticultural Varieties.—Horticultural varieties are continually being improved by nurserymen, plant breeders and seedsmen. In 1962, more than 100 plant patents were issued, with new roses and chrysanthemums dominating the list. Many new varieties are evaluated by such organizations as the All-America Selections.

The All-America Rose Selections for 1963 are Tropicana and Royal Highness. Tropicana is a brilliant orange-red hybrid tea with wide adaptability. It had received 12 outstanding awards in Europe, under the name of Super Star, where it was developed by the well-known rose hybridizer Mathias Tantau of Germany. Royal Highness is a pink hybrid tea with long flowering stems, developed by Herbert Swim and O. L. Weeks.

All-America Selections of new garden flowers for 1963 included four gladioli—Frisky, Goldilocks, Morning Sun, and Victory; and two zinnias—Thumbelina, a dwarf, and Firecracker, a giant.

New garden vegetables chosen as All-America Selections for 1963 include Buttercrunch lettuce, developed in New York; Emerald Cross cabbage, a true hybrid developed in Japan; Hercules, a Butternut-type winter squash; Greyzini, an F_1 hybrid summer squash of the zucchini type; and Executive, a bush snapbean of the tenderbean type.

Awards, 1962.—Horticulture awards presented in 1962 included the following:

American Association of Nurserymen's Norman Jay Colman Award: H. A. Borthwick, for light effects on horticultural plants.

American Horticultural Society: Liberty Hyde Bailey Medal to H. Teuscher of the Montreal Botanical Garden for his efficient design of a modern world-famous botanical garden for educational and scientific use.

American Society for Horticultural Science: Alex Laurie Award in Floriculture to M. Kawase of Purdue University; Joseph Harvey Gourley Award in Pomology to H. T. Hartman of the University of California; Leonard H. Vaughan Award in Vegetable Crops to K. Singh and B. D. Thompson of the University of Florida; Leonard H. Vaughan Award in Floriculture to H. H. Cathey and A. A. Piringer of the U.S. Department of Agriculture; Charles G. Woodbury Award in Raw Products Research to R. C. Wiley and G. E. Sternbridge of the University of Maryland.

"Vegetable Man of the Year" Award, by the Vegetable Growers Association of America: J. Carew of Michigan State University.

AAAS-Campbell Award for Vegetable Research: D. J. Hagendorn of the University of Wisconsin and R. T. Sherwood of the U.S. Department of Agriculture.

Wilder Medal of the American Pomological Society: R. W. Hodgson of the University of California for his leadership in tropical and subtropical horticulture.

(See also AGRICULTURAL RESEARCH SERVICE.)

LELAND BURKHART,
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HOSPITALS

The 6,923 hospitals in the United States admitted 25,474,000 patients during 1961. Of these admissions 67% were to the voluntary, short-term hospitals, which comprised 48% of all hospitals but had only 27% of all hospital beds. Total expenses of operation incurred by all hospitals rose 11% in 1961, and total hospital beds increased by 12,000. Although 63% of the nation's hospitals had fewer than 100 beds, most of the patient-days of care were provided in the larger hospitals. The hospitals having over 100 beds accounted for over 77% of the nation's total hospital beds.

Trends in the utilization, financing, and staffing of hospitals are indicated by the accompany-

HOSPITAL STATISTICS

Category	All hospitals	Voluntary, short-term hospitals
Number of hospitals:		
1951	6,832	2,922
1961	6,923	3,305
Number of beds:		
1951	1,522,000	345,000
1961	1,670,000	458,000
Number of admissions:		
1951	18,783,000	11,946,000
1961	25,474,000	16,974,000
Average daily census:		
1951	1,298,000	257,000
1961	1,393,000	349,000
Percentage of occupancy:		
1951	85%	74.5%
1961	83%	76.0%
Number of births:		
1951	2,889,790	2,125,751
1961	3,908,121	2,774,299
Number of full-time personnel:		
1951	1,075,000	464,000
1961[1]	1,696,000	835,000
Full-time personnel per 100 patients:		
1951	83	181
1961[1]	122	240
Payroll expense:		
1951	$2,374,000,000	$ 953,000,000
1961	$6,225,000,000	$2,815,000,000
Payroll expense per patient day:		
1951	$ 5.01	$10.17
1961	$12.25	$22.13
Total expense:		
1951	$3,913,000,000	$1,688,000,000
1961	$9,387,000,000	$4,584,000,000
Total expense per patient day:		
1951	$ 8.26	$18.01
1961	$18.46	$36.04

[1] Includes full-time personnel plus full-time equivalents of part-time personnel. Excludes residents, interns, and students.

ing table, based on the August 1962 issue of *Hospitals,* the journal of the American Hospital Association.

Hospital Beds.—A marked increase has been shown in the proportion of the nation's hospital beds in voluntary short-term hospitals, which housed 21% of all hospital beds in 1946 and 26.9% in 1960. A corresponding drop of 5.7% was shown by the federal hospitals during this period, to 10.7% in 1960, while nonfederal long-term hospitals continued to comprise slightly over 50% of all hospital beds. The remaining 11.6% of beds are in state and local government or proprietary institutions.

Hospital Planning.—Health leaders have long recommended broad planning for hospitals as an essential part of a continuing voluntary hospital system. Rising operating and construction costs, shortages of facilities in some areas and excess facilities in others, obsolescence, and limitations of financial support provide mounting evidence that no single hospital can intelligently plan its future without considering the entire community it serves. Such "area-wide planning" would not only solve problems of bed distribution and duplication of services but would also help to develop interrelationships between the different services provided by hospitals, and related health facilities. In several states, legislation has been advocated necessitating public utility franchises for hospital enterprises.

Research.—Recent technological advances in electronics have made possible the development of "patient monitoring," the use of automatic equipment to observe and record important clinical information. Data such as the patient's blood pressure, pulse, or temperature are transmitted to an area where they can be recorded, observed, and compared with a range of expected readings. This information is provided on a constant, rather than a periodic, basis, and skilled personnel are released for other responsibilities.

Construction Trends.—Many general hospitals are adding psychiatric units to the already large number of services they offer. The numerous diagnostic facilities and specialists of the general hospital complex are thereby made easily available to the mental patient and his doctor. Also, patients are more apt to seek early treatment in a general hospital because there is less social prejudice attached to it and because it is usually located in the patient's community. Treatment of mental patients in general hospitals has proved so successful that the Veterans Administration has decided to use its general hospitals more extensively rather than build additional neuropsychiatric hospitals.

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HOTELS AND MOTELS

Total sales in the United States hotel industry for the first nine months of 1962 showed no change from the same period in 1961. Room sales in the first nine months of 1962 equaled those in the same period of 1961; a rise of 1% in food sales was offset by a decrease of 1% in beverage sales.

In the first nine months of 1962, room rates averaged 1% higher than in the same period of 1962. This was offset by a decrease in average room occupancy from 63% in 1961 to 62% in 1962, the lowest level since 1941. Average occupancy has declined steadily from 80% in 1950.

The 1958 U.S. Census of Business showed a total of 29,203 hotels in the United States (including Alaska and Hawaii) with six or more rentable rooms. Annual gross receipts of hotels totaled $2,794,015,000. The 1958 census also showed a total of 41,332 tourist courts and motels, with annual gross receipts of more than $850 million.

Data for Canada in 1958 showed 5,088 hotels with receipts at a national record of $480,295,000.

The United States hotel industry itself tabulates only about 15,000 properties having 25 rooms or more. Fewer than 8,000 of these have over 50 rooms, and only slightly more than 800 have more than 300 rooms. In 1962, hotel directories listed 220 chain hotel and motor hotel companies, representing a total of 4,384 hotels and motor hotels having more than 483,985 guest rooms. Hilton Hotels Corporation, which owns, leases, operates under management contract 47 hotels with a total of 33,045 rooms, is the largest chain.

Expenditures for hotel construction in the first nine months of 1962 totaled $420 million, compared with $338 million in the same period of 1961. The 56 new hotels and 21 additions to existing buildings had a total of 23,174 rooms. Av-

First new hotel of more than 1,000 rooms in New York City in over thirty years was the Americana (*left*), which opened on September 24. (*Right*) Under construction in 1962, London's Hilton Hotel has 856 rooms.

LOEW'S HOTELS, INC.
CENTRAL PRESS

erage construction cost per room was $21,255 in new hotels, and $10,919 for new rooms in existing hotels.

Major new hotels opened in the United States during 1962 were the 50-story, 1,862-room Americana of New York (the first hotel of more than 1,000 rooms to be built in New York City since 1931), and the Americana of San Juan, Puerto Rico, both operated by Loew's Hotels, Inc.; the 500-room Sheraton-Lincoln in Houston, Texas; the Carriage House in Chicago; and the International Inn in Washington, D.C.

New hotels completed outside the United States in 1962 included the Sheraton-Kingston in Kingston, Jamaica; the Trinidad Hilton in Trinidad; the Amsterdam Hilton in Amsterdam, Netherlands; the Phoenicia Intercontinental in Beirut, Lebanon; Hotel Indonesia in Djakarta, Indonesia; and the Southern Cross in Melbourne, Australia. (The last three named are operated by Intercontinental Hotels Corporation.)

In an attempt to capture the mass travel market, the 68-hotel Sheraton Corporation of America launched a coast-to-coast chain of "tourist-class" Sherwyn hotels, which eliminate room service and dining rooms, and offer rooms for single occupancy at a maximum of $6.75 a night.

Continued success of franchise chains of motels or motor hotels, such as Holiday Inns of America and Howard Johnson Motor Lodges, has accounted for a large share of the motel industry's growth in recent years. In 1962, Sheraton became the first hotel chain to franchise motor hotels and resorts to operate under the chain's name, using its management techniques and reservation services.

Announced expenditures for new motel construction in the first nine months of 1962 totaled $143,248,000. This covers construction starts on 118 new motels and motor hotels with a total of 13,966 rooms, for an average per-room cost of $10,256.

Among the major motor hotels opened in 1962 were the 20-story Sheraton Motor Inn and the Howard Johnson Motor Lodge, both in New York City, and Imperial Inn in Chicago.

ALBERT E. KUDRLE,
Editor, "Hotel World-Review."

HOUSING

During the year 1962 the impetus provided by the comprehensive Housing Act of 1961 began to be felt in the United States. The provision of additional substantial sums for federally assisted housing and urban renewal meant a generally high level of activity in these areas. A good deal of experimentation went on with new ways of providing and financing moderate- and low-income housing.

The volume of housing built during the year increased moderately as compared with 1961. Expenditures for upkeep and improvement showed a similar rise. Mortgage interest rates and building costs remained fairly stable. Vacancies in rental units continued to increase, and the large number of foreclosures caused some concern.

Governmental Activity.—With the passage of the omnibus Housing Act by Congress in 1961, no new federal legislation of importance was expected in 1962, and none materialized. Congress confined itself largely to enacting amendments to existing housing legislation, none of which was of major significance.

The most significant state legislation was passed in New York. The New York State Housing Finance Agency was authorized to lend up to $1 billion (an increase of nearly 100%) to limited-dividend companies. The state was also authorized to make loans to nonprofit housing bodies covering up to 50% of project costs. This was designed primarily to promote housing for hospital personnel and the aged. State subsidies were made available for low-income families living in limited-dividend housing. The state was empowered to make 10-year, 4% loans to help middle-income families make down payments on cooperative apartments.

For some time a movement had been under way to create a Department of Housing and Urban Affairs in the federal government, thereby giving full cabinet status to the Housing and Home Finance Agency (HHFA). It was felt that cities should be represented in the cabinet just as was agriculture. In January 1962, the president attempted to use his governmental reorganization powers to create such a department. Congress turned down this proposal by a large majority.

Another movement favored the issuance of an executive order by the president barring discrimination in federally assisted housing. Pending the issuance of such an order, the federal housing agencies embarked on a program of using their existing powers gradually to achieve the same objectives. An example of what was being done in this direction was an announcement by the Federal Housing Administration (FHA) that, by agreement with the state, it would refuse to cooperate with anyone violating the Pennsylvania nondiscrimination statute. Another example was the requirement by the Urban Renewal Administration that all transfer deeds for urban redevelopment project land contain an antidiscrimination covenant. On November 20, President Kennedy issued an executive order prohibiting social and religious discrimination in housing built or purchased with federal aid. Enforcement is being sought through voluntary compliance, with court action contemplated only as a last resort.

Concern grew throughout the United States about the failure to cope with the social and delinquency problems existing in run-down and low-income urban neighborhoods. The HHFA and the Department of Health, Education, and Welfare

BURTON BERINSKY FOR ILGWU'S "JUSTICE"

The International Ladies' Garment Workers' Union cooperative housing development in New York City, Penn Station South, was dedicated by President Kennedy on May 19.

agreed to mount a joint attack on these problems in urban redevelopment and public housing areas. This involved a closer working relation between local housing and public-welfare agencies, with joint efforts to stimulate social services in housing and urban renewal projects. Among the programs embarked upon were basic education programs, home economics instruction, and special programs for children, teen-agers and the aging.

In implementing certain provisions of the 1961 Housing Act there was considerable experimentation in ways of providing subsidized housing for low-income families other than through the construction of low-rent projects for the exclusive use of such families. One device was to subsidize tenants who could not afford to pay economically feasible rentals in limited-dividend projects, comprising individual houses. If their income increased, they were given the opportunity to buy the house in which they lived on favorable terms. Another device was the requisition of run-down housing and its renovation by local housing authorities for rental (subsidized if necessary) to low-income families. A Philadelphia court decision prohibited the local authority from acquiring and fixing scattered housing, thereby confining this type of activity to groups of contiguous structures.

Urban renewal proceeded at a high level. Federal government funds devoted to renewal programs totaled about $250 million during the 1962 fiscal year, and were expected to rise to approximately $333 million during the 1963 fiscal year. By the middle of 1962, the cumulative volume of capital grants made since the beginning of the program amounted to nearly $3 billion.

Housing for the elderly took on added significance quantitatively with the increase in federal aid and the high degree of local interest all over the country in the provision of such housing.

Volume of Residential Construction.—The upward trend in residential construction activity in the United States, begun during the latter part of 1961, continued during 1962. Nevertheless, the rate of house building was not as high as in the near-record year 1959, when 1,553,500 units were started. Due to unusually bad weather conditions in many parts of the country, 1962 began with comparatively low seasonally adjusted annual rates of less than 1.3 million units in January and 1.2 million units in February. An increase to more than 1.4 million units occurred in March, and by May a rate of over 1.5 million had been attained. An increase of about 9% above the 1961 level of 1,355,400 units was predicted for 1962. All of the increase was expected to take place in private housing, with public housing declining by about 20% from the 1961 level of 52,000 dwelling units.

The boom in apartment building, evident in 1961, accelerated during 1962. There were 37% more dwelling units in multifamily structures started in 1961 than in 1960. During the first part of 1962 the increase over the comparable period for 1961 was 43%. Whereas in 1959 less than 16% of the total number of dwelling units started were in multifamily structures, the proportion in 1961 was 24%, and in 1962 was approaching 30%. This increase was partly in response to the rapidly increasing numbers in the 20–29 age group (where marriages are most frequent) who demand rental rather than owned housing. It was partly due also to the rapidly increasing numbers of persons over 70 years of age demanding small, trouble-free dwelling accommodations. In addition, many families were moving back from the suburbs into the big cities—a process furthered by the amenities provided through the expansion of urban renewal.

The total amount of money spent on building new nonfarm housing was $17 billion in 1961. The figure for the first seven months of 1962 was $10.3 billion, compared with $9.1 billion for the same period of 1961. It was predicted that by the end of 1962 nearly $19 billion would have been spent for new housing.

Of nearly equal importance to the production of new housing is the amount spent on maintaining and modernizing the existing stock of housing. Every year vast sums are spent on additions and alterations, maintenance and repairs, and replacements. In 1960 these expenditures amounted to 76% of outlays for new housing. Data available for the first nine months of 1961 showed these expenditures to have been $10.7 billion, or about 9% over the comparable period of 1960. Maintenance and repair accounted for 44% of the total. Additions and alterations to buildings and grounds took another 41%, and replacements made up the balance of 15%.

Of the privately owned nonfarm units started in the first half of 1962, about 76% were financed through conventional loans, without any government assistance. Approximately 19% were financed with FHA-insured loans, and about 5% with loans guaranteed by the Veterans Administration. Comparable figures encompassing the whole of 1961 were 74%, 19%, and 7%, respectively.

Over 120,000 mobile homes were built in 1959, and more than 90,000 in 1961. Mobile homes are complete and fully equipped vehicular portable structures built on a chassis and designed to be used without a permanent foundation as year-round dwellings when connected to utilities. Travel trailers, designed more for movement from place to place, were produced at the rate of about 40,000 per year in this period. Together they constituted more than 10% of housing starts. In the first half of 1962, their production was a third higher than in the comparable period of 1961, and combined they were being produced and sold at a higher rate than nonmobile prefabricated housing.

Construction Costs.—The cost of the average single-family dwelling unit climbed steadily during the decade of the 1950's. In 1961 the average for the year was $13,900, and by mid-1962 it had reached an all-time high of $14,500. The E. H. Boeckh residential building cost index continued to inch its way upward. The construction materials price index remained virtually unchanged from June 1961 to June 1962. During the same period, average hourly earnings of building construction workers rose by a few percentage points.

Market Conditions.—Funds available for mortgage lending were in plentiful supply. Early in 1962, banks and savings-and-loan institutions began to increase the rate of interest paid on savings accounts. As a consequence, large amounts of new savings began to flow into lending institutions.

Interest rates on mortgages reached a high average of over 6% on conventional mortgages in 1960. In 1961, stimulated by a reduction in the FHA-insured mortgage rate, they began to fall. During 1962 they remained fairly stable or showed a slight decline. Average rates on conventional mortgages were between 5½ and 6%, with those in the West being somewhat higher and those in the Southeast slightly lower.

With the high rate of apartment house building, vacancies in rental units continued to rise somewhat. In FHA-insured rental apartments, which have average lower vacancy rates than other rental units, vacancies rose from 2.4% of dwellings in 1957 to 5.4% in 1961 and 5.5% by

the second quarter of 1962. The increases occurred in the Northeast and Middle Atlantic states; elsewhere, vacancies declined.

During the decade of the 1950's the number of mortgages foreclosed rose steadily. Since the foreclosure rate merely kept pace with the increase in the residential mortgage debt, this was no cause for alarm. During 1961, however, foreclosures rose sharply to a level of 73,000 for the year, which was over 40% above the 1960 number. The rise continued during the first half of 1962, reaching a total of nearly 43,000, which was almost one fifth higher than the number for the comparable period of 1961. There were some indications that this high rate would not continue. Delinquent mortgages (those on which payments were overdue but which had not been foreclosed), which were 25% higher in February 1962 than in October 1961, decreased by midyear.

(See also ARCHITECTURE; BUILDING AND CONSTRUCTION; CENSUS DATA, U.S.; CITY PLANNING; and references under the Index entry *Housing*.)

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HOUSTON

The nation's seventh most populous city, Houston, Texas, had a population in 1960 of 938,291. It is the center of a metropolitan area composed of Harris County (area, 1,730 square miles; 1960 pop., 1,243,158).

Houston has a mayor-council type of municipal government; Lewis Cutrer, a Democrat, was mayor in 1962. The 1962 city budget: $77,873,566. Total bond debt (Sept. 30, 1962): $264,891,000. City tax rate: $2 per $100 assessed valuation. Public school enrollment (fall of 1962): about 194,000.

Employment in the Houston metropolitan area: 538,000; unemployment, 23,000 (both estimates as of August, 1962). Retail sales in metropolitan Houston for 1962 were expected to total about $1.750 billion. Bank deposits (Sept. 27, 1962): $2,770,037,012. The Port of Houston in 1961 handled 56,474,299 short tons of commercial waterborne cargo, making it the third-ranking United States port in tonnage.

Rapid commercial and industrial growth of the Houston area continued during 1962. Building permits issued during the first eight months of 1962 exceeded $240 million, up 34% from the same period in 1961.

Announced for an area west of downtown Houston was a 17-building, $100 million skyscraper complex to be built by American General Insurance Company. Also announced were plans for the John Mecom Center, which will include the renovated Warwick Hotel, two office buildings of 25 to 30 stories, and a parking garage. Planned for the Texas Medical Center was a 10-story, $6 million building to house the Heart Institute.

The National Aeronautics and Space Administration's Manned Spacecraft Center began operating in leased quarters pending completion of its $123 million facility 22 miles southeast of downtown Houston. The nation's first seven astronauts were moved to the Houston area, and offices were opened by a number of firms engaged in aerospace and related activities.

During 1962, three direct flights from Houston to Europe were inaugurated. Construction was under way on the initial phase of the new $125–$150 million Jetero Intercontinental Airport.

The Ford Foundation announced the offer of a gift of $2 million to the Alley Theatre. Houston Endowment Incorporated will underwrite the construction of a $6 million center for the performing arts.

Rice University marked its 50th anniversary with the inauguration on October 10 of Dr. Kenneth Sanborn Pitzer as its third president. The inaugural ceremonies were followed by a two-day academic festival attended by leading educators, scholars, and scientists. Dr. Philip G. Hoffman was inaugurated as president of the University of Houston on April 27.

Houston, the nation's largest city without a zoning ordinance, again defeated a zoning proposal in a referendum on November 6.

Major league baseball came to the Southwest for the first time in 1962 as the Houston Colt .45's opened their season on April 10. The Colts, who finished eighth in the National League standings, used a temporary ball park, but an all-weather, domed stadium is due to be completed by 1965, contingent on passage of a $9.6 million bond issue.

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HUMAN RIGHTS. See Index entry.

HUNGARY

A Communist-ruled people's democracy in central Europe, Hungary has an area of 35,912 square miles and a 1960 census population of 9,977,870 (Dec. 31, 1961 est.: 10,055,000). About 97% of the population is Hungarian. The capital and principal city is Budapest (1960 est. pop., 1,807,000). Other important cities (with 1960 estimates): Miskolc (144,000); Debrecen (29,000); Pécs (115,000); and Szeged (99,000).

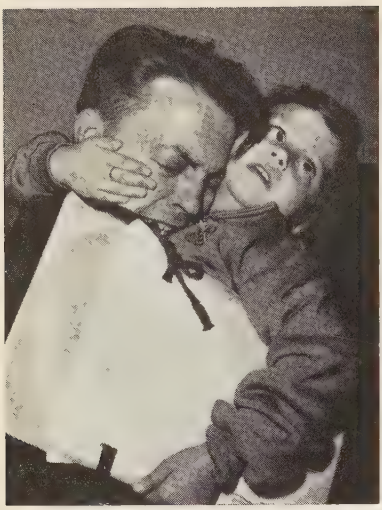
Government.—According to the constitution of 1949, the highest organ of the state is the unicameral 338-member National Assembly, which elects a 21-member Presidium. Both bodies and the cabinet are controlled by the Hungarian Socialist Workers Party (HSWP), which is a Communist party and claimed 478,000 members in 1961. The president of Hungary is István Dobi, and the premier is János Kádár (since Sept. 13, 1961), who is also first secretary of the HSWP's Central Committee. The members of the central government and the local governments (the people's councils) are drawn exclusively from a Communist-controlled organization called the People's Patriotic Front.

Education.—Schooling is compulsory for children aged 6 to 16. The educational system was reorganized in 1959 to combine students' training with part-time work in industry and agriculture. Number of schools (with enrollments), 1959–60: 2,780 preschool (179,488); 6,322 primary (1,314,432); 253 secondary (103,441); 158 technical (41,269); and 22 higher (20,369). Teacher-training and special schools enrolled 6,232 and 15,777 students, respectively. Enrollment of secondary school students totaled an estimated 200,000 in September 1962. The 1962 economic plan provided for the construction of 700 primary and secondary school classrooms, and a 25% increase in expenditures for public education. The Hungarian Academy of Sciences is the highest scientific institution and is organized on the model of the Soviet Academy of Sciences. The four oldest and most prominent universities are located in Budapest, Pécs, Szeged, and Debrecen; the three leading technical universities are at Budapest, Miskolc, and Veszprém.

Religion.—Roman Catholics comprise about 67% of the population; Protestants, 27.3%; Greek Catholics, 2.7%; and Jews, 1.5%. Religious affairs are supervised by the State Office for Church Affairs. The state exerts its influence on the clergy by fostering movements such as the Catholic Opus Pacis, which cooperates with the government. The Communist regime's campaign against the noncooperative segment of the clergy was continued in 1962.

Finance.—Government revenue, 1962 est.: 84.4 billion forints (76 billion in 1961); expenditure, 83.8 billion (76 billion). Total investment in the development of the country was officially estimated at 34.8 billion forints in 1962 (30.7 billion in 1961). The official exchange rate of the forint is 11.74 to the U.S. dollar.

Transportation and Communications.—Transport networks, 1960: railways, 5,552; roads, 17,927; navigable waterways, 871 (chiefly the Danube and Tisza rivers). MAHART, the state shipping company, transported about 2 million tons of freight in 1960 (200,000 more tons than in 1959). MALEV, the state airline, carried 151,900 passengers in 1960. Other data for 1960: motor vehicles, 51,200; telephones, 243,406; radio receiver licenses, 2,224,000; television subscribers, 104,000. Capital investment in transportation, 1962 est.: 3.6 billion forints.



Hungarian freedom fighter Lajos Kovacs greets Kiara, his six-year-old daughter, September 4 in New York City. The parents had not seen their child since 1956, during the unsuccessful attempt to overthrow the Hungarian government.

WIDE WORLD

Agriculture.—Approximately 43% of the population is rural and 62% of the total land area is arable. The new five-year plan (1961–65) calls for complete collectivization and a 32% increase in overall production, with agricultural investment totaling about 38 billion forints and including 20 billion for the development of collective farms. By 1962, 96% of arable land was under state or collective control. Agricultural production in 1961 failed to achieve the planned increase of 7.9% over 1960, and was valued at 62.5 billion forints (62.9 billion in 1960). For the second successive year a drought reduced farm production in 1961, limiting agricultural exports and resulting in lower farm incomes than had been expected. The 1962 economic plan provided for a production increase of 9% to 10% above the 1961 level, and capital investment of 6 billion forints in agriculture (17% of total capital investment). Bread-grain acreage was expected to increase by 7.5%, and wheat acreage by 10.5%. Retail food prices rose by an average 32% in 1961–62.

Hungary's primary crops and 1960 yields (in thousands of metric tons, with 1959 data in parentheses) were: wheat, 1,768 (1,909); rye, 354 (443); maize, 3,504 (3,558); barley, 986 (1,093); oats, 204 (256); potatoes, 2,656 (2,366); and rice, 45 (59). Number of livestock, 1960 (in thousands, with 1959 data in parentheses): cattle, 1,971 (2,004); pigs, 5,356 (6,225); sheep, 2,381 (2,155); and horses, 628 (717).

Industry.—Industrial production in 1961 exceeded planned goals by 3.5%. Labor productivity also rose by 8%, but Hungary's industrial productivity rate is the lowest among Soviet-bloc nations; the productivity index (1950 = 100) was estimated at 141 in 1962. Industrial investment in 1961 totaled 15.2 billion forints (44% of total investment). Two thirds of the predicted production increase of 8% in 1962 was to result from higher labor productivity. The 1962 economic plan called for the completion by 1963 of 168 to 180 major projects, including the Friendship Oil Pipeline from the Soviet Union, the Ajka thermal power station, and the Csepel pipe factory. In July 1962 the State Statistical Office announced that although industrial production goals had been fulfilled, the rate of output was only 8% in the first half of 1962, compared with 10% in the corresponding period of 1961.

Chief industrial products (in million tons, 1961): steel, 2.1 (up 8.9% from 1960); coal, 28.2 (up 6.2%); crude oil, 1.5 (up 18.8%); cement, 1.6 (up 1.9%); aluminum, 0.051 (up 3.1%); bauxite, 1.4 (up 14.3%); and electric power, 8.4 billion kw.-hr. (up 9.9%).

Foreign Trade.—Total exports, 1961: 12,080 million forints (up 18% from 1960); imports, 12,028 million forints (up 5%). The favorable trade balance of 52 million forints contrasted markedly with trade deficits of 274 million forints in 1959 and of 1.1 billion forints in 1960. Chief exports: bauxite and alumina, measuring instruments, textiles, chemicals, corn, and poultry; chief imports: raw materials, machinery and equipment, and foodstuffs. Hungary's principal trading partner is the Soviet Union, which in 1961 took 29.3% of Hungarian exports and supplied 31.0% of total imports. In 1960, about 10% of Hungary's exports went to the members of the Common Market, and 13.5% of the country's imports came from those countries. In the first half of 1962 the volume of trade between Hungary and Western countries rose by 10%.

Events, 1962.—The two most significant internal developments were the accelerated de-Stalinization campaign and the government's efforts to win greater popular support. One aspect of Hungarian de-Stalinization has been the periodic purges in party and governmental circles. In early January it was announced that István Friss, a prominent economist in the HSWP, was relieved of his position as head of the party's Department of State Economy. An intimate friend of deposed Premier Matyas Rakosi, Friss strongly opposed economic liberalization after the 1956 revolt. Imre Dogei, a member of the Central Committee and former minister of agriculture, and Ivan Altomare, former minister of food, were ejected from the party in April on charges of "sectarian and pseudo-leftist views and activities" and of bribery and corruption, respectively.

The major purge was announced on August 19 when the Central Committee reported the expulsion from the HSWP of 25 Stalinists, including Matyas Rakosi and Ernö Gerö, both of whom were formerly party chiefs. They were charged with primary responsibility for the "miscarriages of justice based on forged evidence" which occurred during the years of the "personality cult." Karoly Kiss, a former foreign minister and deputy premier who was generally regarded as the leading Stalinist in the government, was removed from the Politburo. It was alleged that Kiss, who lost his post as party secretary in 1961, refused to accept responsibility for the erroneous decisions and practices of the Central Committee prior to 1956. On Oct. 14, 1962, Vice President György Marosan was ousted from all party and governmental positions because of "fractionalism" and "violation of party discipline."

In an effort to improve the relations of the regime with the public and to utilize numerous unused talents in the service of the state, Premier János Kádár instituted a policy based on the slogan that "whoever is not against us is with us." Kádár declared that all economic administrative positions in industry, agriculture, and government were to be filled on an "efficiency first" basis regardless of party affiliation. It was hoped that the employment of qualified nonparty economists and technicians would prevent the infiltration of the party by so-called careerists. Despite determined opposition among segments of the party, several political leaders and important newspapers argued with firmness that "political reliability" and "professional competence" were not necessarily synonymous, and that public interest should never be sacrificed to the personal whims of a party official. On introduction of the new policy, 20 old-line party officials in key administrative and managerial posts were replaced by young technicians. It was reported later that the new policy had achieved a certain degree of success.

At the 8th Congress of the HSWP, held in Budapest in late November, Premier Kádár declared that his government's de-Stalinization and liberalization policies would continue. He sharply attacked Albanian Communist leaders for opposing Soviet ideology, and indirectly criticized Communist China for supporting Albania. The Hungarian leader endorsed the new Soviet policy of maintaining friendly relations with Yugoslavia, and he said that Hungary was attempting to "normalize poor relations" with the United States. Kádár had conferred earlier in the month with Premier Khrushchev in Moscow, where he reportedly was briefed on the latest Soviet policies regarding the Cuban crisis, other world problems, and economic difficulties within the Soviet bloc.

During the year, Hungary signed trade agreements with West Germany, Japan, and Great Britain, and concluded commercial pacts with Greece, Cyprus, and Cuba. Two groups of Hungarian specialists were dispatched to Guinea to work in bauxite mining and on irrigation projects. Hungary ratified exchange agreements with Great Britain and India, and established diplomatic relations with North Vietnam and Brazil.

Efforts were made in 1962 to mold the country's economy for greater integration within the Soviet bloc's Council for Mutual Economic Assistance. Hungary apparently plans to specialize in producing telecommunications equipment, instrument manufactures, and aluminum; other Soviet-bloc countries are to supply some of the electric power needed for the latter industry. Hungary also intends to rely more on imports of farm machinery from other Soviet-bloc countries. A plan was initiated to decentralize industry by moving to the provinces some factories from Budapest, which account for 52% of the nation's industrial production.

Hungary's growing apprehension over the rapid development of the European Economic Community (Common Market) and its effects on East-West trading relations was apparent in 1962. The press and radio launched a bitter attack against the Common Market because of the latter's alleged anti-Communist nature, its support by the United States, and consideration for membership of such neutrals as Austria, Switzerland, and Sweden.

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HUNTING AND FISHING

The U.S. Department of the Interior reported that a total of 19,394,177 sport fishermen in 50 states spent a record-breaking $52,851,224 (an increase of $708,388 over 1960) for licenses, tags, permits, and stamps, as required by state fish and game departments, to fish during 1961. California, Minnesota, and Wisconsin, in that order, had the most paid fishing license holders, each going over the million mark.

Hunting license figures released by the department also showed an increase over 1960. Data were not available from four states, but a total of 11,798,890 hunters in 46 states paid $64,062,782 for hunting licenses, stamps, tags, and permits in 1961, as compared with the 1960 totals of 11,785,753 and $60,981,203, respectively.

While the number of licensed sportsmen is large, the department points out that it does not reflect accurately the number of persons who hunt and fish, because many are exempt from license requirements because of age, veterans status, or other reasons. Previous surveys of fishing and hunting by the Bureau of Sport Fisheries and Wildlife indicate there are more than 25 million sport fishermen and approximately 15 million hunters in the United States.

U.S. Fish and Wildlife Service.—Continuing its national marine game fish research program, the Fish and Wildlife Service released in 1962 *The 1960 Salt Water Angling Survey.* Planned to estimate anglers' catches, the survey found that 6,198,000 salt-water anglers caught 633,872,000 fish totaling 1,410,952,000 pounds in United States waters (excluding Hawaii) in 1960. The survey marks an important step in determining man's effect on the salt-water fish resources of the nation.

About 34,000 acres of waterfowl habitat was purchased by the federal government in the fiscal year ending June 30, 1961, using up available funds for the program as of that date. The final objective remains at about 3 million acres by 1970.

Differences between National Park Service and state game departments were intensified over the control of fish and wildlife in areas newly acquired by the Park Service. State officials insist on jurisdiction of such areas, as opposed to the complete ban on public hunting in the older national parks imposed by the Park Service. Secretary of the Interior Stewart Udall promised a thorough study of the situation by a distinguished group of citizens. Leading sportsmen were encouraged by the federal appointment of Sigurd Olson as consultant to the secretary of the interior and the National Park Service.

Shooting Foundation.—The newly formed National Shooting Sports Foundation is now fully incorporated and held its first member meeting in Chicago in January 1962 to present a three-way, $150,000 program of shooting activity development in 1962 and beyond. The foundation's purpose is broadly educational: "To foster in the American public a better understanding and a more active appreciation of all shooting sports."

Fishing Records.—The International Game Fish Association announced that 12 new rod and reel all-tackle salt-water records were recognized in the 12-month period ending November 1962. A 69-lb. 1-oz. *albacore* caught in October 1961 by Walter C. Timm at Hudson Canyon, N.J., tied the previous record. The other 11 records are: *California black sea bass* (557 lbs. 3 oz.), caught by Richard M. Lane at Catalina Island, Calif., July 1, 1962; *giant sea bass* (680 lbs.), Lynn Joyner, at Fernandina Beach, Fla., May 20, 1961; *bonefish* (19 lbs.), Brian W. Batchelor at Zululand, South Africa, May 26, 1962; *blue marlin* (810 lbs.), Gary Stukes, at Hatteras, N.C., June 11, 1962; *rainbow runner* (23 lbs.), Lila M. Neuenfelt, at Oahu, Hawaii, May 9, 1961; *Atlantic sailfish* (141 lbs. 1 oz.), Tony Burnand, at Ivory Coast, Africa, Jan. 26, 1961; *porbeagle shark* (390 lbs. 8 oz.), Joseph Monty, at Fire Island, N.Y., May 20, 1962; *allison or yellowfin tuna* (269 lbs. 8 oz.), Henry Nishikawa, at Kauai, Hawaii, May 30, 1962; *wahoo* (149 lbs.), John Pirovano, at Cat Cay, Bahamas, June 15, 1962; *yellowtail* (111 lbs.), A. F. Plim, at Bay of Islands, New Zealand, June 11, 1961; *weakfish* (19 lbs. 8 oz.), Dennis B. Hall, at Trinidad, West Indies, April 13, 1962.

Field & Stream magazine recognized a new world record *sauger* caught with rod and reel. The fish weighed 8 lbs. 5 oz. and was caught on Oct. 22, 1961, by Mrs. Betty Tepner at Niobrara, Nebr. *Field & Stream* also recognized a "caught-by-any-method" world record 4-lb. 4-oz. *redear sunfish,* taken with a cane pole outfit on May 5, 1962, by Jeff Lashley at Gordon, Ala.

(See also CONSERVATION OF NATURAL RESOURCES; FORESTRY; SPORTS, GAMES, AND SHOWS —*Fly and Bait Casting.*)

MIKE BALL,
Fishing Contest Editor, "Field & Stream."

HURRICANES. See METEOROLOGY AND CLIMATOLOGY and the Index entry, *Hurricanes.*

HYDROELECTRIC PROJECTS. See Index entry.

HYGIENE. See INDUSTRIAL HEALTH AND SAFETY; PUBLIC HEALTH; SANITARY ENGINEERING.

INDIA—Women of the Tezpur home guard drill on November 18 as the nation mobilizes to combat the invasion by Communist China.

UPI

ICE HOCKEY. See SPORTS, GAMES, AND SHOWS.
ICE SKATING. See SPORTS, GAMES, AND SHOWS.

ICELAND

An island republic near the Arctic Circle in the North Atlantic, Iceland has an estimated area of 39,770 square miles, and a population of 179,000 (est. July 1, 1961). About one fourth of the area is habitable, and only one fifth is productive. Some 80% of the population lives in towns of more than 300 residents, mainly along the coasts. Reykjavík (1960 pop., 72,407) is the capital.

Government.—The Parliament (or Althing) consists of 60 members elected for four years by a system of direct and proportional representation. The Althing selects a third of its members to form an upper house. Party seating in the Althing (following elections in October 1959): Independence (Conservative), 24; Social Democratic, 9; Progressive (Agrarian), 17; and Labor Union (Communist), 10. Premier Olafur Thors (Independence Party) heads an Independence-Social Democratic coalition cabinet formed in 1959. Asgeir Asgeirsson was re-elected by the Althing to a third four-year term as president of the republic in 1960.

Iceland is a member of the North Atlantic Treaty Organization (NATO), and a NATO base on the island is maintained by the United States under an Iceland–United States agreement of 1951. United States forces in Iceland aggregated about 4,000 men in 1962.

Education and Religion.—Education is compulsory for children aged 7 to 15, and illiteracy is negligible. School enrollment, 1959: primary, 21,865 (1958); secondary, 8,952; technical, 2,822; teacher-training, 156; and higher (the University of Reykjavík), 751. The Evangelical Lutheran Church is the national church, but there is complete religious freedom.

Finance.—Government revenue, 1960: 1,586.6 million krónur (1,166.8 million in 1959); expenditure, 1,539.0 million (1,182.7 million). The króna was devalued in 1960 and 1961 from a par value of 16.3 to the U.S. dollar to a new rate of 43 krónur to the dollar. National debt: 389.1 million krónur at the end of 1959. Gold and foreign exchange holdings: $28.3 million at the end of 1961 ($17.9 million a year earlier).

Transportation and Communications.—The island is without railways. Gravel-surfaced roads aggregate about 6,000 miles. Merchant marine (gross registered tons, 1960): 57,432; fishing fleet, 70,650. Keflavík Airport, near Reykjavík, is used by two Icelandic airlines and by major international airlines. Other data for 1960: motor vehicles, 21,956; telephones, 39,547; licensed radio sets, 50,000.

Production.—National income, 1960: 5.37 billion krónur (up 10% from 1959). Iceland's important fish catch was estimated at 631,000 metric tons in 1961 (514,000 metric tons in 1960); output of fish oil totaled 53,460 short tons (up 43%). Agriculture engages about 20% of the population, and is based on sheep raising (813,000 head in 1960) and dairying (48,500 cattle). Iceland is nearly self-sufficient in meat, dairy products, and eggs, but must import other foods. Chief crops are hay for fodder (329,000 metric tons in 1960), potatoes, and turnips. Manufactures include fish products, clothing, furniture, and other consumer goods. Electric power, 1961: 588 million kw.-hr. (up 9% from 1960); cement, 75,500 metric tons (up 3%). Consumer price index (1953 = 100): 139 in 1961 (132 in 1960).

Foreign Trade.—Total exports, 1961: 2,879.1 million krónur (up 9% from 1960); imports, 3,009.1 million (down 1%). Principal exports are fish products, which account for more than 90% of total export value. Chief imports are mainly fuels, foodstuffs, wood, machinery, textiles, and iron and steel products. Chief customers (with percentage of total Icelandic exports received, 1961): Great Britain (23%); the United States (13%); West Germany (10%). Principal suppliers: the United States (16%); the Soviet Union (14%); and Great Britain and West Germany (11% each).

Events, 1962.—The ruling Independence and Social Democratic parties registered substantial gains in elections to local councils on May 27. The Communist Party suffered losses, apparently as a result of the government's successful economic stabilization program which checked the severe inflationary spiral of recent years, and because of the settlement in 1961 of the Icelandic-British dispute over fishing rights in Iceland's territorial waters, a quarrel that had aroused much anti-Western feeling in the country. Communist propaganda directed against the NATO base on the island and against the United States evidently had little effect on the voters, who displayed growing pro-Western sentiments during the year. The Communist Party on November 28 dropped all 13 Stalinists from its 40-member Central Committee, reportedly because of its loss of popular support.

Iceland on May 22 deported a Czech diplomat for attempting to engage a local pilot in an espionage plot against the NATO base at Keflavík Airport. The spying incident was the first of its kind in Icelandic history.

W. R. F.

IDAHO

A Northwestern state of the United States, Idaho ranks 13th among the states in area (land, 82,708 square miles; inland water, 849) and 42d in population (698,000 on July 1, 1962, a 4.6% increase from the 1960 census figure of 667,191). Urban places with populations above 10,000 in 1960:

Alameda	10,660	Moscow	11,183
Boise City (*capital*)	34,481	Nampa	18,897
Caldwell	12,230	Pocatello	28,534
Coeur d'Alene	14,291	Twin Falls	20,126
Idaho Falls	33,161	Whitney (uninc.)	13,603
Lewiston	12,691		

Government.—Chief executive and judicial officers in 1962 included Robert E. Smylie (Republican), governor, serving a four-year term; William E. Drevlow, lieutenant governor; Arnold Williams, secretary of state; Rulon A. Swensen, treasurer; Joe R. Williams, auditor; Frank L. Benson, attorney general; D. F. Engelking, superintendent of schools; and E. B. Smith, chief justice of the 5-member Supreme Court.

The Idaho Legislature, which convenes in odd-numbered years, comprised 23 Republicans and 21 Democrats in the Senate in 1962 and 30 Republicans and 29 Democrats in the House of Representatives.

Finance.—In the 1961 fiscal year, revenue of $156,615,613 included $56,751,199 from state taxes and $52,137,809 in federal funds. Chief tax yields were from individual income ($20,273,549), motor fuels ($11,910,743), and licensing ($36,943,374). Spending of $125,388,049 included $24,775,669 for education, $6,420,646 for health, welfare, and safety, and $35,571,850 for highways.

Education.—In the 1961–62 school year, public elementary schools staffed by 3,422 teachers enrolled 125,754

pupils; secondary schools with 3,471 teachers enrolled 46,291; parochial schools with 209 teachers enrolled 6,924. College enrollment totaled 12,412 in 3 junior colleges and 6 colleges and universities.

Estimated public school spending in the 1961–62 school year totaled $60.1 million, including current expenditures of $49 million ($309 per pupil) and capital outlays of $9.5 million. Revenue of $63.02 million was drawn chiefly from state funds ($18.02 million) and local districts ($35 million). The state reported teachers' salaries as averaging $4,593.66 (high school, $4,963.17; elementary, $4,357.02). Actual spending for higher education (1961 fiscal year) totaled $11,883,000.

Public Assistance.—In the 1962 fiscal year, public assistance payments to a monthly average of 18,184 persons totaled $13,029,137. This amount included $5,260,932 for the aged and $4,478,758 for dependent children.

Transportation and Communications.—With 315 miles of highway construction and reconstruction completed in the 1961–62 fiscal year, *highways and roads* as of Dec. 31, 1962, totaled 40,200 miles (9,411 surfaced). These served 403,553 *motor vehicles* (as registered Dec. 31, 1961), including 261,765 automobiles. Operating in the state in 1961 were 9 *railroads* (using 2,893 line miles of track); 4 regularly scheduled airlines; and 84 commercial and municipal *airports*.

Communications media included (1962) 1 FM and 41 AM *radio stations;* 6 VHF *television stations;* (1961) 13 daily *newspapers* (circulation, 149,000) and 72 other newspapers (98,200); and (Jan. 1, 1962) 63,700 business and 172,100 residential *telephones*.

Labor Force.—The state's labor force in July 1962 included 62,000 agricultural workers. Nonagricultural employment totaled 198,700, compared with 195,800 a year earlier and an average of 188,700 for the calendar year 1961. Of nonfarm employees, 24.4% were in trade, 22.3% in government services, and 19% in manufacturing. Unemployment in July 1962 stood at 13,700, compared with 15,200 a year earlier.

Manufacturing.—Manufacturing engaged 28,894 workers in 1960, including 23,123 in production, and provided a payroll of $139,064,000. Adjusted value added by manufacture totaled $265,997,000.

Leading Idaho manufactures in 1960 were: food and kindred products (9,507 workers; $37,107,000 in wages; $91,110,000 in adjusted value added by manufacture); lumber and wood products (10,650; $51,962,000; $67,196,000); and chemicals and products (2,664; $18,153,000; $56,252,000).

Mining.—Idaho ranked 35th among the states in the value of mineral output in 1961, with 0.38% of the national total. The value of $68,900,000 was about 20% greater than in 1960. Silver output (valued at $16,249,000) was the largest in 23 years, and accounted for 23% of the state total. Combined production of lead ($14,724,000) and zinc ($13,408,000) was the highest in 7 years. Idaho produced all of the nation's antimony, and was first in silver and second in abrasive garnet, lead, and zinc.

Agriculture.—Cash farm income for the first nine months of 1962 (excluding government payments) totaled $262,594,000, compared with $273,327,000 for the corresponding period of 1961. For the full year 1961, income comprised $196,626,000 from livestock, $228,109,000 from crops, and $14,091,000 in government payments. Principal income sources in 1961 were cattle, $99,605,000; potatoes, $64,554,000; wheat, $58,523,000; and wholesale milk, $53,300,000.

IDAHO CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Alfalfa (1,000 tons)	2,528	2,685	2,685
Apples (1,000 bu.)	1,326	1,150	1,200
Barley (1,000 bu.)	16,767	19,142	26,568
Beans, dry (1,000 bags)	2,344	2,352	2,300
Cherries (tons)	3,272	3,100	3,500
Hay (1,000 tons)	2,907	3,022	3,071
Hops (1,000 lb.)	4,213	5,472	6,596
Onions (1,000 cwt.)	924	770	924
Peas, dry field (1,000 bags)	1,241	1,071	1,821
Potatoes (1,000 cwt.)	34,427	57,734	47,883
Prunes (tons)	20,300	20,500	17,500
Sugar beets (1,000 short tons)	1,559	2,272	2,453
Wheat (1,000 bu.)	42,035	36,250	36,692

(Source: U.S. Department of Agriculture.)

The state's 34,000 farms in 1959 had an acreage of 15,232,000 (3,832,000 in harvested cropland). Livestock on farms on Jan. 1, 1962, included 1,359,000 cattle and 1,113,000 sheep.

Events, 1962.—Gambling was, by all odds, the big item of interest in Idaho in 1962. Vernon K. Smith, a Boise lawyer and sometime Republican, advocating local option gambling as a means of financing state services, won the Democratic gubernatorial nomination from a field of six candidates by capturing 43% of the vote. Republican Gov. Robert E. Smylie, after first considering a race against incumbent U.S. Sen. Frank Church, announced for an unprecedented third term. Smith's strong showing in the primary induced the governor to "run scared" in a campaign in which gambling submerged all other issues. In the November 6 election, Smylie defeated Smith by 23,702 votes—a margin five times that of 1958 when the governor defeated another pro-gambling opponent.

Election day ballot-splitting was again the rule. Republicans won three statewide offices: governor, attorney general, and mine inspector; Democrats won the rest. The Republicans again captured the Legislature, holding their former 23–21 margin in the Senate and winning four newly created seats for a 34–29 margin in the House of Representatives. Senator Church defeated Republican John T. Hawley (141,657 to 117,129) to win reelection and lead both tickets in votes polled. In a race for the U.S. Senate seat (four-year term) made vacant by the death on July 23 of Henry C. Dworshak, Republican Len B. Jordan, a former governor, defeated Congresswoman Gracie Pfost by 4,881 votes. The Democrats retained the two congressional seats: Compton I. White won the 1st District seat formerly held by Mrs. Pfost, and Ralph R. Harding was reelected in the 2d District.

Three proposed constitutional amendments were approved. These permit naturalized Orientals to vote and hold office in Idaho; reduce residence requirements for presidential elections from six months to 60 days; and authorize the Legislature to revamp the state courts below the District Court level.

A noteworthy byproduct of this election year was the retirement, by defeat in the primary, of Attorney General Frank L. Benson, whose four-year vendetta against the governor and other state agencies was thereby terminated.

The economic outlook in 1962 was brightened by slow but definite improvement in the lumber industry, a good year in agriculture, an increase in silver prices, and continued growth in phosphate mining and the food-processing industry. Water resources and transportation development continued, characterized by steady progress on the lower Snake River dams, the authorization of construction at the Bruce's Eddy dam site, and the final paving and dedication of Lewis and Clark Highway. Notable too was the progress of the Nez Percé and the Bannock-Shoshoni Indian groups in developing their natural resources.

At the governmental level, continued budgetary problems—especially in education, health, and welfare—and redistricting promise major political battles. State institutions have already requested $119 million for the coming biennium; and a state Supreme Court decision in 1962 blocked redistricting proposals.

"Events" by: Siegfried B. Rolland,
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IFNI. See SPANISH TERRITORIES.

IKEDA, Hayato. See biographical sketch under JAPAN.

ILLINOIS

A North Central state of the United States, Illinois ranks 24th among the states in area (land, 55,930 sq. mi.; inland water, 470) and 4th in population (10,146,000 on July 1, 1962, an 0.6% increase from the 1960 census figure of 10,081,158). Urban places with populations of 25,000 and over in 1960:

Alton	43,047	Granite City	40,073
Arlington Heights	27,878	Harvey	29,071
Aurora	63,715	Highland Park	25,532
Belleville	37,264	Joliet	66,780
Berwyn	54,224	Kankakee	27,666
Bloomington	36,271	Maywood	27,330
Calumet City	25,000	Moline	42,705
Champaign	49,583	Oak Lawn	27,471
Chicago	3,550,404	Oak Park	61,093
Chicago Heights	34,331	Park Forest	29,993
Cicero	69,130	Park Ridge	32,659
Danville	41,856	Pekin	28,146
Decatur	78,004	Peoria	103,162
Des Plaines	34,886	Quincy	43,793
East St. Louis	81,712	Rock Island	51,863
Elgin	49,447	Rockford	126,706
Elmhurst	36,991	Skokie	59,364
Evanston	79,283	Springfield (*capital*)	83,271
Freeport	26,628	Urbana	27,294
Galesburg	37,243	Waukegan	55,719
		Wilmette	28,268

Government.—Chief executive and judicial officers in 1962 included Otto Kerner (Democrat), governor, serving a four-year term; Samuel H. Shapiro, lieutenant governor; Charles F. Carpentier, secretary of state; Francis S. Lorenz, treasurer; Michael J. Howlett, auditor; William G. Clark, attorney general; George T. Wilkins, superintendent of public instruction; and Roy J. Solfisburg, Jr., chief justice of the 7-member Supreme Court.

The Illinois General Assembly, which convenes in odd-numbered years, comprised 31 Republicans and 27 Democrats in the Senate in 1962 and 89 Republicans and 88 Democrats in the House of Representatives.

Legislation, 1962.—The Illinois General Assembly held a brief "lame duck" special session following the November elections. The only major accomplishment was to establish Illinois as the first state to approve the proposed anti-poll tax amendment to the U.S. Constitution. The amendment would become the 24th if ratified.

The main item on the special session call provided for allocation of additional moneys for the much debated public assistance programs. Governor Kerner had requested an appropriation of $131 million for this purpose and authorization for the transfer of the additional sum from earmarked funds (primarily the motor fuel tax funds) to the general purpose fund. The legislature reduced the amount appropriated to about $28 million, and authorized no transfers. It was obvious that there would be additional emergency moneys needed early in 1963 to continue the public assistance programs.

(See also below, *Events, 1962.*)

Finance.—In the 1962 fiscal year, revenue of $1,536,350,000 included $863,332,000 from state taxes and $305,678,000 in federal funds. Chief tax yields were the 3½% general sales and use tax ($463,926,000), motor fuel taxes ($164,022,000), and licensing ($130,237,000). Spending of $1,302,011,000 included $352,895,000 for education, $449,131,000 for health, welfare, and safety, and $374,148,000 for highways.

Education.—In the 1961–62 school year it was estimated that public elementary schools staffed by 53,110 teachers enrolled 1,442,093 pupils; secondary schools with 23,277 teachers enrolled 439,798; and parochial schools with 14,043 teachers enrolled 494,304. College and university enrollment totaled 216,577.

Estimated public school spending in the 1961–62 school year totaled $1,028 million, including current expenditures of $802,564,000 ($502 per pupil) and capital outlays of $177,337,000. Revenue of $1,041,904,000 was drawn chiefly from state funds ($207,118,000) and local districts ($677,302,000). Teachers' salaries averaged $6,156 (high school, $6,585; elementary, $5,951). Actual spending for higher education (fiscal 1961) totaled $149,910,000.

Public Assistance.—In the 1962 fiscal year, public assistance payments to a monthly average of 443,806 persons totaled $286,013,933. This amount included $125,837,674 for dependent children and $66,543,087 for the aged.

Transportation and Communications.—A total of 1,022 miles of highway construction and reconstruction were completed in 1961; *highways and roads* on Dec. 31, 1960, totaled 102,189 miles (93,528 surfaced). These served 4,072,797 *motor vehicles* (as registered on Aug. 31, 1962), including 3,397,782 automobiles. Operating in the state in 1962 were 63 *railroads* (using 10,709 line miles of track); 20 regularly scheduled *airlines;* 127 commercial and municipal *airports;* and 64 heliports.

Communications media included (1961) 98 AM and 42 FM *radio stations;* 17 *television stations;* (1961) 82 daily *newspapers* (circulation, 3,841,321); and (Jan. 1, 1962) 1,406,400 business and 3,519,400 residential *telephones.*

Labor Force.—The state's labor force on June 15, 1962, included 249,000 agricultural workers. Nonagricultural employment totaled 3,587,900, compared with 3,518,300 a year earlier and an average of 3,482,800 for 1961. Of nonfarm employees, 33.5% were in manufacturing, 20.9% in trade, and 14.1% in service industries. Unemployment on June 15, 1962, had dropped to 203,000 from the 265,000 reported a year earlier.

Manufacturing.—Manufacturing engaged 1,208,781 workers in 1960, including 850,058 in production, and provided a payroll of $6,834,461,000. Adjusted value added by manufacture totaled $12,652,587,000.

LEADING ILLINOIS MANUFACTURES, 1960

Industry group	Total employees	Total payroll (in thousands)	Adjusted value added by mfr.[1] (in thousands)
Food and kindred products	126,193	$ 688,619	$1,794,759
Nonelectrical machinery	176,049	1,069,601	1,790,805
Electrical machinery	167,588	872,943	1,630,421
Fabricated metals	127,709	721,118	1,242,716
Printing and publishing	92,903	581,867	1,000,975
Primary metals	94,784	596,530	998,039
Chemicals and products	46,527	284,412	963,975
Transportation equipment	43,002	275,486	513,694
Stone, clay, glass products	38,100	214,922	461,454
Instruments and products	33,811	183,372	397,015
Paper and products	33,310	174,387	314,245

[1] For definition, see footnote 1 in the article *Industrial Production.* (Source: *1960 Annual Survey of Manufactures.*)

Mining.—Illinois ranked 8th among the states in 1961 in the value of its mineral output, with 3.15% of the national total. Production was about 2% less than the 1960 record. The state was first in output of fluorspar and tripoli; third in stone; and fourth in coal.

ILLINOIS MINERAL PRODUCTION, 1961
(In short tons, except as noted)

Mineral	Quantity	Value
Cement:		
Portland (376 lb. bbl.)	8,595,000	$ 28,301,000
Masonry (280 lb. bbl.)	461,000	1,420,000
Clays	1,982,000	4,166,000
Coal	45,246,000	177,070,000
Coke	1,841,273	35,416,000[1]
Fluorspar	116,908	5,956,000
Iron, pig	4,774,495	288,469,000[1]
Lead (recoverable content of ores)	3,430	707,000
Natural gas (1,000 cu. ft.)	9,970,000	1,276,000
Natural-gas liquids (1,000 gal.)	357,240	17,806,000
Petroleum, crude (1,000 bbl.)	79,387[2]	237,367,000[2]
Sand and gravel	31,353,000	35,098,000
Stone	36,361,000	47,939,000
Zinc (recoverable content of ores)	26,795	6,163,000
Other minerals	...	11,805,000
Total	...	$571,605,000[1 3]

[1] Values for processed materials are not included in the total. [2] Preliminary. [3] Total adjusted to eliminate duplication in the value of clays and stone. (Source: U.S. Bureau of Mines.)

Agriculture.—Cash farm income for the first nine months of 1962 (excluding government payments) totaled $1,588,600,000, compared with $1,482,105,000 for the corresponding period of 1961. For the full year 1961 income comprised $1,176,328,000 from livestock, $984,104,000 from crops, and $106,059,000 in government payments. Principal income sources in 1961 were cattle, $475,118,000; hogs, $460,931,000; corn, $416,947,000; and soybeans, $358,053,000.

The state's 155,000 farms in 1959 had an acreage of 30,327,000 (20,968,000 in harvested crop-

ILLINOIS CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Apples (1,000 bu.)	2,315	2,500	2,200
Corn for grain (1,000 bu.)	538,109	638,476	686,410
Hay (1,000 tons)	4,786	4,267	4,376
Oats (1,000 bu.)	124,575	91,504	80,560
Peaches (1,000 bu.)	873	870	650
Popcorn (1,000 lb.)	46,881	70,200	62,400
Soybeans (1,000 bu.)	110,543	157,320	158,888
Tomatoes (1,000 cwt.)	110	97	103
Wheat (1,000 bu.)	47,460	60,192	49,465

(Source: U.S. Department of Agriculture.)

land). Livestock on farms on Jan. 1, 1962, included 3,862,000 cattle, 7,664,000 hogs, 11,442,000 chickens, and (1961) 17,558,000 commercial broilers.

Events, 1962.—The Republicans won the statewide races in the November elections, with U.S. Senate Minority Leader Everett M. Dirksen heading the ticket. Dirksen defeated Rep. Sidney R. Yates by a 213,195 majority. President Kennedy appeared in Springfield and Chicago for Yates—appearances that proved to be his last before the Cuban crisis. Former President Eisenhower made two separate appearances for Dirksen. Both Dirksen and Yates were nominated over token opposition in the April primaries.

Two Democratic incumbents lost their bids for reelection when William Scott defeated State Treasurer Francis S. Lorenz and Ray Page defeated State Superintendent of Public Instruction George T. Wilkins. In the other statewide races, Republicans were elected to the three board of trustees' seats at the University of Illinois and to the clerkship of the state Supreme Court.

The partisan division of the Illinois delegation to the U.S. House of Representatives was changed from 14 Democrats and 11 Republicans to 12 seats for each party (Illinois having lost one seat through congressional reapportionment). In the featured contest of incumbents, Republican Paul Findley defeated Democrat Peter F. Mack, Jr. Long-time Representatives Robert B. Chiperfield, Noah M. Mason, and Marguerite S. Church did not seek reelection.

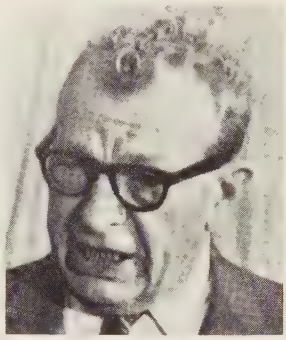
More trouble loomed ahead for Democratic Governor Kerner when the Republicans retained majorities in both houses of the 1963 General Assembly. The division in the Senate became 35 to 23, and in the House, 90 to 87. With the narrow division in the House there was talk of the Democrats again, as in 1961, organizing that body with Republican defectors. This would be important since the 1963 legislature will face serious fiscal problems, as well as a mandate to reapportion the House districts.

A major surprise in the November elections was the passage of a new judicial article to the state's constitution, culminating a long drive by the state bar organization. The amendment, which passed despite strong downstate opposition, provided both for a reorganization of the structure of the judiciary and for a new system of selecting judges. A similar amendment was narrowly defeated in 1958.

A running battle developed between the governor and the Public Aid Commission. The nonsalaried commission, headed by Chicago merchant Virgil Martin, administers the expensive public assistance programs, including the controversial Aid to Dependent Children Program (ADC). The governor was critical of the administration of these programs, and at one point advocated an across-the-board reduction in recipient payments. Chairman Martin, a Kerner appointee, resigned and was replaced by Chicago industrialist Arnold Maremont, who had held other positions in the Kerner administration. At the end of the year, a new debate centered on whether the commission should disseminate birth control information to ADC recipients.

Racial disturbances broke out at the southern end of the state. The previous year there had been trouble in Chicago. In 1962 the problem area was Cairo, where an integration movement by students continued through most of the summer. After an outbreak of violence during a demonstration, the integrationists went to Springfield in August to protest that 53 of their members had been arrested, compared with only 4 of their antagonists. Kerner promised an investigation.

In a case which gained national prominence, a condemned killer was spared on August 1 when Governor Kerner commuted his death sentence to life imprisonment. The convict, Paul Crump, 32, had received 14 stays of execution during a 9-year legal battle. His claim that he had been completely rehabilitated was supported by prison officials, clergymen, and others who enlisted in the campaign to save him.



Republican Everett Dirksen of Illinois won his third Senate term in 1962, but by a lower margin than previously.

WIDE WORLD

(See also CHICAGO.)

"Legislation" and "Events" by: SAMUEL K. GOVE, *Professor, Institute of Government and Public Affairs, University of Illinois.*

ILLITERACY. See Index entry.

IMMIGRATION AND NATURALIZATION

During the year ended June 30, 1962, a record 173 million persons entered the United States, including repeated entries across the Canadian and Mexican borders. Of these repeated entries, 70 million were made by citizens and 95 million by aliens. Another 2½ million of the entrants were crewmen, and the remainder consisted mainly of passengers arriving at United States ports aboard 68,828 vessels and 179,648 airplanes.

Immigration.—Aliens admitted for permanent residence during the fiscal year 1962 numbered 283,763, an increase of 5% over the previous year. This increase was caused mainly by a further 17% increase in the number of Western Hemisphere immigrants, which was partially offset by a 7% decline in the number of immigrants coming from Europe. By far the largest number of immigrants arrived from Mexico, where 55,291, or more than 19%, of all the immigrants were born. A total of 119,692 were born in Europe, including 24,088 in Germany, 21,189 in the United Kingdom, and 21,442 in Italy. Of the 22,105 immigrants born in Asia, 3,897 were from Japan, 3,437 from the Philippines, and 4,017 from China.

Special legislation permitted the admission of 24,098 aliens during fiscal 1962 as nonquota immigrants. Of these aliens, 1,809 were admitted under the Act of Sept. 11, 1957, including 1,316

orphans, 289 beneficiaries of preference quota visas, and 204 refugee-escapees. There were in addition 17,400 aliens admitted under the Acts of Sept. 22, 1959, and Sept. 26, 1961, which provided that certain close relatives of citizens and alien residents of the United States should be admitted as nonquota immigrants.

Quota immigrants during the fiscal year 1962 numbered 90,319, 6% less than the previous year's figure, reflecting a decrease in the number of quota immigrants from the United Kingdom, Germany, Poland, and Ireland. (See Table 1.)

Table 1—IMMIGRANT ALIENS ADMITTED TO THE U.S. IN THE YEAR ENDED JUNE 30, 1962

Country or region of birth	Total admitted	Quota immigrants	Nonquota immigrants
All countries	283,763	90,319	193,444
Europe	119,692	82,618	37,074
Austria	1,633	1,289	344
Czechoslovakia	1,691	1,470	221
France	3,732	2,541	1,191
Germany	24,088	21,727	2,361
Greece	4,702	450	4,252
Ireland	5,486	5,415	71
Italy	21,442	5,602	15,840
Netherlands	4,317	2,848	1,469
Norway	1,983	1,901	82
Poland	8,098	6,094	2,004
Portugal	3,730	430	3,300
Sweden	1,696	1,657	39
United Kingdom	21,189	20,647	542
USSR	2,277	1,927	350
Yugoslavia	1,857	985	872
Other Europe	11,771	7,635	4,136
North America	121,226	1,911	119,315
Canada	30,377	4	30,373
Mexico	55,291	4	55,287
West Indies	26,472	1,626	24,846
Central America	8,405	96	8,309
Other North America	681	181	500
South America	17,592	185	17,407
Asia	22,105	3,502	18,603
Africa	1,931	1,329	602
Australia and New Zealand	808	488	320
Other countries	409	286	123

(Source: U.S. Immigration and Naturalization Service.)

The quota system, based on national origin, provides preference categories for aliens with specialized experience or exceptional ability, and for specified close relatives of citizens and resident aliens. Under this provision, 3,313 highly skilled aliens, accompanied by 3,721 spouses and children, were admitted in 1962 in the first preference category. This group included 361 engineers, 347 professors and teachers, 146 physicians, 246 nurses, 69 chemists, and 72 other scientific personnel.

In the other preference categories, 11,729 relatives of citizens and resident aliens were admitted during the fiscal year 1962, a decrease of 21% from the previous year.

A total of 193,444 nonquota immigrants were admitted, 10% more than in the previous fiscal year. This figure included 30,316 spouses and children of United States citizens, 133,505 natives of the Western Hemisphere (chiefly Canada and Mexico) with their spouses and children, and the 24,098 other nonquota immigrants admitted under special legislation.

The Act of July 14, 1960, authorized the attorney general to parole into the United States alien refugee-escapees who may be granted permanent resident status two years after their entry. This law, scheduled to expire on June 30, 1962, was extended indefinitely by the Migration and Refugee Assistance Act of June 28, 1962. During the fiscal year 1962, 5,132 such refugees were found qualified for parole.

Anti-Castro Cubans continued to seek refuge in the United States in large numbers. At the end of the fiscal years 1962 there were approximately 125,000 Cubans in the United States in temporary status. (See also REFUGEES AND DISPLACED PERSONS.)

Nonimmigrants.—During the fiscal year 1962, 1,331,383 nonimmigrant aliens were admitted for temporary periods, exclusive of Mexican agricultural laborers, border crossers, and alien crewmen, a 9% increase over the previous year. Tourists, or visitors for pleasure, numbered 810,779, 68,000 more than in the previous year. One fourth of the visitors came from Europe, most of them from the United Kingdom, Germany, France, Italy, the Netherlands, and Switzerland. In addition, 117,242 persons visited the United States for business reasons. The admission of 41,202 students and 26,977 exchange aliens exceeded the 1961 total by 17% and 11%, respectively. Other nonimmigrants included 45,891 official representatives of foreign countries, 110,276 alien travelers who passed in transit through the United States, and 37,067 temporary workers and industrial trainees. In addition, 1,762,356 alien crewmen were granted shore leave, and 282,556 Mexican agricultural workers were admitted.

Apprehension and Expulsion of Aliens.—During the fiscal year 1962, 92,758 deportable aliens were located and apprehended, 4% more than in the previous year. Many of these aliens were lawfully admitted to the United States and became deportable after entry, while 16,570 entered illegally. A total of 7,637 aliens were deported from the United States, and 54,164 aliens were required to depart without formal deportation proceedings.

Naturalizations.—A total of 127,307 aliens were admitted to United States citizenship during the fiscal year 1962, 4% less than in the previous year. Of this number, 98,739 persons were naturalized under the general provisions of the law. Under special provisions, more than 17,000 persons gained citizenship as the spouses of citizens, and almost 9,000 as children of citizens. More than half of the children naturalized came from the same four countries as in 1961—Germany, Greece, Italy, and Korea—where most of the orphan adoptions by United States citizens took place.

Table 2 shows the principal countries of former allegiance of persons naturalized during the years ended June 30, 1958 to 1962.

The number of certificates of derivative citizenship issued increased by 2% to 31,589 during the fiscal year 1962. Of this total, 14,057 were issued to persons born abroad who acquired citizenship at birth through their citizen parents. The remaining 17,532 certificates were issued to persons who were aliens at birth and derived

Table 2—PRINCIPAL COUNTRIES OF FORMER ALLEGIANCE OF PERSONS NATURALIZED IN THE UNITED STATES

(Years ended June 30, 1958 to 1962)

Country or region of former allegiance	1958	1959	1960	1961	1962
All countries	119,866	103,931	119,442	132,450	127,307
Europe	91,595	74,613	85,116	93,122	88,302
Austria	1,868	1,510	1,602	1,660	1,474
Czechoslovakia	2,271	1,474	1,522	1,499	1,127
France	2,130	1,920	1,979	1,854	1,737
Germany	20,486	18,442	19,003	18,738	18,568
Greece	3,370	2,457	3,413	6,140	6,092
Hungary	2,541	1,444	1,437	1,546	5,682
Ireland	3,259	3,163	3,673	3,754	3,507
Italy	8,462	8,079	14,560	18,365	17,449
Latvia	2,511	1,634	1,562	1,485	1,055
Netherlands	2,000	2,078	2,134	2,134	3,260
Poland	11,038	7,603	8,021	8,605	5,362
United Kingdom	12,428	10,990	11,303	10,544	9,696
USSR	4,582	3,205	3,372	3,850	2,306
Yugoslavia	4,154	2,121	2,211	2,810	2,628
Other Europe	10,495	8,493	9,324	10,138	8,359
Asia	7,496	8,313	11,071	12,308	14,573
China and Taiwan	1,542	1,395	1,968	2,683	4,109
Japan	2,736	3,094	4,189	3,790	3,563
Philippines	1,431	1,506	2,085	2,329	2,438
Other Asia	1,787	2,318	2,829	3,506	4,463
North America	17,757	18,035	19,503	22,820	20,378
Canada	10,211	10,324	10,215	10,033	9,272
Mexico	5,042	5,147	5,913	8,405	7,205
Cuba	1,323	1,319	1,928	2,774	2,211
Other North America	1,181	1,245	1,447	1,608	1,690
South America	917	1,093	1,318	1,391	1,427
Other countries	2,101	1,877	2,434	2,809	2,627

(Source: U.S. Immigration and Naturalization Service.)

citizenship through the naturalization of their parents or through marriage to a United States citizen.

RAYMOND F. FARRELL,
Commissioner of Immigration and Naturalization, U.S. Department of Justice.

IMMUNIZATION. See Index entry, *Vaccines.*

IMPORTS. See INTERNATIONAL TRADE and the *Foreign Trade* section of articles on countries.

INCOME

National economic activity in the United States was higher in 1962 than in the previous year. As shown in Table 1, gross national product[1] for the first three quarters of 1962 was at a record annual rate (seasonally adjusted) of $551 billion, 6% above the calendar-year 1961 total of $519 billion. (The annual rate data represent the average of estimates for the first three quarters which have been adjusted for seasonal influences and multiplied by four to facilitate comparisons with previous annual totals.) The bulk of the rise in gross national product (GNP) from 1961 to the first three quarters of 1962 represented a further expansion in the volume of production; only a minor part of the rise in GNP was accounted for by higher prices.

Table 1—GROSS NATIONAL PRODUCT OR EXPENDITURE, 1959–62
(Billions of dollars)[1]

Item	1959	1960	1961	1962[2]
Gross national product	482.7	503.4	518.7	550.8
Personal consumption expenditures	313.5	328.5	338.1	354.4
Durable goods	43.6	44.8	43.7	46.9
Nondurable goods	147.1	151.8	155.2	161.4
Services	122.8	131.9	139.1	146.2
Gross private domestic investment	72.7	72.4	69.3	76.5
New construction	40.2	40.7	41.6	44.1
Residential nonfarm	22.3	21.1	21.0	22.9
Other	17.9	19.7	20.5	21.2
Producers' durable equipment	25.9	27.6	25.5	28.6
Change in business inventories	6.6	4.1	2.1	3.9
Net exports of goods and services	−0.3	2.9	4.0	3.3
Government purchases of goods and services	97.2	99.7	107.4	116.5
Federal	53.6	53.2	57.0	62.2
State and local	43.6	46.5	50.4	54.3

[1] Detail will not necessarily add to totals because of rounding.
[2] Data cover first three quarters and represent averages of seasonally adjusted quarterly totals expressed at annual rates. (Source: U.S. Department of Commerce.)

Table 2—NATIONAL INCOME BY DISTRIBUTIVE SHARES, 1959–62
(Billions of dollars)[1]

Item	1959	1960	1961	1962[2]
National income	400.5	415.5	427.8	455.0
Compensation of employees	278.5	293.7	302.2	320.2
Wages and salaries	258.5	271.3	278.8	294.6
Private	213.1	222.9	227.0	238.8
Government	45.3	48.4	51.8	55.7
Supplements to wages and salaries	20.1	22.4	23.4	25.6
Income of unincorporated enterprises and inventory valuation adjustment	46.5	46.2	47.8	49.5
Business and professional	35.1	34.2	34.8	36.7
Farm	11.4	12.0	13.1	12.8
Rental income of persons	11.9	11.9	12.3	12.8
Corporate profits and inventory valuation adjustment	47.2	45.6	45.5	50.6
Corporate profits before tax	47.7	45.4	45.6	50.6
Corporate profits tax liability	23.2	22.4	22.3	24.7
Corporate profits after tax	24.5	23.0	23.3	25.9
Inventory valuation adjustment	−0.5	0.2	−.0	.0
Net interest	16.4	18.0	20.0	22.0

[1] Detail will not necessarily add to totals because of rounding.
[2] Data cover first three quarters and represent averages of seasonally adjusted quarterly totals expressed at annual rates. (Source: U.S. Department of Commerce, except 1962.)

[1] *Gross national product or expenditure* measures the market value of the output of goods and services produced by the nation's economy, before deduction of depreciation charges and other allowances for durable capital goods used up in the productive process. Other business products used by business in the accounting period are excluded.

National income[2] in the first three quarters of 1962 amounted to an annual rate of $455 billion, compared with $428 billion in 1961 (see Table 2). Personal income[3] in the 1962 period was at an annual rate of $438 billion, and disposable income—personal income less personal taxes—amounted to $380 billion (see Table 3). Each of these comprehensive measures of the flow of income to individuals was at an annual rate in the first nine months of 1962 approximately 5% above the total for calendar year 1961.

Table 3—PERSONAL INCOME AND DISPOSITION OF INCOME, 1959–62
(Billions of dollars)[1]

Item	1959	1960	1961	1962[2]
Personal income	383.9	400.8	416.4	438.0
Wage and salary disbursements	258.5	271.3	278.8	294.5
Other labor income	10.4	11.0	11.4	12.2
Proprietors' and rental income	58.4	58.1	60.1	62.2
Dividends	13.7	14.4	15.0	15.8
Personal interest income	23.5	25.8	27.4	29.4
Transfer payments	27.5	29.4	33.4	34.2
Less: Personal contributions for social insurance	7.9	9.2	9.7	10.4
Less: Personal tax and nontax payments	46.8	51.4	52.8	57.5
Federal	40.4	44.0	45.0	49.0
State and local	6.4	7.2	7.8	8.5
Equals: Disposable personal income	337.1	349.4	363.6	380.5
Less: Personal consumption expenditures	313.5	328.5	338.1	354.4
Equals: Personal saving	23.6	20.9	25.6	26.1

[1] Detail will not necessarily add to totals because of rounding.
[2] Data cover first three quarters and represent averages of seasonally adjusted quarterly totals expressed at annual rates. (Source: U.S. Department of Commerce.)

Changes in National Output.—Gross national product advanced to an appreciably higher level in early 1960 but did not show much change during the summer. Declines occurred during the last two quarters of 1960 and the first quarter of 1961. The movement of economic activity was then reversed, and GNP rose from a low of $501 billion (annual rate) in the first quarter of 1961 to $539 billion in the final quarter. The pace of advance moderated in 1962, but further increases carried GNP to an annual rate of $555 billion in the third quarter. In the special budget review issued in November 1962 by the Bureau of the Budget, it was assumed for purposes of federal revenue estimation that gross national product would continue to rise in the final quarter of 1962 and would amount to $554 billion for the year as a whole. This was about $13 billion below the projection for 1962 which had been made by the administration early in the year.

Measured in physical volume, gross national product in the third quarter of 1962 was 6½% above the prerecession high in the second quarter of 1960; it was 9% above the recession trough in the first quarter of 1961 and 2% higher than in the fourth quarter of 1961. The Federal Reserve Board index of industrial production (covering manufacturing, mining, and utilities) increased 13% from its January–February 1961 trough to the following December, and then showed a further

[2] *National income* is the sum of the net earnings of labor and property which arise from the current production of goods and services by the nation's economy. It measures, therefore, the total factor cost of the goods and services produced by the economy. Earnings are measured in the forms in which they accrue to residents of the nation, before deduction of taxes on those earnings.

[3] *Personal income* is the current income received by persons from all sources, including transfers from government and business but excluding transfers among persons. It differs from national income by the inclusion of transfers (such as relief, veterans' pensions, and unemployment compensation) which are not in return for current productive services, and by the exclusion of earnings (social insurance contributions and undistributed corporate income) which are not actually received by persons in the current period.

advance of 3½% from December 1961 to October 1962.

Whether measured in the aggregate or for the industrial sector alone, production in the United States in the summer and autumn of 1962 was at a record level, substantially higher than at the low point of the recession in early 1961. However, the magnitude of the production gain was attributable primarily to the sharpness of the economy's advance during 1961. The further advance which occurred in the first nine or ten months of 1962 was relatively modest, and tended to level out. It was not sufficient to permit marked progress toward reasonably full utilization of resources. In October, seasonally adjusted unemployment represented 5½% of the labor force—about the same as in the early months of the year—and there was considerable excess capacity in most lines of industry. (See also INDUSTRIAL PRODUCTION; LABOR.)

Table 4—PERSONAL INCOME BY STATES AND REGIONS, 1960 AND 1961[1]

State and region	Total personal income (in millions of dollars) 1960	1961	Per capita income (in dollars) 1961	Percent of national per capita income 1961
Continental United States	396,485	411,847	2,263	100
New England	25,877	27,018	2,520	111
Maine	1,820	1,828	1,843	81
New Hampshire	1,266	1,323	2,130	94
Vermont	732	750	1,899	84
Massachusetts	12,936	13,598	2,598	115
Rhode Island	1,873	1,951	2,250	99
Connecticut	7,250	7,568	2,895	128
Mideast	99,542	103,022	2,631	116
New York	46,784	48,504	2,848	126
New Jersey	16,171	16,948	2,714	120
Pennsylvania	25,506	25,933	2,261	100
Delaware	1,345	1,380	3,013	133
Maryland	7,444	7,880	2,472	109
District of Columbia	2,292	2,377	3,124	138
Great Lakes	86,130	87,728	2,383	105
Michigan	18,151	18,054	2,270	100
Ohio	22,697	23,013	2,330	103
Indiana	10,199	10,426	2,213	98
Illinois	26,535	27,410	2,672	118
Wisconsin	8,548	8,825	2,194	97
Plains	32,029	33,318	2,138	94
Minnesota	7,079	7,458	2,149	95
Iowa	5,568	5,902	2,124	94
Missouri	9,510	9,869	2,254	100
North Dakota	1,106	1,000	1,562	69
South Dakota	1,264	1,294	1,875	83
Nebraska	3,022	3,102	2,168	96
Kansas	4,480	4,693	2,139	95
Southeast	62,196	65,178	1,652	73
Virginia	7,371	7,743	1,908	84
West Virginia	3,095	3,126	1,690	75
Kentucky	4,668	4,998	1,625	72
Tennessee	5,488	5,803	1,605	71
North Carolina	7,130	7,576	1,642	73
South Carolina	3,297	3,450	1,433	63
Georgia	6,357	6,573	1,649	73
Florida	9,830	10,263	1,965	87
Alabama	4,782	4,926	1,492	66
Mississippi	2,548	2,722	1,229	54
Louisiana	5,240	5,400	1,626	72
Arkansas	2,390	2,598	1,446	64
Southwest	27,156	28,622	1,971	87
Oklahoma	4,296	4,457	1,889	83
Texas	18,461	19,503	1,993	88
New Mexico	1,731	1,777	1,808	80
Arizona	2,668	2,885	2,074	92
Rocky Mountain	9,064	9,477	2,153	95
Montana	1,362	1,339	1,963	87
Idaho	1,182	1,236	1,807	80
Wyoming	762	768	2,272	100
Colorado	4,037	4,312	2,421	107
Utah	1,721	1,822	1,989	88
Far West	54,491	57,484	2,687	119
Washington	6,593	6,911	2,381	105
Oregon	3,962	4,089	2,273	100
Nevada	814	898	3,003	133
California	43,122	45,586	2,780	123
Alaska	631	630	2,692	119
Hawaii	1,445	1,545	2,407	106

[1] The estimates of "state personal income" shown in this table differ in definition in one respect from the personal income data in Table 3. This pertains to the exclusion from the state estimates of income disbursed by the federal government to its civilian and military personnel stationed outside the continental United States. (Source: U. S. Department of Commerce.)

Patterns of Demand.—The upward course of national output in 1961 and 1962 stemmed in large part from an advance in personal consumption expenditures, supported by a rising flow of personal income. Purchases of goods and services by federal, state, and local governments increased considerably (see Table 1). In the investment area, the value of residential construction in the first three quarters of 1962 was at an annual rate 9% higher than in 1961. Over the same period, there were increases of 3½% in nonresidential construction and 12% in producers' purchases of durable equipment. Most of the rise in the level of durable equipment purchases took place by the end of the calendar year 1961.

The principal explanation of why the gross national product for 1962 fell substantially short of the administration's projection was to be found in the behavior of business investment in construction and equipment. Whereas such investment had been expected to rise markedly throughout the year and to exceed its 1961 dollar value by about 15%, it was evident that the actual increase would be little more than half that large. (See also BUSINESS DATA, U.S.)

National Income.—Among the major industrial divisions of the economy, the main impact of the business recession and ensuing recovery in the 1960–62 period was on manufacturing, especially the durable goods industries. Income originating in most other broad industrial groups increased moderately in both 1961 and 1962.

As may be seen from Table 2, the principal fluctuations from 1959 to 1962 in the distributive shares of national income were registered by corporate profits. On a before-tax basis, this typically volatile income flow advanced rapidly from a recession low of $40 billion (annual rate) in the first quarter of 1961 to about $51.5 billion in the fourth quarter of 1961, and then dipped slightly in the first two quarters of 1962. For the year as a whole, corporate profits before tax were estimated by the Bureau of the Budget, in the November 1962 budget review, at $50.7 billion, compared with $45.6 billion in 1961. (See also BUSINESS DATA, U.S.)

Personal Income by States.—The dollar flow of income to individuals was at a record high in nearly all states in 1961, the latest year for which official estimates were available in 1962. For the country as a whole, personal income in 1961 was 4% larger than in 1960. Relative increases were fairly uniform among the regions (see Table 4). Income expansion differed markedly from the nationwide rate only in the Great Lakes states, where the decline of durable goods production during the 1960–61 recession had a particularly heavy impact.

Per capita personal income (total income divided by total population) rose 2% from 1960 to 1961, reaching $2,263. Differences among the states and regions in average-income levels are recorded in the table.

(See also STANDARDS OF LIVING.)

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INCOME TAX. See TAXATION.

INDIA

Set off from the rest of Asia by the Himalaya, the world's highest mountain system, India extends for about 2,000 miles from the Tibetan border to Cape Comorin on the Indian Ocean. It has an area of 1,264,012 square miles, coastlines aggregating 3,535 miles, and a land frontier of 9,425 miles. The seventh largest country in the world, India is second only to Communist China in population. Final results of the 1961 census (announced by the census commissioner on Sept. 10, 1962) included the North-East Frontier Agency, Nagaland, and, for the first time, the former French and Portuguese territories.[1] An all-

[1] Transfer of the former French settlements of Pondicherry, Karikal, Yanaon, and Mahé was formally completed on Aug. 16, 1962. The Portuguese enclaves of Dadra

India population of 439,235,082 (males, 226,293,620; females, 212,941,462) was recorded exclusive of the Pakistan-held area of Jammu and Kashmir (see KASHMIR).

Politically, India is a union of former native states; it became a sovereign democratic republic on Jan. 26, 1950, while remaining a member of the Commonwealth of Nations. With the partition of Bombay in 1960 to form Maharashtra and Gujarat and the incorporation of the Portuguese enclaves in 1961–62, India consisted of 15 states, 9 centrally administered territories, and the protected state of Sikkim. A 16th state, Nagaland, is in process of formation (see below, *Government*).

Components of the Indian Union, with provisional 1961 census totals, are shown in the accompanying table.

REPUBLIC OF INDIA

Component	Area (sq.mi.)[1]	Population (1961)[2]	Capital
States			
Andhra Pradesh	106,052	35,977,999	Hyderabad
Assam[3]	84,899[4]	11,860,059[5]	Shillong
Bihar	67,189	46,457,042	Patna
Gujarat	72,138	20,621,283	Ahmadabad[6]
Jammu and Kashmir[7]	86,024	3,583,585	Srinagar
Kerala	15,003	16,875,199	Trivandrum
Madhya Pradesh	171,210	32,394,375	Bhopal
Madras	50,132	33,650,917	Madras
Maharashtra	118,530	39,504,294	Bombay
Mysore	74,122	23,547,081	Bangalore
Orissa	60,162	17,565,645	Bhubaneswar
Punjab	47,084	20,298,151	Chandigarh
Rajasthan	132,150	20,146,173	Jaipur
Uttar Pradesh	113,452	73,752,914	Lucknow
West Bengal	33,928	34,967,634	Calcutta
Territories			
Andaman and Nicobar Islands	3,215	63,438	Port Blair
Dadra and Nagar Haveli	160	57,932[8]	
Delhi	573	2,644,058[9]	Delhi
Goa, Daman, and Diu	1,505	625,831[10]	Goa
Himachal Pradesh	10,879	1,348,982	Simla
Laccadive, Minicoy, and Amindivi Islands	11	24,108	
Manipur	8,628	778,318	Imphal
Pondicherry[11]	186	369,083	Pondicherry
Tripura	4,036	1,141,492	Agartala
Protected State			
Sikkim	2,744	161,080	Gangtok
Total	1,264,012	438,416,673	

[1] Revised in January 1961 pending final surveys of boundaries by the Survey of India. [2] Provisional. [3] Including North-East Frontier Agency. [4] Including Part B tribal areas (32,289 square miles) and Naga Hills-Tuensang area (6,236 square miles). [5] Excluding North-East Frontier Agency and Nagaland. [6] Temporary. [7] Status in dispute with Pakistan; area for entire state, population for Indian-held area. [8] 1962. [9] Aggregate of Old and New Delhi. [10] 1960. [11] Including Pondicherry, Karikal, Yanaon, and Mahé.

The census disclosed that the urban population (61,870,000 in 1951) had risen to 77,840,000 in the intercensal period. Six cities had populations exceeding 1,000,000: Calcutta, 2,926,498 (including the metropolitan area, 5,550,195); Bombay, 4,146,491; Delhi (old and new cities), 2,644,058; Madras, 1,725,216; Hyderabad, 1,252,337; and Ahmadabad, 1,149,852, while 103 cities (exclusive of those in Kerala) had populations exceeding 100,000. Taking into account Pakastani infiltration into Assam, West Bengal, and Tripura, the Central Statistical Organization has projected the population at 492,000,000 in 1966, 555,000,000 in 1971, and 625,000,000 in 1976, for an increase of more than 42% in 15 years. Family planning clinics increased from 1,649 in 1961 to almost 4,000 in 1962, of which 3,000 were in villages.

Government.—The Union Parliament consists of a Council of States (Rajya Sabha) and a House of the People (Lok Sabha), numbering 236 and 507 members, respectively, in 1962, while each state has an appointed governor and its own popularly elected legislature. Dr. Sarvepalli Radhakrishnan, vice president of India since 1952, was elected president for a 5-year term by a 3,920-member electoral college on May 11, 1962, succeeding Dr. Rajendra Prasad, who had held that office since 1950. Meanwhile, on May 7, Dr. Zakir Hussain, governor of Bihar, was elected vice president for a 5-year term by the same body.

In 1962 the Indian electorate numbered 216,047,643, of whom 53.7% voted in elections held on February 16–25 (during April in Himachal Pradesh and in snowbound constituencies of the Punjab), returning 494 directly elected members to the House of the People. Recording 51,247,168 votes (45.06%) in 489 contests, the Congress Party won

and Nagar Aveli (renamed Nagar Haveli), as of Aug. 11, 1961, and those of Goa, Damão (renamed Daman), and Diu, by vote of Parliament on March 20, 1962, have become Indian Union territories.

(*Above*) Defense Minister Krishna Menon (left) arrives in Ladakh in October to inspect front-line troops battling Communist Chinese invasion. (*Right*) Indian soldier digs trench at Ladakh front during mid-November lull in the fighting.

UPI

(*Above*) Y. B. Chavan (l.), who replaced Krishna Menon as defense minister in November, greets Prime Minister Nehru in Bombay, November 22. (*Right*) Mrs. Jacqueline Kennedy bids goodbye to Nehru in New Delhi, March 15, during her tour of country. (*Below*) Nehru addresses campaign meeting in Delhi before February election.

UPI; AUTHENTICATED NEWS INTERNATIONAL; LONDON DAILY EXPRESS

356 seats, adding 5 more in the delayed elections for a total of 361 (10 less than at the 1957 elections), and also secured an absolute majority in 10 state assemblies. The Communist Party, with 11,377,765 votes (a gain of 623,690), did not increase its representation of 29 seats. On April 9, Jawaharlal Nehru, leader of the Congress Party, formed a new administration (sworn in on April 10), consisting of a 17-member cabinet, which he heads as prime minister, and 6 ministers of state.

Legislation was enacted by Parliament on August 29 (approved September 3), providing for the formation of Nagaland as a separate state. Consisting of three districts (Kohima, Mokochung, and Tuensang), the new state was to have 1 representative in each house of Parliament. Meanwhile, the campaign led by Angami Zapu Phizo for Naga independence continued with an effort to present a case before the United Nations.

Defense.—Urged by Prime Minister Nehru to repel the encroachments of Chinese Communist forces, the principal elements of India's small regular army were deployed on the northern border in 1962. Outposts in Ladakh were doubled, while in the eastern sector a new Frontier Corps under Lt. Gen. B. M. Kaul was charged with the defense of the northeastern border and was ordered also to protect Sikkim and Bhutan. Increasing numbers of Indian and Chinese troops were engaged in heavy sporadic fighting, which on October 20 developed into a full-scale Chinese attack (see below, *The Year 1962 in India*).

Education and Religion.—Recognized institutions (1959): preprimary schools, 1,164; primary, 229,220;

AMERICANA MAP BY DONALD T. PITCHER

INDIA—BORDER DISPUTE WITH CHINA

Fighting between India and Communist China (October 20 to November 21) was in the North East Frontier Agency in the east and the Ladakh District in the west (arrows on map).

secondary, 53,302; vocational and technical, 3,410; special education, 51,300. Other facilities (1959): professional, arts and science, and other colleges, 1,553; universities (1960), 43. Students, all categories (1960 est.): 43,500,000.

Principal religious groups (percentages, 1961 census): Hindus, 84.99; Muslims, 9.93; Christians, 2.30; Sikhs, 1.74; others, 1.04.

Finance.—Revised estimates showed revenue of Rs.10,791.1 million (1 rupee equals U.S.$0.21) in 1961–62, expenditures of Rs.10,451.5 million, receipts on the capital account of Rs.8,507 million, and capital disbursements of Rs.9,145.2 million. Revenue in 1962–63 was estimated at Rs.13,208.7 million and expenditure at Rs.13,816.5 million, the resulting deficit to be met by new taxes and by excise duties yielding an estimated Rs.717 million. Capital account estimates for 1962–63 forecast receipts of Rs.15,060.4 million and disbursements of Rs.14,490 million. In March 1962, the public debt totaled Rs.74,020 million.

The total outlay for the Third Five-Year Plan (1961–66) is estimated at $24,360 million, including $5,460 million in foreign aid. Revised commitments by an international consortium total $2,365 million for the first two years of the plan, the United States contribution (by far the largest) being $545 million for 1961–62. For 1962–63 the United States again matched the contributions of seven European countries, Canada, and Japan, aggregating $435 million. With $200 million promised by the World Bank and the International Development Association, commitments by the consortium totaled $1,070 million, as compared with $1,305 million for 1961–62.

India's gold and foreign exchange holdings declined from $665 million on Dec. 31, 1961, to $505 million on Aug. 31, 1962.

Transportation and Communications.—Aircraft of the Civil Aviation Department, using 85 airports, flew 30,900,000 miles on international and domestic flights in 1960, carrying about 921,000 passengers and 168,500,000 pounds of mail and freight. Passengers on state railways, 1959–60: 1,534,030,000; freight carried, 145,479,000 tons. National highway mileage, 1961: 14,881; other surfaced roads, 144,000; unsurfaced roads, 274,000. Motor vehicles, March 31, 1960: 579,024 (private cars, 231,048). Telephones, 1961: 470,559; radio licenses, 2,341,643.

Economic Indicators.—National income: Rs.142.0 billion in 1960–61 (Rs.129.4 billion in 1959–60). Index of agricultural production in 1960–61 (1952–53 = 100): 139.1; general index of industrial production (1958 = 100) in 1961, 129 (122 in 1960). Cost-of-living index (1949 = 100): 129 in July 1962 (126 in July 1961). Per capita income (1950–51 = 100), based on the 1961 census at current prices: Rs.327.8 (Rs.302 in 1959–60).

Manufactures and Minerals.—Chief industrial products (metric tons, 1961): crude steel, 4,104,000 (up 816,000 from 1960); finished steel, 2,811,600 (up 772,800); jute manufactures, 970,800 (down 114,000); cement, 8,244,000 (up 408,000); sugar, 2,841,000 (up 250,800); and wheat flour, 1,090,800 (up 172,800). Textile products (meters, 1961): cotton cloth, 4,701,600,000 (up 81,600,000); woolen cloth, 13,224,000 (down 756,000). Chief mineral products (metric tons, 1961): coal, 56,064,000 (up 3,468,000); iron ore, 12,132,000 (up 1,536,000); copper ore, 423,264 (down 24,600); crude petroleum, 523,200 (up 78,000); magnesite ore, 209,748 (up 53,424); and gold (kilograms), 4,872 (down 120). Electricity generated (1961): 19,104 million kw.-hr. (up 2,676 million from 1960). Motor vehicles (1961): 54,312 (up 2,652 from 1960); sewing machines, 317,112 (up 21,324).

Agriculture.—Agriculture accounted for 48.1% of national income in 1960–61. Net area sown, 1960–61: 327,000,000 acres. Production of food grains (crop year ended June 30, 1962): 80.5 million tons (about the same as in 1960–61). Yields of other principal crops (in thousands of metric tons), calendar year 1961: pulses, 12,689 (up 1,049 from 1960); oilseeds, 9,034 (up 789); tobacco, 299 (up 13); tea, 326 (up 10); and peanuts, 5,100 (up 676). Other agricultural produce, 1961: cotton, 5,400,000 bales (392 pounds each); jute, 5,000,000 bales (400 pounds each); and milk, 22,000,000 metric tons (21,000,000 in 1960).

Foreign Trade.—In the fiscal year 1961–62 export income rose to Rs.6,651.8 million (Rs.6,422.9 million in 1960–61); imports totaled Rs.10,015 million (Rs.11,069 million in 1960–61), the adverse balance of trade (Rs.4,646.1 million in 1960–61) declining to Rs.3,363.2 million. Exports (1961–62) included (in millions) fabrics, Rs.2,285; food, Rs.2,150.6; and beverages, Rs.1,182.4; imports included machinery and transport equipment, Rs.3,517.2; manufactured goods, Rs.2,095.5; raw materials, Rs.1,340.9; and food, Rs.1,191.4.

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THE YEAR 1962 IN INDIA

On Oct. 20, 1962, Communist Chinese forces attacked Indian territory in strength south of the McMahon Line frontier between Assam and Tibet; on October 22, Prime Minister Jawaharlal Nehru confessed that India had been living in "an artificial atmosphere of our own creation"; and on October 29, the Indian government requested military assistance from the United States. These events completely overshadowed all other developments of the year.

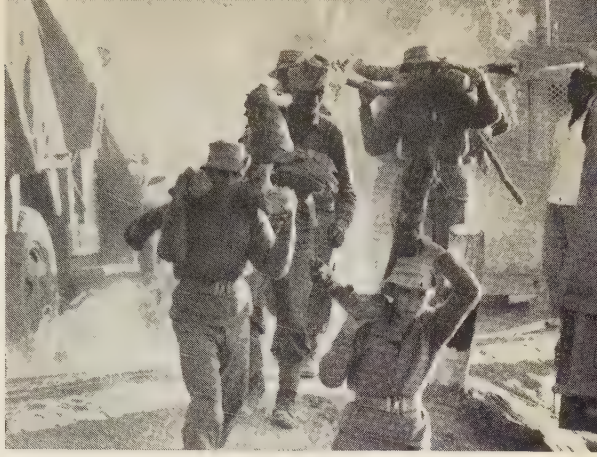
The outbreak of an undeclared war on the Sino-Indian border was the culmination of a dis-

pute between the two countries dating from the Chinese occupation of Tibet in 1950–51. The Chinese refusal to accept the Indian version of the Himalayan border either in Assam or in the Ladakh region of Jammu and Kashmir led to clashes between military patrols in 1959. Negotiations in 1960–61 to reconcile the opposing views proved fruitless, and during the first half of 1962 Chinese and Indian diplomatic notes traded charges of additional border infringements. At the same time, China completed a process of isolating India from her neighbors by agreeing (as announced on May 3) to negotiate a settlement with Pakistan in respect to the portion of the Kashmir-Sinkiang border under Pakistani control.

Armed clashes in midsummer made it apparent that the Chinese were preparing to assert their claims against India by force, and on September 8, Chinese incursions south of the McMahon Line near the junction of Tibet, Bhutan, and Assam began. In the continuing exchange of notes between the two governments during September and October, the Indian government ruled out negotiations —again proposed by Peking—so long as Chinese troops remained on Indian territory. Then, on October 13, New Delhi—amid increasingly frequent border clashes and ominous reports of Chinese troop movements—ordered the Indian Army to "eject" the Chinese. The Chinese response came on October 20 and succeeding days, with the Indian Army forced to withdraw steadily, giving up the base town of Towang, 17 miles south of the McMahon Line, on October 25, and losing all of the disputed territory in Ladakh. On October 26, a state of emergency was declared by President Sarvepalli Radhakrishnan, vesting almost unlimited powers in Nehru and his cabinet. The strategic village of Walong fell on November 18, and Bomdi La the next day, endangering Tezpur and the Assam plains.

Three days later, on November 21, the Chinese government announced a unilateral cease-fire effective at midnight, and stated that beginning on December 1 its troops would withdraw "20 kilometers behind the line of actual control" as of Nov. 7, 1959. Since the Chinese definition of this line would leave them in control of all the disputed territory in Ladakh, the cease-fire proposals were rejected informally by India on December 1, but the fighting was not then resumed. On December 6, the Indian government announced that it would close its consulates in China on December 15, and that it had demanded that the Chinese consulates in India also be closed. The Chinese government demanded on December 9 that India state clearly whether or not it agreed with the cease-fire proposals, implying that the attacks would be resumed if an acceptable reply was not received. The Chinese terms were rejected by India, as announced by Nehru to Parliament on December 10. In a speech broadcast to the Indian troops later that day, the prime minister warned of the possibility of renewed Chinese aggression.

These developments meanwhile caused a political upheaval within the Congress Party. Indian military reverses evoked a demand for new leadership and especially for the dismissal of Defense Minister V. K. Krishna Menon. Long disliked in Indian political circles, Menon won popular acclaim and notoriety in late 1961 by his direction of India's conquest of Goa and other Portuguese enclaves, and capitalized on this, with Nehru's support, to win election to Parliament in February by a smashing victory over his anti-Communist opponent. The complete failure of his "trust-the-Chinese" defense policy, however, gave his enemies the opportunity to destroy him politically.



WIDE WORLD

Indian troops build a road used for supplying the northeastern front during the fighting with China in November.

Reluctantly yielding to pressure, the prime minister on October 31 changed Menon's title to minister of defense production and assumed the defense portfolio himself, but this device did not satisfy the critics. On November 7, at a meeting of the Congress Parliamentary Party, Nehru was forced to accept Menon's resignation. Soon afterward, on November 14, Y. B. Chavan, the vigorous chief minister of Maharashtra, was appointed defense minister. The demand for further changes was parried by the formation of a 30-man advisory National Defense Council, including some cabinet members, state chief ministers, and military officers. Its creation was further evidence of the prime minister's reluctance to part company with his old comrades, which he had demonstrated earlier in the year by making practically no cabinet changes after the elections.

In the third Indian general elections, held on February 16–25, the Congress Party once again won a massive though slightly reduced majority in the Lok Sabha, the lower house of Parliament. Including 5 seats filled in April, it received 361 of the 494 elective seats and 45.06% of the popular vote. Opposition parties, especially those of the right, however, showed increasing strength, most markedly in the state legislatures. Only in Maharashtra—where the Congress Party had been nearly destroyed in 1957 for opposing the linguistic division of Bombay state (finally conceded in 1960)—did the party under Chavan's leadership improve its position, winning 215 of 264 seats. Elsewhere the party lost ground, and in Madhya Pradesh and Rajasthan was able to retain power only with the support of independents.

Conferring in New Delhi on November 23 are (from left) U.S. Assistant Secretary of State Harriman, Assistant Secretary of Defense Nitze, U.S. Ambassador Galbraith, and Prime Minister Nehru. Harriman headed an aid mission.

WIDE WORLD

In the Hindi-speaking north, Hindu communal parties made impressive gains: in the Lok Sabha, 14 seats were won by the Jan Sangh, 1 by the Hindu Mahasabha, and 2 by the orthodox Ram Rajya Parishad; in Madhya Pradesh and Uttar Pradesh the Jan Sangh formed the official opposition in the legislatures. In the other Hindi states (Bihar and Rajasthan) and in Gujarat (and in Orissa, where state elections were held in 1961), the conservative Swatantra (Freedom) Party became the official opposition, while in the Lok Sabha it won 22 seats and later added another by a byelection victory over the Congress Party. On the left, the Socialists continued to suffer from their factional divisions: the Praja Socialist Party (PSP) vote secured only 12 seats in Parliament, while the independent Socialists won 6 seats. The combined forces of the two Socialist parties held important blocs in Uttar Pradesh, Madhya Pradesh, and Bihar, but only in Mysore did the PSP become the official opposition. (In October, the PSP withdrew from the Kerala coalition ministry, losing its only toehold in power.)

At the extreme left, the Communist Party (CPI) confirmed its standing as the second party in India, with 10% of the vote and 29 seats in the Lok Sabha. In Andhra and West Bengal the CPI formed the opposition, and it continued in that role in Kerala, where state elections had been held in 1960. These gains were jeopardized by later developments. A power struggle within the party between nationalist (right) and pro-Chinese (left) factions had grown in intensity since the beginning of the border dispute in 1959, and the death in January 1962 of A. K. Ghosh, the right-leaning general secretary, forced a direct confrontation between the extremes in the choice of a successor. A compromise solution was reached on April 29, with the election of nationalist S. A. Dange of Maharashtra to the new office of party chairman, while the more left-leaning E. M. S. Namboodiripad of Kerala was chosen general secretary.

The cracks in the party structure thus papered over were split open again under the impact of the Chinese attack. In a search for unity the National Council of the CPI met in Delhi on October 31 in emergency session, and the following day issued a resolution reflecting right-wing views, denouncing Chinese aggression and abuse of Nehru and pledging full support to the war effort. In doing so, the CPI defied a "directive" published by the Peking *Jenmin Jihpao,* informing Indian Communists that "progressive forces" must resist the pressures of bourgeois nationalism and work to preserve "Sino-Indian friendship" from disruption by imperialists. The nationalist stance of the CPI, however, was not enough to allay public anti-Communist emotions, and it came under increased attack. On November 7, more than 50 members of the CPI's "China lobby" were arrested as potentially disloyal, and on November 21 over 200 other Communists were jailed.

Despite India's conflict with a Communist power and her receipt of sympathy and support from the United States and Great Britain, Nehru sought to preserve his position of nonalignment. To balance Western arms shipments, he received confirmation that before the end of the year the USSR would deliver MIG fighters ordered by India (much to Western dismay) during the summer. Subsequently, however, the Soviet government notified India that the planes would not be shipped as scheduled, although a few planes were promised for December delivery. The overall Soviet attitude seemed in doubt because of conflicting Russian commitments to India and Communist China.

Similar conflicts existed between the American decision to send arms to India and standing United States commitments to Pakistan. The Indians promised to use American arms only against the Chinese, but the Pakistani government felt that so long as the Kashmir dispute remained unsettled any strengthening of India was a threat to the security of Pakistan. This was the situation on November 22, when W. Averell Harriman arrived in Delhi at the head of a United States aid mission. Together with Duncan Sandys, British secretary of state for Commonwealth relations, he induced Nehru and President Mohammed Ayub Khan of Pakistan to agree to enter into negotiations on Kashmir, as announced on November 29. Ministerial talks were held in Rawalpindi, Pakistan, on December 27–29.

(See also FAR EAST.)

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INDIANA

A North Central state of the United States, Indiana ranks 38th among the states in area (land, 36,185 square miles; inland water, 106) and 12th in population (4,715,000 on July 1, 1962, an increase of 1.1% from the 1960 census figure of 4,662,498). Urban places with populations above 15,000 in 1960:

Anderson	49,061	Kokomo	47,197
Bloomington	31,357	La Porte	21,157
Columbus	20,778	Lafayette	42,330
Connersville	17,698	Logansport	21,106
East Chicago	57,669	Marion	37,854
Elkhart	40,274	Michigan City	36,653
Evansville	141,543	Mishawaka	33,361
Fort Wayne	161,776	Muncie	68,603
Frankfort	15,302	New Albany	37,812
Gary	178,320	New Castle	20,349
Hammond	111,698	Richmond	44,149
Highland	16,284	South Bend	132,445
Hobart	18,680	Terre Haute	72,500
Huntington	16,185	Valparaiso	15,227
Indianapolis (*capital*)	476,258	Vincennes	18,046
Jeffersonville	19,522		

Government.—Chief executive and judicial officers in 1962 included Matthew E. Welsh (Democrat), governor, serving a four-year term; Richard O. Ristine, lieutenant governor; Charles O. Hendricks, secretary of state; Robert E. Hughes, treasurer; Mrs. Dorothy Gardner, auditor; Edwin K. Steers, attorney general; William E. Wilson, superintendent of public instruction; and Norman F. Arterburn, chief justice of the 5-man Supreme Court.

The Indiana General Assembly, which convenes in odd-numbered years, comprised 26 Democrats and 24 Republicans in the Senate in 1962 and 66 Republicans and 34 Democrats in the House of Representatives.

Finance.—In the 1962 fiscal year, revenue of $553,544,241 included $420,525,787 from state taxes and $117,470,574 in federal funds. Chief tax yields were from gross income ($204,472,761), motor fuels ($105,382,923), and licensing ($52,332,201). Spending of $566,319,540 included $198,568,685 for education, $92,120,531 for health, welfare, and safety, and $208,541,287 for highways.

Education.—In the 1961–62 school year it was estimated that public elementary schools staffed by 25,490 teachers enrolled 793,600 pupils; secondary schools with 12,410 teachers enrolled 257,200; and parochial schools with 3,637 teachers enrolled 127,626. Enrollment in colleges and universities totaled 105,294.

Estimated public school spending in the 1961–62 school year totaled $439,650,000, including current expenditures of $362,200,000 ($392 per pupil) and capital outlays of $68,000,000. Revenue of $506 million was drawn chiefly from state funds ($145 million) and local districts ($285 million). Teachers' salaries averaged $5,725 (high school, $6,100; elementary, $5,540). Actual spending for higher education (1961 fiscal year) totaled $131,997,000.

Public Assistance.—In the 1962 fiscal year, public assistance payments to a monthly average of 71,135 persons totaled $49,590,839. This amount included $20,810,214 for the aged and $15,503,933 for dependent children.

Transportation and Communications.—A total of 533 miles of highway construction and reconstruction were completed in fiscal 1961; rural and municipal *highways and roads* on Dec. 31, 1960, totaled 102,185 miles (79,741 miles of rural roads surfaced). These served 2,417,807

motor vehicles (as registered in the 1962 fiscal year), including 1,764,521 automobiles. Operating in the state in 1961 were 30 *railroads* (using 8,328 line miles of track); (1962) 7 regularly scheduled *airlines;* and 26 commercial and municipal *airports.*

Communications media included (1962) 65 AM and 26 FM *radio stations;* 6 VHF and 11 UHF *television stations;* (1961) 90 daily *newspapers* (circulation, 1,642,200); and (Jan. 1, 1962) 472,200 business and 1,421,600 residential *telephones.*

Labor Force.—The state's labor force in June 1962 included 153,600 agricultural workers. Nonagricultural employment totaled 1,458,500, compared with 1,416,900 a year earlier and an average of 1,575,600 for 1961. Of nonfarm employees, 36.87% were in manufacturing, 17.28% in trade, and 12.58% in government services. Unemployment in June 1962 was down to 89,500 from the 125,100 reported for the previous June.

Manufacturing.—Manufacturing engaged 590,000 workers in 1961, and provided a payroll of $3,007 million. Estimated value added by manufacture totaled $7,061 million.

LEADING INDIANA MANUFACTURES, 1960

Industry group	Total employees	Total payroll	Adjusted value added by mfr.[1]
		(in thousands)	
Totals	587,970	$3,303,418	$6,259,833
Primary metals	94,385	597,774	1,135,033
Transportation equipment	85,759	549,222	888,407
Electrical machinery	85,916	455,585	836,975
Food and kindred products	49,497	246,397	603,264
Nonelectrical machinery	51,829	303,454	529,240
Chemicals and products	21,711	140,297	501,673
Fabricated metals	42,625	235,359	420,569

[1] For definition, see footnote 1 in the article *Industrial Production.* (Source: *1960 Annual Survey of Manufactures.*)

Mining.—Indiana ranked 22d among the states in the value of its 1961 mineral production, with 1.09% of the national total. A decline in mineral output was attributed to lessened demand for construction materials, as well as for mineral fuels, and to the petroleum output decrease of 6%. No metals were produced in the state.

INDIANA MINERAL PRODUCTION, 1961
(In short tons except as noted)

Mineral	Quantity	Value
Clays	1,362,000	$ 2,446,000
Coal	15,106,000	58,815,000
Coke	7,666,870	133,000,000[1]
Iron, pig	8,865,419	522,733,000[1]
Natural gas (1,000 cubic feet)	382,000	77,000
Peat	57,146	502,000
Petroleum (1,000 bbl.)	11,152[2]	33,233,000[2]
Sand and gravel	19,577,000	16,898,000
Stone	18,001,000	33,062,000
Other minerals	...	55,475,000
Total	...	$197,965,000[1,3]

[1] Values for processed materials are not included in the total. [2] Preliminary. [3] Total adjusted to eliminate duplicating the value of clays and stone. (Source: U.S. Bureau of Mines.)

Agriculture.—Cash farm income for the first nine months of 1962 (excluding government payments) totaled $826,873,000, compared with $829,176,000 for the corresponding period of 1961. For the full year 1961 income comprised $715,373,000 from livestock, $476,617,000 from crops, and $70,174,000 in government payments. Principal income sources in 1961 were hogs, $305,007,000; cattle, $178,899,000; soybeans, $167,907,000; and corn, $162,083,000.

The state's 128,000 farms in 1959 had an acreage of 18,613,000 (11,147,000 in harvested cropland). Livestock on farms on Jan. 1, 1962, included 2,103,000 cattle, 5,092,000 hogs, 503,000 sheep, and 13,856,000 chickens, and (1961) 122,747,000 commercial broilers. An average of 187,000 family and 26,000 hired workers engaged in farming during 1961.

INDIANA CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Apples (1,000 bu.)	1,525	1,350	1,850
Corn for grain (1,000 bu.)	268,859	308,802	352,436
Oats (1,000 bu.)	47,691	26,620	33,275
Soybeans (1,000 bu.)	49,641	75,068	77,308
Tobacco (1,000 lb.)	12,657	14,440	15,200
Tomatoes (1,000 cwt.)	328	352	330
Wheat (1,000 bu.)	36,326	45,150	38,908

(Source: U.S. Department of Agriculture.)

Events, 1962.—Divided political control existed in Indiana throughout 1962. When the year opened the governor (Matthew E. Welsh) was a Democrat, and the lieutenant governor (Richard O. Ristine) a Republican; the Democrats controlled the upper house of the General Assembly, the Republicans the lower house. All other key state administrative officials, except the superintendent of public instruction, were Republicans. Seven congressmen were Republicans, four were Democrats; and each party controlled one of the U.S. Senate seats.

Birch E. Bayh, Jr., of Indiana, won a Senate seat in November by defeating Republican Homer E. Capehart.

WIDE WORLD

The state and congressional elections on November 6 resulted in a major upset with the defeat of Sen. Homer E. Capehart, veteran Republican who had represented Indiana in the U.S. Senate since 1945. Capehart lost to the youthful but politically experienced Democratic nominee, Birch E. Bayh, Jr., by the narrow margin of 904,795 to 895,319. The victory gave Hoosier Democrats both Senate seats and also attracted national attention to Bayh, a Terre Haute attorney and former Indiana House speaker. The Republicans won both houses of the General Assembly, but the postelection death of a Republican senator meant that neither party then had control of the upper house. All incumbent congressmen were reelected. The offices of governor and lieutenant governor were not involved in the voting.

Despite cutbacks in some expenditures, state fiscal affairs remained tight because revenues were less than anticipated. By year's end Democratic and Republican leaders alike were aware that the General Assembly, meeting early in 1963, must raise taxes, cut expenditures, or do both. Less well understood was the fact that Indiana's budget difficulties had resulted in part from several years of sluggishness in overall economic output and in total personal and corporate income, as well as from rising state expenditures. Fortunately, 1962 showed some signs of growth in both output and income. In view of the unfavorable fiscal situation, Republican strength in the 1963 General Assembly loomed as a possible political liability. This was especially true since legislative reapportionment, postponed since 1921, seemed inevitable, and was expected to be hazardous to the party responsible.

Local school reorganization was retarded because of disagreements over the pros and cons of alternative plans, court suits against proposed plans, and hopes that the 1963 legislature might modify basic requirements. The Post-High School Education Study Commission, established by the 1961 legislature, endorsed increased state support for university extension centers but recommended permissive legislation to allow local communities to establish junior colleges. Dr. Herman B. Wells retired as president of Indiana University on June 30, having completed 25 years of service. He was succeeded by Elvis J. Stahr, Jr., who resigned as secretary of the Army to take the post.

In economic matters, bipartisan efforts to obtain federal aid for an Indiana deep-water port on Lake Michigan (at Burns Waterway, near Ogden Dunes) continued amid contradictory reports and signals from the federal government. Plans for a giant steel finishing plant to be constructed just east of the projected port were announced by the Bethlehem Steel Company on December 3. The $250 million facility, to be known as the Burns Harbor plant, will occupy a 3,300-acre site in Porter County. The first section of the plant is due to be completed in 1964, and plans call for the eventual development of a fully integrated iron and steel works at a cost of about $1 billion.

President Kennedy on February 19 signed a bill authorizing up to $1 million in federal funds for Indiana's first national park, the 200-acre Abraham Lincoln Boyhood National Memorial, near Lincoln City.

"Events" by: DONALD F. CARMONY, *Professor of History and Editor of "Indiana Magazine of History," Indiana University.*

INDIANS, American. See Index entry.
INDOCHINA. See CAMBODIA; LAOS; VIETNAM.

INDONESIA

The Republic of Indonesia consists of some 2,000 inhabited islands located along the equator between the Pacific and Indian oceans. It has an area of 577,000 square miles, exclusive of West New Guinea. The principal islands (with area in square miles) are Kalimantan or Borneo (208,000, exclusive of the British Borneo territories), Sumatra (164,000), Sulawesi or Celebes (73,000), and Java (51,000). (For the status of West New Guinea, see below, *Events, 1962.*) Population (1961 census): 97,135,348, including 750,000 (mid-1961 est.) for West New Guinea; principal cities, with 1961 populations: Djakarta, the capital, 2,973,052; Surabaja, 1,007,945; Bandung, 972,556; Semarang, 503,153; Medan, 479,098; Palembang, 474,971; Makasar, 384,159; Surakarta, 367,626; Malang, 341,452; Djogjakarta, 312,698. Indonesian, which is based on Malay, is the official language.

Sukarno was born in the city of Surabaja, Java, in 1902. After receiving a degree from the Technical Institute of Bandung, he became active in the nationalist movement in 1926. During the next 15 years he was jailed three times by the Dutch and was exiled to Sumatra in 1940. In World War II, Sukarno collaborated with the Japanese, and when they capitulated in 1945, he took advantage of the interval period before the return of the Dutch to consolidate Indonesian control. When the war against the Dutch was eventually brought to an end in 1947, through United Nations intervention, Sukarno assumed presidency of the newly created Indonesian state. Immensely popular with the people, Sukarno prescribed for the young republic a system of "guided democracy" in which he as president would exercise unrestricted political power. Internationally, he advocated a policy of neutralism and soon became an influential leader of the Afro-Asian bloc.

Government.—Indonesia proclaimed its independence of the Netherlands on Aug. 17, 1945, and received the transfer of sovereignty from the Netherlands on Dec. 27, 1949. The original 1945 constitution, readopted in July 1959, provides for a strong chief executive with a cabinet responsible to him, a unicameral Parliament, and a Supreme Advisory Council to advise the president. President Sukarno has been chief of state since 1945, and also serves as prime minister, chairman of the Supreme Advisory Council, and supreme commander of the armed forces. Parliament consists of 283 members as appointed by the president in 1960. The Supreme Court is the chief judiciary organ.

Education and Religion.—School enrollment, 1958–59: 8,109,661. Number of schools (with enrollments), 1958–59: 34,124 primary (7,380,734); 3,685 junior secondary (579,247); 968 senior secondary (149,680). In January 1961 there were 65,000 students in 83 institutions of higher learning. Principal religions: Muslim (approximately 90% of the population); Protestant (4%); Roman Catholic (1%); Hindu (1%).

Finance.—Government revenue, 1962 est.: 61,010 million rupiah (66,000 million in 1961); expenditure, 97,996 million (82,650 million), exclusive of expenditure for West New Guinea campaign. At the official rate of exchange, 45 rupiah equal U.S.$1. Gold and foreign exchange of the Bank of Indonesia: U.S.$146 million as of Jan. 31, 1962 (down U.S.$191 million from Dec. 31, 1960).

Transportation and Communications.—Transport networks (miles, 1960): state-owned railways, 4,150; roads, 48,190. Merchant marine tonnage (end of 1961): 210,000. National airline: Garuda Indonesian Airways (air routes, 21,700 miles in 1958; presently serving Malaya, Thailand, Hong Kong, Philippines, and Japan; 161,392,000 passenger-miles in 1960). Passenger cars: 103,300 (1960); commercial vehicles, 92,400 (1960). Telephones: 115,000 (1960); radio receiver licenses, 631,000 (1958).

Economic Indicators.—Gross national product: U.S. $8.03 billion (est.) in 1961 (up 2% at constant prices from 1960). Index of agricultural production (1952–53–1956–57 = 100): 112 in 1960–61 (108 in 1959–60). Cost-of-living index (1958 = 100): 209 in 1961 (169 in 1960).

Manufactures and Minerals.—Chief mineral products (metric tons, 1961): petroleum, 21,288,000 (up 3% from 1960); tin, 18,840 (down 18%). Textiles, paper, cement, and matches are principal manufactures.

Agriculture.—Chief crops (thousands of metric tons, 1961): rice (rough), 13,460 (up 2% from 1960); rubber, 681 (up 7%); sugar, 600 (down 11%); cassava, 11,278 (1959); sweet potatoes, 2,719 (1959); maize, 2,092 (1959).

Foreign Trade.—Total exports, 1961: U.S.$784 million (down 7% from 1960); imports, U.S.$794 million (up 38% from 1960). Principal exports (million U.S. dollars, 1961): rubber, 305 (down 19% from 1960); petroleum, 260 (up 18% from 1960); coconut products, 38 (up 12% from 1960); tin 37 (down 31% from 1960). Principal imports: rice, cotton yarn and fabrics, chemicals, iron and steel products, machinery, and vehicles. Chief customers (with percentage of total Indonesian exports received, 1960): Singapore (23%), United States (22.5%), United Kingdom (11%), Malaya (7%), West Germany (6%); principal suppliers: United States (17% of total provided, 1960), followed in order by Japan, Communist China, Burma, and West Germany.

Events, 1962. *West New Guinea.*—At the end of 1961 the United States was reported to be trying to bring Indonesia and the Netherlands together for discussion of the problem of West New Guinea (also called Netherlands New Guinea, or West Irian). Progress toward negotiations was temporarily threatened when, on January 15, Dutch ships sank an Indonesian motor torpedo boat in the waters between Aru Island and the southwest coast of West New Guinea. In spite of the increased tension, however, both sides responded affirmatively to a plea on January 17 by UN Acting Secretary General U Thant to discuss with him the possibilities of a peaceful settlement.

Early in March, both sides announced their readiness to meet for secret preliminary talks to explore the possibilities for formal negotiations. The talks opened on March 20 at Middleburg, Va., in the presence of retired American diplomat Ellsworth Bunker, appearing in a private capacity at the invitation of U Thant. On March 23 the talks were recessed to allow Indonesian representative Adam Malik to consult with President Sukarno in Djakarta. Four days later President Sukarno de-

clared that the Dutch position at the talks was "unsatisfactory" and that the talks were broken off. Sukarno's statement was preceded by an Indonesian landing on the island of Waigeo off the northwest coast of West New Guinea on March 23, and an Indonesian air attack which damaged a Dutch vessel anchored off the small island of Gag, west of Waigeo.

In April, Ambassador Bunker urged that the parties resume negotiations, and proposed for West New Guinea a two-year transition period under United Nations supervision, followed by a transfer of administration to Indonesia, with provision for exercise of Papuan self-determination after the transfer. President Sukarno replied at the end of April that he was willing to resume talks on this basis, but he rejected the two-year transition period as too long. The Dutch accepted Ambassador Bunker's proposals in May as a basis for further negotiations. Meanwhile, Indonesian infiltrations into West New Guinea continued, and in mid-May the first infiltrations by parachute were carried out.

Talks were resumed on July 12 at Middleburg, and on July 19, Foreign Minister Subandrio arrived to take part in the negotiations. On July 31, U Thant announced that the two sides had reached an agreement. The main points of this agreement, formally signed in New York on August 15, provided that: (1) the Netherlands transfer West New Guinea to a United Nations Temporary Executive Authority (UNTEA); (2) after May 1, 1963, UNTEA will transfer administration to Indonesia; and (3) before the end of 1969 the Papuan population will be given the opportunity to decide whether they wish to remain with Indonesia or to become independent. Netherlands authority over West New Guinea was transferred to UNTEA on October 1. (See also NETHERLANDS; WEST NEW GUINEA.)

Foreign Affairs.—The United States role in encouraging the West New Guinea negotiations was a major feature of United States–Indonesian relations in 1962. The year was also marked by Attorney General Robert Kennedy's visit to Indonesia from February 12 to 18. General Maxwell Taylor, chairman-designate of the Joint Chiefs of Staff, visited Indonesia in September, as did Peace Corps director Sargent Shriver. After his visit, Shriver indicated that he understood the Indonesian government would welcome Peace Corps volunteers in Indonesia. In July, Allan Lawrence Pope, an American citizen who had been condemned to death for participation in the 1958 rebellion against the Indonesian government, was released and left Indonesia.

The continuation of the West New Guinea dispute resulted in increased military aid from the USSR. In February the newly appointed Indonesian air force chief of staff, Air Vice Marshal Omar Dani, visited the USSR to discuss the speed-up of Soviet arms deliveries. By mid-April, Soviet military equipment was reported to be arriving at an increasing rate. On May 3 Foreign Minister Subandrio and Deputy Defense Minister Maj. Gen. Hidajat arrived in Moscow for further discussion of West New Guinea and of accelerated arms deliveries. At the end of June, Chief Marshal K. A. Vershinin, commander-in-chief of the Soviet Air Force, returned Omar Dani's visit. Vershinin told reporters that the USSR was ready to provide Indonesia with the necessary aid to make good the latter's claim to West New Guinea.

Domestic Affairs.—President Sukarno reorganized his cabinet on March 6. Most portfolios were given to persons already in the cabinet, with some reassignment of responsibilities. President Sukarno

WIDE WORLD

Indonesian Foreign Minister Subandrio (left), UN Acting Secretary General U Thant (center), and the Dutch ambassador to the United Nations, C. W. A. Schurmann, exchange papers on the West New Guinea agreement on September 20.

continues to serve concurrently as prime minister, Djuanda Kartawidjaja as first minister, and Dr. Subandrio as deputy first minister for foreign affairs.

The Indonesian Communist Party, which claims a membership of over 2 million, held its Seventh Party Congress in Djakarta in April. A high point of the congress was an address by President Sukarno, who expressed his pleasure that he had removed "Communist-phobia" from the minds of the Indonesian people, and told the gathering that there was now general acceptance of the role that Communists should play in Indonesia.

Two unsuccessful attempts were made on the life of President Sukarno during the year. In the first, at Makasar, Celebes, on January 7, the president escaped unhurt as a hand grenade exploded one hundred yards from his car. The second attempt occurred in Djakarta on May 14, at an early morning Muslim prayer meeting. The attacker fired several shots at close range, but his aim was apparently deflected by the president's bodyguard. Police identified the assailant as a member of the Darul Islam, a fanatical Moslem group based in West Java.

In spite of this burst of activity, the Darul Islam appeared to be largely eliminated as an armed dissident threat with the capture on June 4 of S. M. Kartosuwirjo, leader of the group. Since the surrender of other rebel leaders in 1961, Kartosuwirjo had been the only armed dissident leader of consequence still at large. He was tried, and was executed on September 12.

In October the government announced that martial law would be lifted throughout the country in 1963. Martial law was proclaimed on a nationwide basis in March 1957, and remains in effect in many parts of the country.

The Economy.—The year was a difficult one for the Indonesian economy. Officials repeatedly commented on the deficits in foreign trade and payments and in government revenue, rising prices, shortages of rice and of other essentials, and the low level of primary production. The West New Guinea campaign, requiring arms imports, domestic stockpiling, and diversion of transport, was a major factor. Natural disasters aggravated the rice shortages. Deficiencies in the distribution system were frequently cited, and President Sukarno asked for an end to "regional blockades" in the traffic of foodstuffs. The president also charged in April that price rises in essential foods were caused by such acts as the setting of unreasonable prices by money lenders in the rice market. To encourage exports, the government in

March began to permit exporters to retain 15 per cent of foreign exchange earned.

Throughout the year steps were taken to improve production of certain important export items. American experts undertook comprehensive surveys of Indonesia's principal coal and tin producing areas. In April the government announced that an exchange of tin experts was being discussed with the government of Bolivia. The government has also acquired new machinery in order to step up production of tin and bauxite. In July, First Minister Djuanda announced that a rubber replanting program had begun. The program calls for replanting of 27,000 hectares (1 hectare equals 2.471 acres) in 1962, and a total of 270,000 hectares over an eight-year period.

Chaerul Saleh, minister of basic industries and mining, declared in April that in view of the shortage of capital, Indonesia was prepared to cooperate with foreign oil enterprises, provided that the latter were willing to act as contractors to the government for a limited period. In June the Pan-American Oil Company agreed to begin its operations in Indonesia as a contractor for a 30-year period with the state-owned Pertamin Oil Mining Corporation. Saleh stated that the foreign oil companies already in Indonesia must also accept this status.

Redistribution of land to peasants began in September under the terms of the land reform regulations. The first phase calls for redistribution of 225,000 hectares to peasants who have hitherto tilled the land but not owned it. The land reform is scheduled for completion in 1965.

(See also FAR EAST.)

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INDUSTRIAL DESIGN. See Index entry.

INDUSTRIAL HEALTH AND SAFETY

The Federal Hazardous Substances Labeling Act, for which regulations were issued in August 1961, emphasized the need for acute toxicity data on industrial chemicals. This was pointed up by a report issued in 1962, listing range-finding toxicity data on more than 300 commercial compounds. Data on oral, skin absorption and inhalation toxicity, and irritation to the skin and eyes were presented. The fact that this information was from a single laboratory was indicative of the broad scope of this type of investigation.

There is intense interest in fluorocarbons, and numerous new compounds are being produced. The toxicity of these substances range from highly toxic chemical warfare agents to those so physiologically inert that they can be used as a food propellant. They are important as refrigerants and insecticides, and some are being considered as anesthetics and diagnostic agents. A review of the toxicity of these numerous materials, with particular reference to chemical constitution, provides much meaningful and useful information for further industrial application of these substances.

Organic phosphorus compounds are important and widely used insecticides. Some are highly toxic and, therefore, information on their metabolism and biochemical action is essential to their safe use in industry. A comprehensive review of the effects of these compounds on the enzyme cholinesterase, mechanism of action, metabolism, symptoms of poisoning, and specific antidotes is timely.

A book titled *Toxicity of Industrial Metals* by Ethel Browning, published in England in 1961, discusses 44 metals with regard to properties, industrial uses, metabolism, toxicology, and in some cases industrial poisoning and treatment. The book is an excellent critical review of the literature, with numerous references to original articles.

The 1962 list of threshold limit values contains 295 compounds. Hygienic Guides containing pertinent information on hazard, evaluation, and control were published for benzene, bromochloromethane, carbon tetrachloride, methyl chloroform, epichlorohydrin, ethylene chlorohydrin, methyl chloride, nitromethane, nitroethane, propyl alcohol, and cumene. American Standard Maximal Acceptable Concentration was approved for benzene, toluene, xylene, p-dichlorobenzene, methylene chloride, and nitrogen dioxide.

Toxicity Research.—Concurrently with routine studies, considerable attention was directed to the changing objectives in industrial health. Early efforts were concerned with specific industrial diseases. The goal now is to attain a high level of health and well-being. In the field of toxicology, new concepts and procedures are being utilized to evaluate the mechanism of toxic stress and to find early indications of toxic effects before injury occurs. Changes in certain body constituents have been found to be early evidence of exposure to vanadium, cobalt, and lead; and a variety of organic compounds may cause changes in enzyme systems. Increased secretion of zinc in the urine is the first response to carbon disulfide. Immunochemical and behavioral responses are other areas being aggressively explored.

A series of experiments in which human subjects have been exposed to chlorinated hydrocarbons has yielded new and significant information. The concentration of the compound in the expired breath was determined by an infrared spectrometer. It was found that the concentration decreased at a regular rate and could be used to estimate the magnitude of an exposure several hours after it occurred.

Safety.—The Eighth President's Conference on Occupational Safety was held March 6–8, 1962, in Washington, D.C. The theme of the conference was "Safeguarding Human Worth." Emphasis was placed on the need for applying tested safeguards to nonmanufacturing industries, since 80% of work injury occurred in these industries in 1960. In addition, safety research and planning was recommended to foresee and control in advance new hazards resulting from scientific and technologic advances. Safety can no longer be an afterthought, but must start with the conception and continue with the development of new products, operating procedures, and services.

(See also MINING; SANITARY ENGINEERING.)

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INDUSTRIAL PRODUCTION

Industrial production in the United States increased slowly to a new peak in July 1962 and then leveled off. The advance in the first half of the year represented a continuation of the general uptrend which actually began in the early spring months of 1961. The recent overall stability resulted from a mixture of small up-and-down movements among individual industry groups.

The Federal Reserve Board's seasonally adjusted production index of 119 in September (1957 = 100) was 5% higher than at the beginning of the year, more than one sixth above the

1960–61 recession low of February 1961, and 7% above the 1960 prerecession top. About two thirds of the total advance, however, occurred in the first six months of the 1961–62 recovery period. In the comparable 20 months of the 1958–59 recovery cycle, the increase in total industrial production amounted to 25%. (The 1960–61 business downturn was somewhat milder and of shorter duration than the 1957–58 recession, however.)

Production of final products—a comprehensive measure of demand from consumers, business, and government—expanded by 7%, with most end products higher in 1962 than in 1961, although varying in magnitude from product to product.

Table 1—U.S. INDUSTRIAL PRODUCTION INDEX FOR 1960–1962: INDUSTRY AND SUMMARY MARKET GROUPINGS
(1957 = 100)

Classification	1960	1961	Jan.–Sept. 1962[1]
Industry Groupings			
Industrial production, total	108	109	117
Manufacturing, total	108	109	117
Durable manufactures:			
Primary metals	90	88	95
Fabricated metal products	106	105	116
Machinery	106	106	118
Nonelectrical machinery	102	100	112
Electrical machinery	112	114	127
Transportation equipment	102	97	110
Motor vehicles and parts	115	103	123
Aircraft and other equipment	89	91	98
Instruments and related products	119	118	124
Clay, glass, and lumber	109	107	111
Furniture and miscellaneous	116	117	128
Total durable manufactures	104	103	113
Nondurable manufactures:			
Textile, apparel, and leather products	115	116	122
Paper and printing	112	115	119
Chemicals, petroleum and rubber products	118	123	133
Foods, beverages, and tobacco	109	113	116
Total nondurable manufactures	113	117	123
Mining:			
Coal	83	80	83
Crude oil and natural gas	98	100	103
Metal, stone, and earth minerals	105	105	107
Total mining	97	98	100
Utilities, total	123	131	140
Market Groupings			
Total index	108	109	117
Final products, total	111	112	120
Consumer goods	114	116	123
Equipment, including defense	103	104	113
Materials	106	106	114

[1] Seasonally adjusted. (Source: Board of Governors of the Federal Reserve System.)

The expansion in manufacturing production brought about a higher overall rate of capacity utilization in 1962 than in 1961. Even so, a number of basic industries, notably steel and cement, continued to operate well below available capacity.

The four broad industry groups—durables, nondurables, mining, and utilities—and all of the 21 major industry divisions comprising the Federal Reserve index registered output increases over 1961. Durable goods output, paced by motor vehicles and machinery and equipment, increased 12%, and nondurable goods expanded 7%.

In general, production movements for the major product groups in the first 10 months of 1962 followed the pattern of total industrial output—a slow rise in the first half followed by a topping off in the third quarter. Most industries reached new production peaks in 1962 and were operating at or close to record levels in September.

Durable Manufactures.—The steel industry began the year at a fast pace, filling large orders placed late in 1961 and early 1962 for immediate consumption and for inventory buildup as a hedge against a possible industry-wide steel strike during the summer months. After a new labor-management wage contract was signed at the end of March 1962, output fell sharply from a weekly average of 2.4 million tons of ingot steel in March to 1.4 million tons in July, a reduction of more than two fifths. Steel output actually started to move upward after the July 4 holiday week and continued to rise slowly through October 1962, when the industry produced about 7.8 million tons, the highest monthly volume since April.

Total ingot production for the year was expected to reach 98 or 99 million tons, little changed from 1961 and substantially below the high volume years of 1955 to 1957.

Imports of steel mill products again exceeded exports. The January–September 1962 import gap amounted to 1.6 million tons, compared with 1.2 million tons for the entire year 1961. Prior to 1959 exports exceeded imports by a sizable margin. (See also IRON AND STEEL.)

In nonferrous metals (aluminum, copper, lead, and zinc) supplies in the aggregate were at a record rate during the first half of 1962. Higher net imports contributed to the expansion in overall supplies, but the bulk of the increase originated from domestic production. In the third quarter, however, most major producers outside the aluminum industry announced production cutbacks, ranging from 5 to 10%, to limit inventory accumulation. Despite the curtailment, total January–September output was well above the volume for the same period of 1961.

Under pressure of demand for capital goods, the machinery industry had a record output year, increasing volume by 12%, one of the largest year-to-year advances of all manufacturing industries. (See BUSINESS DATA, U.S.) The September index was at a new high rate, one tenth above December 1961 and one sixth above the prerecession peak of July 1960.

Almost all segments of the electrical and nonelectrical machinery industry shared in the expansion. Products showing better-than-average strength included office and store machines, commercial equipment, farm equipment, and industrial electronic products such as computers and data processing equipment.

Among important groups of products showing less than the average industry gain were machine tools, industrial equipment, and household appliances and radio and television sets as a group.

Activity in the aircraft and parts industry, as measured by man-hours worked, held fairly closely to the December 1961 rate, the high for that year. For the nine months through September, output was 5% higher than in the corresponding period of 1961.

All of the expansion in output resulted from the enlarged missile and space procurement programs which constitute an important part of the total activity in the aircraft industry. The importance of this rapidly developing industry is indicated by the fact that employment in aerospace activities has increased steadily while showing consistent year-to-year declines in aircraft plants, although some leveling off occurred in 1962. Of the more than 690,000 employees classified in the aircraft and parts industry in 1962, more than one fifth were engaged in the production of missile and space systems. (See also AERONAUTICS.)

The automobile industry had an active year, the best since the high production year of 1955. With the entire industry in full production of the 1963 models, completions of passenger cars and trucks in October 1962 totaled 840,000 units, the highest since November 1955 and substantially above the monthly average for that year. Produc-

Table 2—LEADING UNITED STATES MANUFACTURES, 1960

Products	Total number of employees (thousands)	Payroll (In millions of dollars)	Adjusted value added by manufacture
Food and kindred products	1,713	$8,268.7	$19,660.5
Meat products	307	1,560.8	2,663.4
Dairy products	287	1,404.3	3,164.9
Canned and frozen foods	237	851.9	2,345.8
Grain mill products	117	689.8	1,976.8
Bakery products	306	1,468.7	2,902.1
Beverages	211	1,138.6	3,197.9
Tobacco products	82	319.4	1,545.0
Textile mill products	902	3,216.0	5,613.5
Weaving mills, cotton	239	816.2	1,311.8
Knitting mills	220	710.8	1,219.6
Apparel and related products	1,223	3,827.5	6,681.6
Men's and boys' furnishings	277	743.4	1,241.5
Women's and misses' outerwear	365	1,176.0	2,169.7
Lumber and wood products	596	2,151.5	3,457.6
Sawmills and planing mills	281	937.6	1,495.7
Furniture and fixtures	365	1,529.8	2,618.5
Household furniture	264	1,033.7	1,741.7
Paper and allied products	580	3,120.3	6,568.5
Paper mills (except building)	137	820.3	1,877.0
Paper and paperboard products	159	802.9	1,650.0
Paperboard containers	191	943.9	1,660.5
Printing and publishing	908	5,064.4	9,262.3
Newspapers	307	1,673.9	2,924.5
Periodicals	67	441.0	1,164.1
Books	76	408.0	1,142.0
Commercial printing	302	1,708.5	2,641.5
Chemicals and allied products	722	4,420.5	14,380.0
Basic chemicals	240	1,613.7	5,101.5
Fibers, plastics, and rubbers	130	789.1	2,255.7
Drugs	102	623.6	2,349.1
Cleaning and toilet goods	83	468.4	2,229.0
Petroleum and coal products	168	1,126.7	3,201.3
Petroleum refining	135	935.8	2,720.5
Rubber and plastics products[1]	378	1,998.1	3,772.6
Tires and inner tubes	92	589.6	1,271.6
Fabricated rubber products[1]	128	670.1	1,161.8
Plastics products[1]	134	627.5	1,147.9
Leather and leather products	358	1,227.3	2,043.6
Footwear (except rubber)	228	743.3	1,221.1
Stone, clay, and glass products	589	2,983.1	6,348.0
Pressed and blown glassware	100	509.8	1,012.5
Concrete and plaster products	159	781.1	1,749.1
Nonmetallic minerals[1]	98	546.1	1,192.4
Primary metal industries	1,178	7,230.7	13,314.1
Steel rolling and finishing	620	4,059.1	7,685.6
Iron and steel foundries	196	1,041.2	1,577.8
Nonferrous rolling and drawing	171	1,000.4	1,858.0
Fabricated metal products	1,085	5,881.0	10,284.7
Cutlery, hand tools, and hardware	140	736.4	1,409.0
Structural metal products	328	1,825.6	2,929.1
Metal stampings	135	730.5	1,224.7
Fabricated metal products[1]	138	767.3	1,369.3
Nonelectrical machinery	1,424	8,466.1	14,377.6
Construction and mining	220	1,290.2	2,162.5
Metalworking	257	1,660.7	2,687.6
Special-industry	175	1,015.5	1,762.4
General industrial	223	1,334.8	2,285.9
Office machines[1]	136	857.6	1,294.8
Service-industry	102	563.0	1,093.0
Machine shops	126	672.7	1,150.9
Electrical machinery	1,340	7,224.9	13,068.7
Electric distribution products	147	843.3	1,580.1
Electric industrial apparatus	173	980.7	1,752.8
Household appliances	152	823.3	1,671.4
Lighting and wiring devices	139	666.9	1,433.6
Communication equipment[2]	289	1,851.5	2,813.9
Electronic components	274	1,242.4	2,113.6
Transportation equipment	1,588	10,367.2	17,978.0
Motor vehicles and equipment	695	4,505.1	10,119.1
Aircraft and parts	680	4,653.5	6,099.1
Ships and boats	135	785.8	1,022.2
Instruments and related products	334	1,976.2	3,763.1
Miscellaneous manufactures	588	3,122.6	5,273.3
Ordnance and accessories	212	1,513.8	2,242.9
All manufacturing establishments[3]	16,726	880,151	1,632,308

[1] Total includes only data for manufactures not classified under other categories. [2] Includes radio and television communication equipment and telephone and telegraph apparatus. [3] Includes administrative and auxiliary units, and includes some industries not separately listed in the table. (Source: U.S. Bureau of the Census, *1960 Annual Survey of Manufactures.*)

tion of American-made cars for all of 1962 is estimated at 8 million, consisting of 6.8 million passenger cars and 1.2 million trucks—about 1.3 million more than in 1961, although still 1.1 million below 1955. Compact or economy type cars accounted for about one-third of the total passenger cars built. (See also AUTOMOBILES.)

Nondurable Manufactures.—In nondurable goods industries, production in the aggregate increased through July and then held steady at a rate somewhat above the December 1961 level. New production peaks were registered at various dates during 1962 for all of the major industry divisions except apparel, leather, and tobacco products.

Chemicals, rubber and plastics, and textile mill products increased by 10% over 1961, the largest among the industry groups. In other soft goods lines the advances were smaller, ranging from 2% for foods, beverages, and tobacco to 6% for paper and products.

In the cyclical textile industry, output in 1962 equaled the previous high (July 1959) in the first quarter, advanced further to a new peak in June, and then edged downward. The lower rate of output in the July–September 1962 period was associated with a drop in unfilled orders, rising inventories, and some price weakness. (See also TEXTILE INDUSTRY.)

Minerals.—Output of minerals averaged somewhat higher in 1962 than in 1961. Each of the three main categories comprising this group shared in the advance, although the increases over the year were small. Production of bituminous coal, an estimated 425 million tons for 1962, was the best in five years, reflecting higher industrial and utility consumption. Crude oil producers increased drilling operations despite a generally unfavorable supply-demand position for refined petroleum products. Extractors of metal, stone, and earth products showed the smallest output increase, as metal mining activity was reduced substantially beginning in July. (See also MINERAL PRODUCTION; MINING.)

Utilities.—The strong postwar growth trend of the utilities industry continued in 1962. The increase in output was about 8½%, compared with a rise of 6% from 1960 to 1961 and an average of 7½% in the 1958–61 period. (See also PUBLIC UTILITIES.)

Annual Survey of Manufactures, 1960.—Preliminary data from this survey, released in 1962, indicate that almost 300,000 manufacturing plants were operating in the United States. Total employment was 16,726,109, including 12,178,965 production workers; the aggregate payroll was $88,015.1 million, including $55,452.1 million for production workers. Adjusted value added by manufacture[1] totaled $163,230.8 million. Capital expenditures in 1960 for new plant and equipment and for improvement of existing equipment approximated $9,968.1 million.

Table 2 furnishes data for all major industry groups and for component manufactures for which adjusted value added by manufacture was estimated at $1 billion or more.

FRANCIS L. HIRT,
Office of Business Economics,
U.S. Department of Commerce.

INFANT MORTALITY. See Index entry.
INFLATION. See Index entry.
INFLUENZA. See Index entry.
INFORMATION AGENCY, U.S. See UNITED STATES INFORMATION AGENCY.

INLAND WATERWAYS

Vessels operating on the inland waterways of the United States, exclusive of the Great Lakes, transported 387,981,193 net tons of cargo in 1961 and accounted for more than 122 billion ton-miles of service. This represented a decrease of 7.3 million net tons from 1960, but an increase of 2.1 billion ton-miles, which means that freight is being hauled over longer distances in the inland waterways trade.

Principal commodities and their tonnages transported in 1961 were: petroleum and petroleum products, 139,173,506; bituminous coal and lignite, 85,883,905; sand, gravel, and crushed rock, 48,708,980; unmanufactured sea shells, 20,041,431; logs, 19,503,710; grain and grain products, 9,000,331; iron and steel, 8,773,594; and chemicals, 5,341,731.

[1] Adjusted value added by manufacture is derived by subtracting the cost of raw materials, parts, components, supplies, fuels, goods purchased for resale, and contract work, from the value of shipments of manufacturing establishments in each industry. It includes the net change in finished goods and work-in-process inventory and also the value added in merchandising activities by manufacturing establishments.

The following table compares tonnages moved over 11 major United States inland waterways in 1961 with tonnages moved in 1960:

Waterway	1960 tonnage	1961 tonnage
Atlantic Intracoastal Waterway[1]	2,829,292	2,763,170
Columbia River	22,152,906	22,807,385
Gulf Intracoastal Waterway	54,948,389	58,866,694
Illinois Waterway	26,928,807	26,691,019
Mississippi River[2]	82,486,236	87,136,590
Missouri River	6,595,947	6,137,230
Monongahela River	29,532,592	26,764,177
Ohio River	79,477,596	80,137,815
Sacramento River	2,120,899	2,077,690
Tennessee River	12,440,696	11,614,674
Warrior-Tombigbee System	5,804,107	6,031,255

[1] Entire waterway. [2] Inland traffic only.

In 1961 there were approximately 1,700 firms engaged in inland waterways transportation. They employed about 80,000 operating personnel aboard the inland fleet. As of Dec. 31, 1960, there were 20,557 vessels available for the transportation of freight on the inland waterways, including 4,052 towboats and tugs with a total horsepower of 2,542,875, and 16,505 non-self-propelled barges of all types with a cargo capacity of 16,355,657 net tons. This compares with 4,139 towboats and tugs with a total horsepower of 2,465,339, and 16,289 non-self-propelled barges with a cargo capacity of 15,649,092 net tons for the year ending Dec. 31, 1959.

During 1961 a total of 576 industrial production plant facilities were developed or expanded on waterside sites. Records for the first three quarters of 1962 show that 369 more such sites were developed, bringing the total number of waterside site plants developed or expanded to 4,447 since The American Waterways Operators, Inc., began keeping records on this activity in 1952.

(See also Canals.)

Braxton B. Carr,
President, The American Waterways Operators, Inc.

INSANITY. See Psychiatry and Mental Health and the Index entry, *Mental Health.*

INSECTS AND INSECTICIDES. See Index entry.

INSTALLMENT BUYING. See Consumer Credit.

INSURANCE

The following article is presented in three parts, reviewing developments in: (1) Health Insurance; (2) Life Insurance; and (3) Property and Casualty Insurance.

Health Insurance

By Dec. 31, 1961, a record 136,522,000 persons in the United States were covered by some form of health insurance, and protection against the cost of hospital and doctors' bills had been extended to include about 75% of the nation's population. Nearly $6.4 billion was paid in health cost benefits during 1961 by all types of insuring organizations, compared with $5.7 billion in 1960.

An increase of 60% in the number of persons covered by hospital expense plans was recorded in the last decade. The number of those covered by surgical plans increased 96%, and by regular medical plans, more than 200%. During the same period, major medical expense insurance coverage rose from slightly over 100,000 persons to more than 34 million.

Health insurance policies are handled by more than 800 insurance companies in the United States. At the end of 1961, insurance companies covered over 81 million persons for hospital expenses, 79 million for surgical expenses, and 44 million for regular medical expenses. Loss-of-income insurance policies covered 32 million persons, and more than 34 million policyholders had protection against major medical expenses. Of the total employed United States civilian labor force in 1961, an estimated two thirds (43 million persons) were protected by loss-of-income insurance policies and other formal salary-continuation plans.

In 1961, insurance companies alone paid benefits on an estimated 11 million claims for hospital expenses, representing 47% of the more than 23 million admissions to voluntary hospitals during the year.

As of May 1962, it was estimated that some 55% of the population aged 65 or older had health insurance. In 1952, approximately 26% of the persons in that age group had health coverage; this figure had risen to about 37% in 1956. This progress was due in large measure to new approaches adopted by all insuring organizations in the last decade. One approach enables retiring workers to continue their health insurance coverage; another is the mass-enrollment technique of issuing health insurance to large groups of aged persons in a state.

James R. Williams,
Vice President and General Manager, Health Insurance Institute.

Life Insurance

American families increased their life insurance protection by $50 billion during 1962, as the nation's total life insurance passed $725 billion for the first time. The year ended with $680 billion in force with legal reserve companies and $55 billion with other institutions and the Veterans Administration.

Six out of seven families owned life insurance, with an average of $14,300 each—an increase over 1961 of about $700 per insured family. There were 122 million policyholders with the nation's 1,500 legal reserve life companies.

Although Americans own life insurance mainly to protect their families from financial hardship in case the head of the family should die, another major reason is savings and investment (for retirement and other purposes), a survey showed. Many families also buy policies to guarantee that educational funds will be available for children.

Growth.—Since a generation ago, life insurance protection for American families has grown nearly 10 times faster than the nation's population. An important growth factor has been new types of policies to meet changing needs. For example, a significant development has been group life insurance for workers and their families, which totaled $210 billion in 1962 and covered 50 million Americans, including more than two out of every three civilian nonfarm workers.

Individually purchased "ordinary" life insurance, the nation's main form of protection, also continued to grow rapidly. The 1962 total of $393 billion in force was greater than all other forms of life insurance combined.

Industrial life insurance (issued in small amounts, with premiums payable weekly or monthly) showed little change. Ownership in 1962 totaled $39 billion. Credit life insurance, which pays off a loan if the borrower dies, reached $38 billion in 1962.

New Purchases.—Sales of life insurance in 1962 totaled $78 billion, under nearly 25 million new policies. Ordinary purchases amounted to more than two thirds of the total.

California, which passed New York State for the first time in 1961 as the biggest buyer of ordinary life insurance, continued to lead in 1962, purchasing nearly $6 billion.

Benefits.—Benefit payments to policyholders and their families set new records again in 1962. Over $9 billion was paid under life insurance policies, including $3.9 billion resulting from policyholders' deaths and $5.4 billion in "living benefits" to policyholders themselves. Health insurance benefits totaled $3 billion.

Investments.—Assets of American life insurance companies rose to $133 billion in 1962, an increase of over $6 billion from 1961. Most of these funds are set aside to meet future obligations to policyholders and, until needed, are invested. Investment earnings help reduce the cost of life insurance protection. The largest share is invested in business and industry. More than one third is in home, farm, and commercial mortgage loans.

Canada.—In relation to national income, Canada has for many years reported more life insurance than any other country. (The United States ranks second.) Total life insurance in Canada grew to $55 billion in 1962, an increase of more than $4 billion. Purchases totaled $7 billion, and Canadians received about $650 million in benefits. Assets of Canadian life companies rose to $10 billion.

Blake T. Newton, Jr.,
President, Institute of Life Insurance.

Property and Casualty Insurance

Underwriting results during the first six months of 1962 were similar to the poor experience in 1961 for United States stock property and casualty companies, while the value of investment portfolios dropped steeply from the 1961 level.

The stock market decline in the six-month period whittled away all the gains of the entire previous year. Paper values of portfolios depreciated some $2 billion, causing a drop of about 18% in surplus and 6% in assets.

Despite the sharp dip in security prices, net investment income of insurance companies rose 10%. Since this income exceeds statutory underwriting losses for most companies, the property-casualty business remained in sound financial condition. Dividend pay-out was 6% higher than a year earlier.

Purchases of property and casualty insurance continued to rise. Premium volume in the first half of 1962 increased to about $8 billion, almost 7% over the 1961 figure, largely because of the large volume of car sales. Underwriting results, however, were adversely affected by severe fire losses and a high frequency of wind and hailstorm claims during the winter and spring months, as well as an unsatisfactory record on automobile, compensation, and liability coverages.

Fire losses of $680,408,000 for the first six months of 1962 were about 7% higher than the total of $635,017,000 for the first half of 1961.

The automobile in 1962 once again proved to be the worst killer. While deaths from all types of accidents rose approximately 6% over the toll for January–June 1961, traffic fatalities increased 6.6%, from 16,910 to 18,040.

The total dollar cost of traffic accidents in the United States has quadrupled in 20 years, the combined figure for property damage, legal expenses, medical, surgical, and hospital costs, and loss of income by absence from work amounting to $7.9 billion in 1961, equivalent to $42.93 for every man, woman, and child in the nation.

Automobile insurance is the largest single classification of property-casualty business, with premiums totaling about $5.9 billion in 1961. This was approximately 40% of the overall volume of property and casualty premiums in that year. Although automobile liability insurance is the largest single item, it showed a loss of almost $800 million from 1952 to 1962.

J. Dewey Dorsett,
General Manager, Association of Casualty and Surety Companies.

INTEGRATION, School. See Civil Liberties; Education.

INTER-AMERICAN AFFAIRS

Preoccupation with the Communist-oriented government of Cuba obscured the long-range hemispheric developmental program and strengthened those forces least interested in rapidly paced economic and social reform during 1962. Deteriorating foreign trade and private investment in the Latin countries intensified the polarization of extreme conservative and radical groups. With their domestic support thus weakened, moderate regimes turned to or were overturned by the military whose position on the Cuban crisis more closely paralleled that of the United States.

Punta del Este Conference, 1962.—The Eighth Meeting of Consultation of American Foreign Ministers convened at Punta del Este, Uruguay, from January 22 to 31. The Colombian initiative for a foreign ministers conference on the Cuban problem at the Nov. 9, 1961, Council meeting of the Organization of American States (OAS) had been strongly endorsed by the Caribbean countries and by the United States, although for the larger and more democratic Latin governments (Argentina, Brazil, Chile, and Mexico), representing two thirds of the Latin population, the Cuban issue was a politically divisive one.

U.S. Secretary of State Dean Rusk won respect for his courtesy and tactful diplomacy in persuading the Caribbean countries not to leave the conference when their recommendations for strong action against Cuba were not supported. Except for Cuba (which voted against them all) there was unanimous support for five of the eight declarations which were approved by the foreign ministers: the principles of communism were declared to be incompatible with the inter-American system; Cuba was removed from the Inter-American Defense Board; all countries were encouraged to hold elections; the strengthening of the Inter-American Commission on Human Rights was recommended; and there was expressed support for the Alliance for Progress. With Bolivia abstaining, the foreign ministers directed the OAS Council to establish a five-member Advisory Committee of Experts on Security Measures Against Communist Subversion. Argentina joined a majority of 16 (the 3 other large Latin countries and Ecuador abstained) to recommend immediate suspension of trade in arms with Cuba and to instruct the OAS Council to study the desirability of extending the suspension to other items.

The declaration that Castro's Cuban regime was considered to be excluded from participating in the OAS organs because its Marxism-Leninism was incompatible with the principles of the inter-American system received 14 votes, the minimum required for approval. The four major Latin governments, together with Bolivia and Ecuador, abstained from voting on this declaration; they agreed with Mexico that none of the inter-American treaties provided for the exclusion of any mem-

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President João Goulart of Brazil (r.) arrives at Andrews Air Force Base, Md., on April 3 for talks with President Kennedy.

ber, and even more they feared unwelcome political repercussions within their respective states.

Aftermath of the Punta del Este Conference.—The Latin governments which opposed strong collective action at the foreign ministers meeting had reason to believe that the Cuban problem would solve itself. The Cuban regime was being weakened by the struggle between Castro and the old-line Cuban Communists, and the consequences of economic mismanagement had become evident by 1962. Inexperienced and increasingly disenchanted administrators had replaced the 200,000 professional middle-class exiles. Per capita income had fallen from $374 in 1957 to $185 in 1962. Food rationing was introduced on March 19. The important sugar harvest had dropped from 5 million to 4 million tons, and was largely committed to the Soviet bloc. Cuba's capacity to import Western consumer's products and to export its revolution through arms and subversion was reduced by its loss of dollar exchange. For the first time in its three-and-one-half-year history, the Castro regime found it necessary to quiet a hungry and angry crowd in the port city of Cardenas with a show of armed force on June 16.

To hasten this economic deterioration, President Kennedy imposed an embargo on the remaining Cuban imports to the United States on February 3 (and on March 23 excluded all imports from any country which included elements of Cuban origin, such as tobacco). The action would deprive Cuba of an estimated $35 million exchange annually.

Cuba appealed to the United Nations in an attempt to rally wider international support for its accusations against the United States, and, as U.S. Ambassador Adlai E. Stevenson noted on February 5, "to obscure the decisions against Cuba taken at Punta del Este." A Soviet bloc proposal that the United States be ordered to stop interfering in Cuba's internal affairs was decisively defeated by the Political Committee of the General Assembly on February 15. On February 27 the Security Council refused to discuss the charge that the United States had illegally persuaded the OAS members to exclude Cuba. Cuba's final request to the Security Council that the International Court of Justice rule on the legality of Cuba's exclusion from the OAS was similarly rejected.

The United States could do little to ameliorate the destructive impact of the foreign ministers' debate on Cuba on the internal power structure of the important Latin countries. Violent political clashes between the extreme right and left were unleashed in Uruguay, Chile, Ecuador, Brazil, and Argentina, thereby reducing the effectiveness of the moderate forces in those countries. Military groups, antagonistic to their governments' position at the Punta del Este meeting, forced the Argentine president on February 8, and the Ecuadorean president on April 3, to sever diplomatic relations with the Castro regime. On June 28, conservative members of the Brazilian Chamber of Deputies rejected President Goulart's choice of his foreign minister, Dr. Francisco Dantas, as the new premier, in part because he had abstained on the vote to exclude Cuba from the OAS.

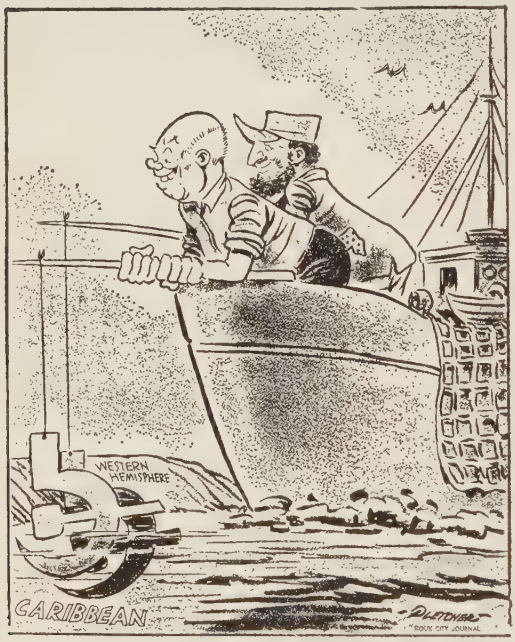
The polarization of antagonistic forces within the larger Latin countries deterred the respective governments from undertaking collective consultation on sensitive political matters within the OAS. Nor were they paying their annual contributions for the financial support of the organization. On Feb. 14, 1962, all but Colombia and Venezuela were delinquent, and Argentina, Brazil, and Cuba together accounted for more than half of the $4 million owed.

Prodded by the United States, the OAS lifted the 16-months-old economic sanctions against the Dominican Republic on Jan. 4, 1962, after President Joaquin Balaguer, who had been closely associated with the Trujillo dictatorship, agreed to resign. When Cuba began on March 29 the secret mass trials of the 1,179 prisoners captured in the abortive Cuban invasion, the Council expressed its "firm hope" that the defendants would be tried fairly by the Castro regime, although the trial had begun with complete disregard for the legal process of human rights. (The prisoners were returned to the United States before the end of the year.) Bolivia, Brazil, and Mexico abstained from voting on the resolution which, they asserted, was intervening in the internal affairs of a country. Ideological reasons persuaded others to support the principle of nonintervention in regard to a military coup d'état in Peru. With only seven governments favoring it, the Council on August 10 decided against holding a foreign ministers meet-

ing on the subject of antidemocratic revolutions.

The 23-year-old Lauca River dispute between Bolivia and Chile proved equally resistant to an OAS settlement. Bolivia withdrew from all OAS activities on September 3, and announced that it would resume its seat only when the OAS took firm steps to bring about a just solution to the dispute.

The political framework of the OAS had so deteriorated by the end of September 1962 that the United States found it necessary to consult with the Latin foreign ministers outside the organizational structure of the inter-American system altogether. The informal meeting was held in Washington, D.C., October 2–3, to strengthen the hemispheric position on the growing Cuban threat. While the conference lacked the power of making recommendations to the OAS Council, it could establish a political posture of hemispheric determination to withstand aggression. This it did with a press statement that Sino-Soviet intervention in Cuba was an attempt to convert the island into an armed base for Communist penetration of the Americas and subversion of the democratic institutions of the hemisphere.



PLETCHER IN THE SIOUX CITY JOURNAL

"Fishing Without a License."

Cuba and the Monroe Doctrine.—The United States policy toward the Castro regime had been one of economic harassment, surveillance, and propaganda—measures insufficiently strong to satisfy the public or Congress. When President Kennedy confirmed on Sept. 4, 1962, the massive Soviet military aid received by Cuba since the last week of July, it was regarded as the boldest challenge yet to the Monroe Doctrine. The 1823 doctrine had declared that the United States would consider any attempt by European powers to extend their system to any portion of the Western Hemisphere as dangerous to its peace and safety. President Kennedy, however, did not view the new military strength of the Soviet-oriented Castro regime as immediately dangerous to the United States. He warned Cuba that the United States would use whatever means might be necessary to prevent aggression against the Panama Canal, the Guantanamo Naval Base, or Cape Canaveral; to intercept offensive movements against the Caribbean governments; and to protect itself from any offensive missile bases.

The United States therefore increased its air and naval surveillance of Cuba. Raids on Cuban vessels and shores from United States territory by Cuban exile groups were countered by mild disapproval and little interference by United States authorities. Cuban exiles were permitted to engage in guerrilla training on an island in the Florida keys. The Department of State unsuccessfully attempted to persuade its Western allies to discontinue all commerce with Cuba (half of the 1,000 calls at Cuban ports between January 1 and September 1 were made by ships flying Western flags).

As the United States congressional elections approached, the public was not satisfied by these half-measures. Cuba was declared to be training thousands of Latin youths in subversion, to be broadcasting Communist propaganda from six powerful transmitters for 22 hours a day, and to be preparing a "fishing base" (to be constructed by the USSR) as a Communist submarine port. Congressional dissatisfaction was reflected in two resolutions signed by President Kennedy on October 4: one called for armed resistance, if necessary, to the forceful extension of aggressive or subversive activities by the Castro regime; and the other gave the president authority to call up 150,000 members of the military reserve to meet possible emergencies.

Cuba and the Cold War.—The discovery by air surveillance of sites for Soviet medium-range (1,200-mile) and intermediate-range (2,500-mile) missiles, as well as jet bombers, in Cuba rescued the Kennedy administration from its political dilemma. The president had been secretly notified of this military escalation of the Cuban problem on Oct. 16, 1962, and four days later the United States determined its first course of action. Since invasion or the bombing of the missile bases in Cuba would tarnish the moral position of the United States in the West and might provoke Soviet counteraction, it was decided to institute a selective blockade on offensive weapons (called a "quarantine" by the president). The mobilization of naval, air, marine, and missile units in the Caribbean area lent credibility to the threat that further action would be taken if preparation of missile sites did not cease. Finally, Soviet Premier Khrushchev was called upon to withdraw the offensive weapons from Cuba. The public was told about the missile sites and the position taken by the United States in a dramatic radio-television statement by President Kennedy on October 22.

The Council of the OAS was convoked in emergency session as a provisional Organization of Consultation under the Rio Treaty at 9 A.M. on October 23. Secretary of State Dean Rusk represented the United States and offered a resolution to authorize the use of force, individually or collectively, to enforce the blockade (the deputy legal adviser in the State Department had declared that the blockade would be less illegal if supported by the Latin governments) and to prevent the missiles from ever becoming an active threat; to call for the immediate withdrawal of offensive weapons; and to inform the UN Security Council of these enforcement measures.

Confronted by the sudden reality that the Cuban-based Soviet missiles endangered their own countries, the Latin governments, in a surprising demonstration of unanimity, approved the resolution at 5 P.M. that evening. The United States blockade was thereupon declared to become effec-

tive at 10 A.M., October 24, and more than half of the Latin governments offered military support, including two Argentine destroyers which arrived in Trinidad on November 8 to join in the blockade operations. The Latin diplomats at the Pan American Union once again supported the United States on October 26 when they made it known that the resolution of October 23 did indeed authorize the dismantling of missile bases by force if necessary. Should the Soviet leaders fail to heed United States warnings, they would confront a unified hemisphere.

Ambassador Adlai E. Stevenson carried the United States complaint on Soviet missile bases to an emergency session of the UN Security Council on October 23. On October 30 the acting secretary general and a score of aides flew to Cuba for discussions regarding a United Nations inspection of the dismantled missile bases. To provide a better atmosphere for the talks, the United States suspended its sea blockade and aerial surveillance for three days. Premier Castro declared, however, that the USSR had not consulted him about the proposed United Nations inspection and that he had no intention of agreeing to it.

The Soviet leaders had been stunned by the public revelation of their duplicity, and were impressed not only by the determined stand taken by the Kennedy administration but also by the overwhelming support accorded it by Latin America and the West. The embargo, as it developed, was effective largely because of its psychological impact; only one Soviet-chartered freighter was searched, and when no contraband was disclosed, it was allowed to proceed to Cuba. Of the 25 Soviet ships enroute to Cuba, 12, presumably with incriminating cargoes, were redirected to their home ports on October 25. Not until October 28, however, was it clear that an armed clash had been avoided.

Only then did the USSR agree to discontinue work on the missile bases, to return the missiles to the USSR, and to permit United Nations representatives to "verify" the dismantling. By November 8, United States aerial reconnaissance indicated that all known missile bases had been dismantled; within the next three days, United States naval units had, by agreement with the USSR, counted 42 missiles on the decks of Soviet ships outbound from Cuba.

WIDE WORLD

During the conference of foreign ministers of the Organization of American States, at Punta del Este, Uruguay, January 30, delegates from Nicaragua (left) and Paraguay (right) raise their hands to signify approval of a resolution calling for free elections in all American states. In this vote, as in most of the others, the sole dissenter was President Osvaldo Dorticós Torrado of Cuba (center).

For his part, President Kennedy pledged that Cuba would not be attacked or invaded by the United States. The United States guarantee of Cuban territory, however, awaited on-site inspection of the missile sites and the withdrawal from Cuba of 42 Soviet jet bombers—to both of which the Castro regime was adamantly opposed.

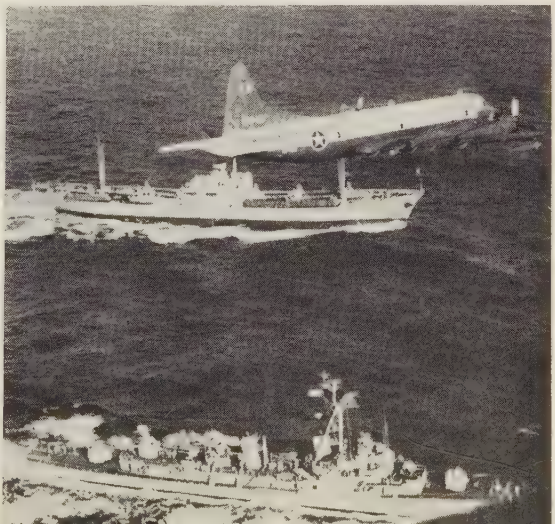
Soviet pressure apparently forced Castro to alter his position, however; on November 20, President Kennedy announced that Khrushchev had promised to remove all the jet bombers from Cuba by December 20. As a result, the United States lifted its naval "quarantine" of the island. By December 7, all 42 of the jet bombers were reported to have been removed on Soviet ships.

The prestige of Premier Castro was seriously dimmed by the crisis. While he continued to resist on-site inspection, the unreliability of his Soviet ally had been amply demonstrated. The Chinese Communists were now supporting Castro, but he had sided against their youthful, sectarian extremists within Cuba the previous March, and could not expect that China was capable of replacing Soviet economic assistance.

In addition, Castro had incurred the suspicion of Latin governments and leftist groups which heretofore had been sympathetic to his cause. Some Latin extremists, to be sure, responded to

(*Left*) At the emergency meeting of the Organization of American States on October 23 in Washington, D.C., at which the United States quarantine of Cuba received unanimous support, Secretary of State Rusk (seated) talks with Roberto Alemann, the Argentine ambassador to the United States. (*Right*) The Soviet freighter *Anesov* (background), returning missiles to the Soviet Union from Cuba in late November, is subjected to scrutiny by a U.S. Navy patrol plane and the U.S.S. *Barry*.

WIDE WORLD



his orders. In Venezuela they damaged United States gas and oil installations, but their documented actions there were subjected to OAS review. In Brazil, however, Leonel Brizola, leader of the radical nationalist left and persistent critic of United States policies, declared that the "Soviet Union has taken advantage of the Cuban people for its own ends simply as an instrument for its own power." In a letter to the Cuban president, the Mexican president declared that his government "cannot view with indifference a Latin American country establishing facilities for the utilization of the most destructive weapon of all times."

Political Stability.—Deteriorating economic conditions fostered political extremism in the five presidential and eight congressional elections held in Latin America in 1962. Budget deficits, rampant inflation, and growing unemployment were most serious in those countries—Argentina, Brazil, and Chile—where the general public had been most influential in the political structure. Internal unrest was intensified by decisions at hemispheric meetings regarding the Cuban problem.

Faltering democratic processes favored the ascendancy of military groups; by the end of the year these groups were dominant in all but ten of the Latin countries.

Argentine army and navy forces deposed and arrested President Arturo Frondizi on March 28 and compelled his successor, Jose Mario Guido, to cancel the results of the March 18 elections in which Peronist candidates won 47 of the 85 congressional seats and 10 of the 14 provincial governorships.

Encouraged by the Argentine example, the Peruvian military imprisoned President Manuel Prado y Urgateche on July 18, two weeks before his term expired, and voided the June 10 presidential elections which had given the leftist Aprista candidate a plurality.

Enthusiastic support for the 12-man military junta, led by Gen. Ricardo Perez Godoy, came from Peruvian business, land-owning, church, and Communist groups. President Kennedy, who had declared on July 18 that this action was a serious setback for the Alliance for Progress, recognized the junta on August 17, but withdrew all further military assistance pending new elections on June 9, 1963.

An alliance between the military and a conservatively oriented coalition cabinet in Ecuador maintained vigilant scrutiny over subversive activities (about 40 pro-Castro guerrilla youths and sizable quantities of ammunition were seized on April 5).

The reform-minded Salvadorean administration of Col. Julio A. Rivera, whose election on April 29 was unopposed, joined ranks with the country's oligarchic financial rulers against the rapidly expanding left in October.

The administration of Romulo Betancourt in Venezuela depended increasingly on the uncertain loyalty of the military. The conservative opposition to the reform government was now joined by non-Communist, left-wing disenchantment with the moderation of the Betancourt regime. The mounting violence throughout the country (two major uprisings by leftist-supported marines and military leaders at Carupano in May and Puerto Cabello in June), and in Caracas (a three-day riot in January and ten days of terrorism by civil and military elements in October) had resulted in constitutional guarantees being suspended for most of the year, and had provoked the government to request the Supreme Court to outlaw both the Communist Party and the Movement of the Revolutionary Left on October 15.

The Venezuelan experience indicated that political stability would not be maintained by military control alone, when military leaders were split by opportunism and ideology. There was growing evidence of a serious rift among the Brazilian military in November as the consequence of the appointment of "nationalist" and "political activist" officers to cabinet posts and major military units. Rival military groups waged an ugly civil war in Argentina, September 20–22, for leadership positions. The winning faction rejected a five-year "democratic dictatorship" which they charged their conservative opponents were advocating. They were also more sympathetic to Peronist aspirations, and to advancing the date for national elections.

Elsewhere, the military maintained its historically dominant role. In Haiti the despised Civil Milice, without regular salaries, uniforms, or drill, and the armed thugs of the Ton Ton Macoute replaced the armed forces as the major support of the Duvalier regime; the Guatemalan military, acting under a 30-day state of siege, subdued student demonstrations and arrested moderate leftist leaders on January 25. Supported by the military, the church hierarchy, and a confidential fund of over $1 million, Guatemalan President Miguel Ydígoras withstood continuing demands by student and professional groups that he resign in March and April. Meanwhile, business and land-owning elites strengthened their position in a number of countries, and labor and student groups exercised occasional influence on their respective governments.

Military Assistance Program.—Inter-American military programs were directed in 1962 against potential threats to strategic Caribbean bases (symbolized by the Soviet missile installations and "fishing port" in Cuba) and Soviet-Chinese-Cuban inspired sabotage; they were also being used constructively for economic development. Critics of the programs charged that they had contributed more to internal wars than to hemispheric defense and that they had encouraged an arms race in countries with already overburdened military budgets. (In fiscal 1962, total United States military aid to Latin America amounted to $76.1 million, of which one third went to Brazil, $10.7 million to Peru, $2.2 million to Haiti, $1.7 million to Nicaragua, and $1.1 million for regional programs.)

United States military training programs in the Canal Zone were expanded in July with the inauguration of the Inter-American Police Academy at Fort Davis; 100 Latin middle- and senior-level police officials were schooled in modern police methods during the 12-week course. The jungle warfare center at Fort Sherman had graduated 364 Latin military officers in the three years of its operation. An Inter-American Defense College was opened at Fort McNair, Va., on October 9. In March, a 44-man United States military mission began a long-range program to retrain the Dominican forces as an efficient antiguerrilla organization to subdue Cuban-trained extremist youths.

Central American governments received coast guard cutters to patrol their Caribbean shores against illicit Cuban arms. Mexico purchased 20 United States minesweepers for this purpose in July. In Ecuador, the Military Civic Action Program was being expanded with the construction of irrigation canals, roads and airports, and health and educational facilities.

South American navies participated in antisubmarine maneuvers with United States warships in September and October. The first military maneuvers (based in Honduras) held jointly with four Central American countries and Colombia, September 4–5, provided a warning to potential Communist infiltration.

Social and Economic Development.—The Alliance for Progress program for government-sponsored tax, land, and administrative reforms was frustrated by the resurgence of powerful conservative groups and by a lack of capital resulting from a deterioration of trade and private investment. Inequitable tax burdens favored the wealthy, and tax evasion was widespread. Where nominal land-reform programs were adopted, their implementation was handicapped by economically restrictive provisions and by resistance from important groups.

The faltering progress of social reform reflected the economic stagnation in Latin America. Only two Latin countries averaged more than a 2% per capita annual growth in 1957–62 (the Alliance goal was 2.5%), while the rest failed to keep pace with a 2.9% population growth. The prices of major exports—mostly agricultural products, minerals, and petroleum—had fallen. Between 1957 and 1960 the overall price decline amounted to 11.5%, effec-

tively canceling out a 13.5% increase in volume of goods sold abroad. Foreign exchange available for imports in 1961 ($7.19 billion) and private foreign investment in 1961 ($642 million) had not registered a discernible growth in the four-year period, although the Latin population had increased 12% during that time.

Under these circumstances, United States government assistance made little impact on the Latin economies. The Kennedy administration had more than fulfilled its promise to extend $1 billion in aid during the first year of the Alliance program. (Between March 13, 1961, and March 1, 1962, the U.S. government had committed $1.03 billion, 87% of which was in the form of long-term loans. The Export-Import Bank of Washington supplied $361 million; the Agency for International Development, $402 million; the Social Progress Trust Fund administered by the Inter-American Development Bank, $130 million; the Food for Peace Program, $136 million; and the Peace Corps, $1.9 million.) However, an estimated $400 million of the total United States commitments was used to bring short-term relief to debt-ridden economies through the form of export refinancing or balance-of-payment loans. In addition, only a quarter of these commitments had been disbursed by March; the rest required loan agreement negotiations with the respective government officials.

Alliance for Progress.—The first annual review of the Alliance for Progress was undertaken at Mexico City by the Inter-American Economic and Social Council (October 7–21), followed by a meeting of the inter-American ministers of finance (October 22–27). The United States was concerned that the Latin American countries viewed the program as a North American charity and not in terms of self-help. Only five of the Latin governments had drafted 10-year developmental programs, and many of the others had been unable or unwilling to meet United States conditions for assistance. However, U.S. Secretary of the Treasury Douglas Dillon announced his government's willingness to commit $413 million in expanding the capital authorization of the Inter-American Bank by $1 billion, and to replenish the $375 million Social Progress Trust Fund of the bank.

To meet Latin complaints against United States administrative delays in approving Alliance credits, six permanent committees were established to recommend improved procedures. Former Presidents Juscelino Kubitshek of Brazil and Alberto Lleras Camargo of Colombia were assigned the task of developing and propagating a convincing doctrine for the Alliance, which, it was recognized, had not been properly understood in the Latin countries.

(See also FOREIGN POLICY OF THE U.S.; UNITED NATIONS; UNITED STATES; and articles on the countries named in this review.)

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INTER-AMERICAN DEFENSE BOARD. See Index entry.
INTER-AMERICAN DEVELOPMENT BANK. See INTER-AMERICAN AFFAIRS.

INTERIOR DECORATION

The year 1962 was characterized by three significant events in the interior decorating field. The first in importance was the announcement by Mrs. John F. Kennedy, in February, of the restorations completed in the White House under the supervision of the National Fine Arts Commission. Results of the restoration, shown by Mrs. Kennedy in a televised tour, followed years of indifference and neglect of the historic mansion. Among the rooms so restored, and accepted by the first lady on behalf of the nation, were the Diplomatic Reception Room, completed as a gift, with furnishings, by the National Society of Interior Designers; and the White House Library, completed as a gift, with furnishings, by the American Institute of Interior Designers (AID).

The second important event in interior decoration was the opening in April of the Seattle World's Fair, with its Fashion Pavilion, featuring furnishings in attractive settings, jointly sponsored by the American Institute of Interior Designers and its Resources Council. The pavilion, a large, low building, was located directly behind the Space Needle, a spire topped with a revolving restaurant, itself a notable achievement in interior decoration by Don Robbins.

The third event of national interest was the exhibition, "Treasures of Versailles," at the Art Institute of Chicago, commemorating the opening of the new Sterling Morton Wing for the showing of additions to the institute's collections. The exhibition featured two entire historic rooms from Versailles as well as a gallery of French masterpieces, including furniture, paintings, and *objets d'art*.

The year of contract decoration, including work other than residential, was made notable by such distinguished and diverse installations as the first of the series of buildings at the Lincoln Center for the Performing Arts, in New York City; the branch store of Strawbridge & Clothier, of Philadelphia, by Welton Becket & Associates; the brokerage offices of Edward F. Hutton & Company, in New York, by Virginia Conner Moseley; the new Seattle Hilton Inn, by Welton Becket & Associates, with modern art featured as an integral part of the overall decorating concept; the Austin, Texas, Club, by Revell & Company; the clubhouse for Paradise Island, the Bahamas, by Mildred Hull; Georgetown Inn, Washington, D.C., by Ludliner & Himmel; and the Charlotte City Club, in North Carolina, designed by Ellen L. McCluskey, with backgrounds designed for 18th century furnishings.

From 650 entries, 43 designers and manufacturers of interior furnishings were cited by AID International Design Awards in the 17th annual presentation in Chicago. Several of the awards were given for designs of international origin; and of special interest was a series of fabric designs by American Navajo Indians.

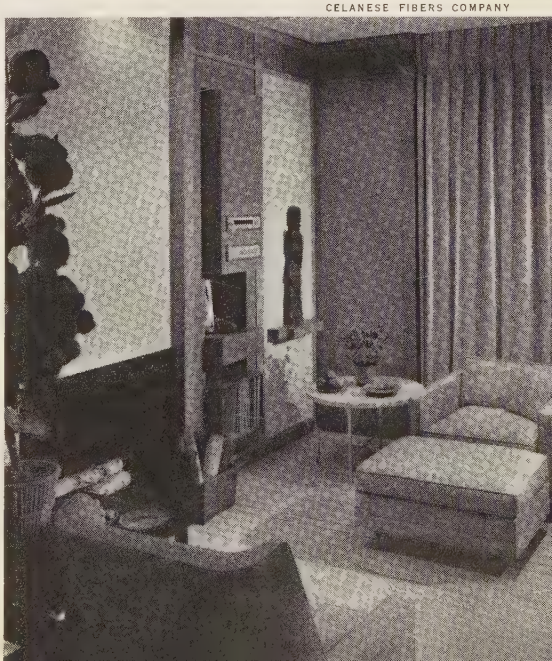
Authentic reproductions of ancient Greek furniture were re-created by T. H. Robsjohn-Gibbings for Saridis, of Athens, and displayed at Tiffany's, New York City.

Included in the outstanding exhibits by the National Design Center, in New York City, was "Panorama," which focused attention on the house in an imaginative display of furnishings for every room by Tom Lee.

Furniture.—The furniture industry was more active than ever before in its history, its seasonal output (marked by spring and fall market showings

This prize-winning living room design by Marvin Sharpe is highlighted by fabric-covered panels on each side of the fireplace that conceal stereo high-fidelity components.

CELANESE FIBERS COMPANY



with record attendance in Chicago, Grand Rapids, and High Point) presenting a cross section of its productivity in all phases. Styling of Southern lines was characterized by better design quality, more refined workmanship, and with custom touches heretofore available only in the lines of Northern manufacturers, resulting in a much longer list of resources for showrooms and interior decorators looking for finer merchandise to offer on projects having budgetary restrictions.

The fashion in furniture was to mix and blend —not match—woods, styling, and finishes. The groupings were designated as "collections" or "ensembles," with the term "suites" no longer featured. In styling, 18th century French designs dominated, followed by Georgian examples (including revivals of Hepplewhite and Sheraton) which stole the spotlight from American Colonial. Middle East and Far East designs were influential in the more impressive schemes of decoration; and rustic Spanish renditions, with Gothic and Renaissance overtones, were seen in many manufacturers' lines, auguring an important design trend for the future.

Fabrics and Floor Coverings.—There was evident in 1962 a trend toward a country manor house style of decorating, featuring such elements as beamed ceilings, mellow woods, and patterned fabrics in darker, richer hues, and producing an all-over effect of luxury with restraint. Texture, therefore, was a natural development, and was stressed in fabrics and wall coverings, as well as in floor coverings. New fabrics in the "American Legacy" series, by Greeff, reproduced patterns in authentic 18th and 19th century weaving and painting from the Henry Ford Museum. Herbert Bright made new developments in flooring with his fabrics laminated in vinyl, and tiles of pebbles and stones of all sizes and colors embedded in plastic. Outstanding, also, was the striking Amtico vinyl flooring which reproduced malachite in coloring and marking, with crystals added to give a true reproduction.

Altogether, the 1962 "look" was one of restraint. The profiles of furniture were softer and shapelier, and the interplay of various decorative materials was employed in refined and pleasing combinations, highlighted by such accents as leather, tile inlays, slate, and parquet.

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INTERNAL REVENUE. See Index entry.

INTERNATIONAL AFFAIRS. See references under the Index entry, *World Politics*.

INTERNATIONAL ATOMIC ENERGY AGENCY. See ATOMIC ENERGY.

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

This international lending agency, also known as the World Bank, began operations in June 1946. It is owned by its member countries which, by the end of 1962, numbered 81. It makes loans to member governments and, with the guarantee of the government concerned, to their territories, public agencies, or private enterprises. The bank's subscribed capital is $20,663 million; 10% is paid in, and the balance is subject to call only to meet the bank's obligations. Loan funds come from the paid-in portion of capital subscriptions, and from borrowings and net earnings. By September 1962 these subscriptions amounted to $2,056 million; the outstanding funded debt was $2,533 million; and net earnings totaled $489 million. Bank funds are also replenished by the sale of parts of loans to outside investors; such sales totaled $1,352 million by September 1962.

On Oct. 24, 1962, the executive directors selected George D. Woods as president of the bank (effective Jan. 1, 1963) to succeed Eugene R. Black, who retired after having held the position for 13 years.

Activities in 1961–62.—During the fiscal year ending June 30, 1962, bank lending reached a new high; 29 loans totaling $882.3 million were made in 19 countries. This brought total loans to 321, aggregating $6,544 million in 60 countries or territories. More than half the year's lending, $493.5 million, was for the expansion of electric power in Argentina, Australia, Colombia, Ghana, Mexico, the Philippines, South Africa, and Trinidad and Tobago. Transport loans totaling $241 million were for highway development in Colombia, Costa Rica, Japan, Mexico, Peru, and Venezuela; for railways in India and South Africa; and for port improvements in India and the Philippines. Industrial loans for development banks in India, Austria, Costa Rica, and Ethiopia, and for specific projects in India, Finland, and Israel amounted to $134.5 million. The year's operations also included loans of $8.4 million for land settlement in Kenya, $2.9 million for telecommunications in Ethiopia, and $2 million for the hot water heating system in Iceland.

During the year a new Development Services Department was established to administer the bank's technical assistance work, which among other things includes serving as executing agency for the UN Special Fund projects. Of special importance was the inauguration of the Development Advisory Service, through which the bank provides a corps of highly experienced professionals to serve as advisers to member governments.

The bank is also becoming more active in the investigation and preparation of projects for possible financing and, where appropriate, in studying whole sectors of the economy of a member country to provide the basis for sound investment planning. During the past year the bank organized and helped to finance such studies in six countries.

International Development Association.—IDA came into existence as an affiliate of the World Bank in September 1960. Its purpose is to provide funds for economic development on terms more flexible and bearing less heavily on the balance of payments of recipient countries than those of conventional loans. Membership in IDA is open to World Bank member countries; by September 1962, 67 countries had joined and their subscribed capital totaled $942.6 million. Members are divided into two groups: the more industrialized countries, whose entire subscriptions are to be paid over five years in gold or freely convertible currencies; and the less developed countries, which pay only 10% of their subscriptions in this form and the remainder in their national currencies.

By September 1962, IDA had extended 29 credits totaling $347.6 million in Chile, China, Colombia, Costa Rica, Honduras, India, Jordan, Korea, Nicaragua, Pakistan, Paraguay, Sudan, Swaziland, and Tunisia. The credits are assisting the development of electric power, transportation, communications, agriculture, industry, municipal water supply, and education. Each of the credits is for a term of 50 years. After a 10-year period of grace, 1% of the principal is repayable annually for 10 years, and 3% is repayable annually for the final 30 years. The credits are free of interest, but a service charge of three fourths of 1% per annum on the amount withdrawn and outstanding is made to meet IDA's administrative costs.

J. BURKE KNAPP,
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INTERNATIONAL COURT OF JUSTICE. See INTERNATIONAL LAW; UNITED NATIONS.

INTERNATIONAL DEVELOPMENT ASSOCIATION. See INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT.

INTERNATIONAL LABOR ORGANIZATION. See SOCIETIES AND ORGANIZATIONS.

INTERNATIONAL LAW

Principal developments in international law during 1962 included decisions by the International Court of Justice involving a temple in Southeast Asia and the financial obligations of United Nations members.

International Court of Justice.—Judgment on the merits in the dispute between Cambodia and Thailand concerning sovereignty over the Temple of Preah Vihear was given by the court on June 15, 1962 (*I.C.J. Reports 1962*, p. 6).

The temple ruins are situated in the Dangrek range of mountains along the boundary between Thailand and Cambodia, which until 1953, when it gained independence, was part of French Indochina. Prior to 1904 there was tension between the two countries due to uncertainty over the precise location of the long frontier. On Feb. 13, 1904, France and Siam (as Thailand was then called) concluded a boundary treaty providing that in the Dangrek sector the boundary should follow the watershed line; it was also agreed that a mixed commission should delimit the frontier on the ground. Maps were eventually prepared by French authorities at the request of the Siamese commissioners. It appears that these were not submitted to the commission before it disbanded and, therefore, lacked binding character. In 1908, however, the maps were officially transmitted to Siam. One showed the Preah Vihear area to be in Cambodia, although the boundary did not follow the watershed.

The court reviewed several opportunities when Siam could and should have challenged the boundary and found that it had failed to do so, even as late as 1947. At that time Siam claimed several frontier rectifications before the Franco-Siamese Conciliation Commission in Washington, D.C., but none related to the contested area. Thailand argued before the court that since it had in fact exercised sovereignty, it did not have to raise the question. The court dismissed this argument, first, because the acts were performed by local and minor officials, and second, because Thailand failed to challenge France when in 1930 it asserted sovereignty over the area. In 1949 and 1950, France—and in 1953 and 1954, Cambodia—questioned the presence of Thai policemen and keepers and requested their withdrawal, but Thailand failed again to raise a claim on the diplomatic level.

The court held that Thailand was precluded by its own conduct from pleading error regarding the map; that it had in fact accepted the line drawn on the map; that having enjoyed for 50 years the benefits of a stable frontier, Thailand could not now challenge it; that both parties had accepted the line as fulfilling the terms of the treaty; and that this agreement resulting from their conduct superseded the watershed line provided for in the treaty. Accordingly, the court, by a vote of 9–3, ruled that the temple was situated in territory under the sovereignty of Cambodia, and that Thailand was obligated to withdraw its police forces and keepers from the area. By a vote of 7–5, the court ruled that Thailand was obligated to return to Cambodia any sculptures, fragments, and ancient pottery that may have been removed from the temple since 1954.

The court pointed out that the chief objective of a boundary settlement is to establish certainty and finality by means of natural and visible lines. The line on the map, though not following the watershed, satisfied this requirement and therefore the intent of the treaty. The adverse judgment, which caused some domestic difficulties for the Thai government, was reported to have been executed.

On Dec. 20, 1961, the UN General Assembly voted to request the court for an advisory opinion as to whether expenditures authorized in several resolutions for the purpose of financing the United Nations Emergency Force in the Middle East (UNEF) and the United Nations Operations in the Congo (ONUC) constituted "expenses of the Organization" within the meaning of Article 17, par. 2, of the UN Charter. The court on July 20, 1962, by a vote of 9–5, answered the question in the affirmative (*I.C.J. Reports 1962*, p. 151).

The court considered first whether the term "budget" in Article 17, par. 1, should be construed as being limited to "administrative" or "ordinary" as distinguished from "operational" or "extraordinary" budgets. It found that in practice the organization from its beginning had included items in the budget which could not be regarded as falling in the first category. The court saw no reason for challenging the legality of this settled practice.

Turning to the interpretation of Article 17, par. 2, in the context of the Charter, the court dismissed as unfounded the argument that the General Assembly could take no action whatsoever, and therefore could not incur expenses, in connection with the maintenance of international peace and security. Article 11, par. 2, of the Charter was intended only to preclude the Assembly from taking action which was exclusively within the authority of the Security Council, namely, enforcement action. The court also concluded that Article 43 of the Charter did not constitute a limitation on the budgetary power of the Assembly. The agreements provided for in this clause concerning armed forces, assistance, and facilities to be made available by members to the Security Council had, in the first place, not yet been concluded; and, in the second place, even had they been made, it might still be necessary to provide financial assistance to the members. The Assembly had authority to do so. Moreover, the absence of these agreements did not render the Security Council impotent in the face of an emergency. The Security Council certainly has the power "to police a situation even though it does not resort to enforcement action against a state." The financial burden of such action would constitute "expenses of the Organization within the meaning of Article 17, par. 2."

UNITED NATIONS

International Court of Justice at The Hague, Netherlands, advised on July 20 that United Nations members had to pay assessments for operations in the Congo and Middle East.

Finally, the court held that, in determining whether the actual expenditures referred to in the request of the Assembly constitute expenses of the organization, "such expenditures must be tested by their relationship to the purposes of the United Nations in the sense that if an expenditure were made for a purpose which is not one of the purposes of the United Nations, it could not be considered an 'expense of the Organization'."

The primary purpose of the organization is the

maintenance of international peace and security. Even if an action serving this purpose is taken by the wrong organ or in an incorrect manner, it would not follow that the expense incurred would not be an expense of the organization. Specifically, UNEF was established by the General Assembly acting within its powers and with the consent of Egypt and therefore it did not constitute enforcement action. The secretary general of the United Nations was authorized to incur the required financial obligations. They constitute expenses of the organization. The fact that they were carried in a special account was considered immaterial. The measures relating to the Congo are not enforcement action; they were initially taken by the Security Council at the request and with the consent of the Congo, and confirmed by the Assembly, and the expenses incurred by the secretary general constituted an obligation of the organization. The Assembly had authority to apportion them in accordance with Article 17, par. 2.

This opinion deals with the most important matter ever referred to the court by the Assembly for an advisory opinion. The Soviet Union deemed it sufficiently significant to be represented for the first time in oral hearings held by the court. The import of the opinion lies in the determination that the expenses involved in the police operations in Egypt and the Congo are legally binding on the members, and that those failing to pay their assessed contribution expose themselves to the penalty provided for in Article 19. According to this article, "a Member of the United Nations which is in arrears in the payment of its financial contributions to the Organization shall have no vote in the General Assembly if the amount of its arrears equals or exceeds the amount of the contributions due from it for the preceding two full years."

The financial difficulties of the United Nations were in large measure due to the fact that a substantial number of members, including the USSR and France, failed to pay their assessments for UNEF and ONUC on the ground that they were not legally binding. Under this opinion, accepted by the General Assembly on Dec. 19, 1962, the defaulting members expose themselves to the loss of their vote in the Assembly as soon as the condition of Article 19 is met, unless the Assembly is satisfied "that the failure to pay is due to conditions beyond the control of the Member." In the meantime, the Assembly authorized a bond issue to meet the deficit and ensure the solvency of the organization, as well as the continuation of these vital actions.

At the hearing held on March 1, 1962, the president of the court, Judge Bohdan Winiarski of Poland, delivered an address to note that on Feb. 15, 1922, the predecessor of the present court, the Permanent Court of International Justice, held its first sitting. That day was "outstanding in the history of international law." It marked the establishment for the first time of a truly permanent institution of international justice. The court was not merely "the principal judicial organ of the United Nations" but "first and foremost the organ of international law."

International Law Commission.—In the course of its 14th session, April 24–June 29, 1962, the commission discussed draft articles on the law of treaties and surveyed its program of work in the light of recommendations formulated in General Assembly Resolution 1686 (XVI) of Dec. 19, 1961. The commission decided to give priority to the formulation of the law of treaties and to include two additional main topics in its program: the law of state responsibility, and succession of states and governments. Departing from its usual method, the commission appointed subcommittees for these topics to meet in January 1963 and submit reports to the commission. The commission also decided to include in its program four topics of more limited scope which were referred to it by the General Assembly: the question of special missions, the question of relations between states and intergovernmental organizations, the right of asylum, and the juridical regime of historic waters, including historic bays.

Treaties.—From June 16, 1961, to June 15, 1962, 724 treaties and international agreements were registered with the UN Secretariat, 11 treaties and agreements were filed and recorded, and 457 certified statements were registered or filed and recorded, bringing the total since 1946 to 9,255 treaties and agreements, and 2,824 certified statements. During the year the Secretariat published 27 volumes of the United Nations *Treaty Series*, and an additional 33 volumes of instruments registered or filed and recorded prior to the end of 1961 were expected to appear in 1962. Four instruments were drawn up under the auspices of the United Nations, raising the total of instruments for which the Secretariat is the depository from 157 to 161. During the period under review, 107 signatures were added to these agreements, and 263 ratifications, accessions, or notifications were received by the Secretariat. Two additional agreements have entered into force, raising the total from 109 to 111, namely: the Convention on the Contract for the International Carriage of Goods by Road (May 19, 1956) and the European Convention on Customs Treatment of Pallets used in International Transport (Dec. 9, 1960).

During the period from Aug. 31, 1961, to October 1962, the U.S. Department of State added over 300 instruments to its *Treaties and Other International Acts Series* (*TIAS*) raising the total to 5,093.

(See also UNITED NATIONS.)

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INTERNATIONAL MONETARY FUND

The Board of Governors of the International Monetary Fund (IMF) held its 17th annual meeting in Washington, D.C., Sept. 17–21, 1962. One of the outstanding features of the past year has been the movement toward greater international monetary cooperation. Arrangements were negotiated to replenish the fund's resources by borrowing up to $6 billion in case of need, from 10 industrial countries. These new developments can be expected to lead to a strengthening of the world monetary system; they also hold out hope for a closer coordination of economic and financial policies among the industrial countries, to the benefit of all nations.

The 12-month period ended Sept. 30, 1962, was the most active, from the standpoint of financial operations, in the history of the fund. Purchases equivalent to $636,050,000 were made in nine currencies—U.S. dollars, deutsche marks, French francs, Italian lire, sterling, Netherlands guilders, Belgian francs, Swedish kronor, and Austrian schillings. The purchases were as follows, by countries and amounts: Argentina, $110,000,000; Bolivia, $2,000,000; Canada, $300,000,000; Ceylon, $11,250,000; Colombia, $7,500,000; Costa Rica, $10,000,000; Ecuador, $7,000,000; El Salvador, $2,000,000; Ghana, $14,250,000; Guatemala, $5,000,000; Haiti, $3,750,000; Honduras, $3,750,000; India, $25,000,000; Indonesia, $21,250,000; Nicaragua, $1,500,000; Philippines, $28,-

300,000; Syrian Arab Republic, $3,600,000; Turkey, $15,000,000; United Arab Republic, $59,900,000; and Yugoslavia, $5,000,000.

The IMF agreed to stand-by arrangements, permitting drawings for one-year periods, with Argentina, $100,000,000; Bolivia, $10,000,000; Colombia, $10,000,000; Costa Rica, $15,000,000; Ecuador, $5,000,000; El Salvador, $11,250,000; Haiti, $6,000,000; Honduras, $7,500,000; Iceland, $1,625,000; India, $100,000,000; Japan, $305,000,000; Paraguay, $5,000,000; Peru, $30,000,000; Philippines, $40,400,000; United Arab Republic, $42,500,000; and United Kingdom, $1,000,000,000. A six-month stand-by arrangement for $6,600,000 was agreed to with the Syrian Arab Republic, and this was extended for two months beyond its expiration date of Sept. 30, 1962; and a nine-month stand-by arrangement for $31,000,000 was agreed to with Turkey. The stand-by arrangement with Iran for $35,000,000 was extended from Oct. 10, 1961, to March 20, 1962.

Total transactions between March 1, 1947, when the IMF commenced operations, and Sept. 30, 1962, were equivalent to $6,714,327,102. Of the currencies purchased during the 12-month period ended Sept. 30, 1962, 84 percent was in currencies other than U.S. dollars. During this 12-month period, 22 IMF members made total repurchases of their currencies equivalent to $1,729,033,732, of which $78,243,670 was paid in gold and $1,010,493,268 in U.S. dollars.

New par values were agreed on with Israel, 33.3333 U.S. cents per Israeli pound; and Canada, 92.5 U.S. cents per Canadian dollar. Initial par values, given per U.S. dollar, were agreed on as follows: 0.359596 New Zealand pound, 28.75 Portuguese escudos, 0.357143 Cyprus pound, and 3.06122 Malayan dollars. Seventeen fund members had not agreed initial par values with the Fund.

During the period ended Sept. 30, 1962, eight new members joined the Fund: Cyprus, Liberia, Togo, Senegal, Somalia, Sierra Leone, Tanganyika, and Kuwait. The quota for each of these countries was $11,250,000, except for Senegal ($7,500,000), Tanganyika ($25,000,000), and Kuwait ($50,000,000). Terms and conditions of membership were approved by the Board of Governors for the Central African Republic, Chad, Congo (Brazzaville), Dahomey, Gabon, Niger, and Upper Volta, with quotas of $7,500,000 each; Cameroon, Guinea, and the Ivory Coast, with quotas of $15,000,000 each; and Jamaica, with a quota of $20,000,000. Applications for membership were received from Mali, Trinidad and Tobago, Congo (Léopoldville), Burundi, Malagasy Republic, Rwanda, and Uganda.

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United States Executive Director.

INTERNATIONAL TRADE

Free-world exports resumed a strong upward movement in 1962. After a lull in the previous year, the renewed thrust was expected to raise the export total by as much as 6% above 1961—to $125 billion or $126 billion. This increase brought the volume of world trade to a level one third higher than that of four years earlier.

Most of the 1962 expansion could be attributed to rising exports from the major industrial countries—United States, western Europe, and Japan—and from Oceania. Only minor increases were shown in shipments from Asia, Africa, and the Middle East, while no change was discernible in Latin American exports. Furthermore, expanded trade between the developed areas of the world accounted for a large share of the overall rise.

A partial explanation of the lack of vitality in the exports from the less-developed countries lay in the fact that prices for many primary products in world markets declined in 1962. In fact, the movement of industrial and primary prices had been diverging for some years. Since 1958, average export prices for industrial goods had increased by 3%, while average prices of commodities exported by the less-developed areas had moved downward by 5 or 6%.

Among the industrial countries, the United States expansion in 1962, after a pause in export sales the previous year, was noteworthy. The main push for rising world exports in 1962, as in other recent years, however, came from the still expanding economies of western Europe and Japan. In the latter country, the rate of increase of production and investment was reduced, but exports were in greater demand in foreign markets than ever, and were expected to be at least 15% above the previous year's level. Exports were especially strong to the United States, as major gains were shown in sales of tuna, iron and steel products, and cotton, silk, and woolen fabrics.

Despite some slowing in the rate of growth of most European countries, their external trade continued to grow about as fast in 1962 as in the previous year. Exports from the European Economic Community (EEC, or Common Market), however, were less buoyant than those of other European countries.

The EEC initiated a further 10% cut in internal tariffs on industrial products at the beginning of the year, followed by a second 10% reduction on July 1. This brought the total reduction in internal tariffs since the establishment of the market in 1957 to 50%. The halfway mark was thereby reached 30 months ahead of the original timetable. On selected agricultural products, an additional 5% cut was made in the middle of the year, making a total cut on these items thus far of 35%. A decision was made to take a second step toward the common external tariff (CXT) on July 1, 1963, also 30 months ahead of schedule. At that time, the differences between the CXT and each country's national tariff will be narrowed by 60% on all nonagricultural goods, with minor exceptions where the CXT will become effective at once.

Agreement was reached early in 1962 on an EEC agricultural policy, designed to create, over a transitional period of 7½ years, a common market in farm products. A system of variable import levies was designed in an effort to equalize the prices of imported farm products with the domestic support prices of member countries. These levies became effective on August 1 on foreign grains, poultry, eggs, pork, fruit, and vegetables. To maintain a competitive advantage for producers in the market, certain supplemental charges could also be levied against outside imports as necessary. (See also EUROPE.)

United States.—The year 1962 was a momentous one for United States trade policy. The beginning of the year brought the successful conclusion of a two-year negotiation on tariff reductions with the Common Market and other countries under the eleventh extension of the Trade Agreements Act of 1934. The end of the year saw the passage of the new Trade Expansion Act of 1962, containing unprecedented tariff-cutting authority for the president and a unique plan of tariff adjustment assistance.

In tariff negotiations under the General Agreement on Tariffs and Trade (GATT), the United States received concessions on a trade volume of about $1.6 billion in return for commitments, to take effect in most cases in two steps, one year apart, on United States tariffs covering commodities with a trade volume of $1.2 billion. In special negotiations with the EEC, agreement was reached for a phased 20% cut in most of the industrial items making up the common external tariff. On two products of special interest to the United States—automobiles and automobile parts—duties

Table 1—WORLD TRADE, BY QUARTERS, 1961–62
(In billions of dollars; quarterly figures at annual rates)

Area	1st quarter 1961	2nd quarter 1961	3rd quarter 1961	4th quarter 1961	1st quarter 1962	2nd quarter 1962
Exports, f.o.b., total	115.1	118.5	116.0	125.2	120.9	126.2
United States and Canada	26.4	26.6	26.2	28.8	26.7	29.6
Latin America	10.5	10.6	10.1	10.1	10.5	10.7
Western Europe	53.1	54.9	54.1	59.4	56.8	58.1
Middle East	5.4	5.5	5.0	5.4	5.8	...[1]
Africa	5.6	5.8	5.5	5.6	5.8	...[1]
Asia	10.9	11.6	12.0	12.5	11.8	12.3
Oceania	3.2	3.5	3.1	3.4	3.5	3.6
Imports, c.i.f., total	121.3	125.2	121.4	130.6	129.8	132.0
United States and Canada	20.8	21.9	22.3	24.2	23.6	24.9
Latin America	10.1	10.4	10.7	11.2	10.4	10.2
Western Europe	59.9	61.5	58.4	64.4	65.5	65.8
Middle East	4.4	4.5	4.3	4.8	4.5	...[1]
Africa	7.0	6.9	6.5	6.9	6.5	...[1]
Asia	15.0	16.3	15.8	16.0	16.0	16.0
Oceania	4.1	3.7	3.4	3.1	3.3	3.5

Note: Data exclude trade of the USSR, European Soviet satellites, mainland (Communist) China, North Korea, North Vietnam, and the Mongolian People's Republic.
[1] Not available.

were cut by even larger amounts. Various arrangements, including a number of tariff cuts, also were agreed on agricultural items. New concessions were agreed on at Geneva with 18 other countries. (See also TARIFFS.)

The new Trade Expansion Act of 1962, signed by President Kennedy on October 11, authorized the president to reduce rates of duty existing on July 1, 1962, by 50% in the next five years. He was further given authority to eliminate duties (1) on categories of goods for which the United States and the Common Market together account for 80% or more of free-world exports; (2) on selected agricultural commodities where such modification would assure maintenance or expansion of United States exports of like goods; (3) on tropical agricultural or forestry products not produced in the United States if the EEC would reciprocate; and (4) on articles for which the ad valorem rate is now 5% or less. The power to eliminate duties was the first such authority granted by Congress to the president.

Table 2—PRINCIPAL COMMODITY EXPORTS AND IMPORTS OF THE UNITED STATES, 1961–62
(Millions of dollars)

Commodity	Year 1961	January–August 1962
Exports, total	20,874	14,477
Wheat and wheat flour	1,229	743
Coarse grains	516	551
Soybeans, excluding canned	343	217
Tobacco, unmanufactured	391	184
Cotton, raw	875	394
Textile finished manufactures	466	298
Pulp, paper, and products	453	304
Coal	341	241
Petroleum and products	445	290
Iron and steel scrap	354	104
Iron and steel mill products	429	284
Metal manufactures	427	300
Copper and copper-base alloys	341	169
Electrical apparatus	868	597
Construction, excavating, and mining machinery	776	564
Metalworking machines and machine tools	480	350
Industrial machinery, other	1,487	1,120
Office machines and parts	311	223
Tractors, parts, and accessories	359	253
Aircraft and aircraft engines	351	252
Chemical specialties	696	502
Industrial chemicals	299	207
All other domestic exports	8,392	6,152
Re-exports	245	178
Imports, total	14,720	10,815
Imports for consumption, total	14,628	10,688
Meat products	385	305
Fish	334	259
Coffee	964	638
Sugar, cane	458	320
Textile finished manufactures	770	632
Sawmill products	314	230
Woodpulp	303	221
Newsprint	686	456
Petroleum, crude	934	678
Fuel oil	540	333
Iron and steel mill products	422	367
Nonferrous ores and metals	1,069	788
Electrical apparatus	318	254
Machinery, other	471	368
Automobiles, new	307	268
Chemicals and related products	390	282
All other imports for consumption	5,963	4,289

Note: Commodity exports exclude "special category" exports which are restricted for security reasons.

The other unique feature of the act was the initiation of a program of tariff adjustment assistance. Under this provision any industry, firm, or group of workers threatened with, or experiencing, serious injury from increased imports as a result of a tariff concession can apply for assistance. This may be in the form of technical assistance, loans, or tax relief for firms, or weekly unemployment allowances, retraining, or relocation allowances for workers. Negotiations under this new act were expected to begin early in 1964.

United States trade through September 1962 was rising strongly toward record totals. Nonmilitary exports for the nine months of the year, on a seasonally adjusted annual basis, were $21.2 billion, more than 5% above the calendar year 1961 level. Imports were even more buoyant, climbing by 12% in annual rate over 1961 to $16.4 billion. The 1962 balance of trade, based on nine months' data, was, therefore, about $4.8 billion, compared with $5.3 billion in the year 1961.

Strength in machinery sales abroad contributed to the high export level, with sales to western Europe, Japan, and Canada through August well above those of the previous year. Aid-financed sales of machinery to India and Pakistan also showed notable increases. Gains were concentrated in various types of industrial machinery, particularly power-generating, construction, excavation, and mining machinery, and machine tools. Shipments of foodstuffs gained over the previous year. Among the grains, wheat lagged behind 1961 totals, but coarse grain sales were exceptionally large and rice shipments rose by 50%. Sales of meat products to the EEC—mainly poultry to Germany—were especially high through July 31 when new import levies went into effect, but they receded thereafter. Cotton sales were very sluggish, totaling only 2.9 million bales in the first eight months of 1962, compared with 4.8 million bales in the like period of 1961. Iron and steel scrap exports dropped to less than half their exceptional 1961 total, while copper and copper-base alloys decreased by 25%. Sales of motor trucks also were down, but reductions in that vehicle category were more than compensated for by large gains in sales

Table 3—U.S. TRADE WITH PRINCIPAL COUNTRIES, 1961–62

(Millions of dollars)

Country	Exports, including re-exports		General imports	
	Year 1961	Jan.–Aug. 1962	Year 1961	Jan.–Aug. 1962
Total	20,874	14,477	14,720	10,815
Argentina	424	287	102	68
Australia	318	256	184	178
Belgium-Luxembourg	420	295	352	266
Brazil	486	280	562	340
Canada	3,643	2,577	3,267	2,399
Chile	227	112	184	144
Colombia	245	166	276	172
France	565	396	436	292
Germany, Federal Republic	1,075	726	856	613
India	483	426	252	167
Italy	794	506	376	287
Japan	1,739	949	1,055	878
Mexico	797	499	538	403
Netherlands	697	499	208	136
Netherlands Antilles	68	48	274	186
Philippines	333	176	316	226
South Africa	228	148	209	164
Spain	270	160	84	58
Sweden	260	166	141	110
Switzerland	271	199	191	142
United Kingdom	1,130	677	901	663
Venezuela	510	311	898	654
Other countries	4,122	3,108	3,058	2,269
Special category exports	1,769	1,510	...	...

Note: Country data exclude "special category" exports.

of parts for assembly and, to a lesser extent, in new passenger car sales.

Imports, which gained steadily quarter-by-quarter from April 1961, were larger in almost every major group. Increased amounts of coffee were purchased, but because of lower prices, at a smaller value than in 1961. Meat products rose by 20% in value. Among industrial materials for which demand was strong as the economy operated in high gear, at record levels of income and investment, there were increased imports of crude petroleum, rubber, sawmill products, wood pulp, iron ore, aluminum, nickel, and tin. Declines were registered for deliveries of uranium, fuel oil, and lead. In the finished-goods categories, purchases of foreign machinery, iron and steel mill products, and textile manufactures all climbed impressively.

By area, import gains were relatively minor from Africa and Latin America, and strongest from Canada, Europe, and the Far East. Exports were substantially larger to Canada, Europe, and Africa, but smaller to Latin America and the Far East, the latter being influenced by a drop in shipments to Japan of over $200 million in the first eight months of 1962.

The Export-Import Bank of Washington implemented further its assistance to United States foreign trade in 1962 by starting three new programs. On February 5, the new Foreign Credit Insurance Association (FCIA), sponsored and underwritten by the bank, began operation. Insurance policies are issued by FCIA to cover both commercial credit and political risks on transactions resulting from United States export sales to buyers in friendly foreign countries. Insurance was initially provided for short-term credit transactions of up to 180 days, but later in the year was extended to cover medium-term transactions, for sales covering terms of 181 days to 5 years. The other two new bank programs were a system of guarantees on export transactions for commercial banks, and the sale of $300 million of Export-Import Bank portfolio paper to private United States banks.

During the fiscal year 1962, the bank authorized loans, guarantees, and export credit insurance totaling $1.8 billion, the largest annual volume of business in its history except in 1946 when huge loans were made for reconstruction in Europe.

The balance-of-payments deficit of the United States through September 1962 was estimated at $1.4 billion. About half of this total was incurred in the third quarter, with $476 million attributable to the first quarter and $218 million to the second. Totals for the second quarter were favorably, and those for the third quarter were unfavorably, affected by the Canadian financial crisis and by measures taken by that government in May and June to stop its loss of reserves.

Compared with the same period of the previous year when the deficit was $1.05 billion, the less favorable picture in 1962 stemmed primarily from a deterioration in the merchandise export surplus and some change in the outflow of United States capital. An increase in private long-term direct investment was more than counterbalanced by a sizable reduction in the outflow of private short-term investments. Advance repayments of $471 million in postwar debts by France and Italy in the third quarter contributed to the overall balance. (See also FOREIGN INVESTMENTS.)

Canada.—Canadian trade moved to new record levels in 1962, as demand for that country's crude industrial materials strengthened in the United States and import requirements rose with the expansion of industrial production and personal income. Exports through September totaled C$4,623 million, a 9% advance over the comparable period of 1961. A part of this gain reflected the change in the foreign exchange value of the Canadian dollar. On May 2 that dollar was pegged at 92½ cents in terms of United States currency, after nearly 12 years of fluctuation in response to conditions of supply and demand.

Canadian exports to the United States through September rose by nearly 20% over shipments in the corresponding period of 1961, but declined fractionally to the United Kingdom and by somewhat more to the rest of the world. Shipments to the United States were especially strong in materials for industry. Iron ore, crude petroleum, nickel, aluminum, and copper advanced sharply. Declines, however, were registered in deliveries of uranium and newsprint to the United States. The net increase raised the share of Canadian exports absorbed by the United States from 53½ to 59% of the total.

Canadian imports through August climbed by 14% over the like total for 1961, to C$4,235 million. The resultant import balance for the 8-month period was C$104 million, contrasting with a small export balance of C$21 million in the same months of 1961. Eighty-five percent of the increase in imports in 1962 arose from purchases in the

Table 4—CANADIAN TRADE BY PRINCIPAL COMMODITY GROUPS, 1961–62

(Millions of Canadian dollars)

Commodity group	Exports of Canadian produce				Imports for consumption			
	Total		United States		Total		United States	
	Year 1961	Jan.–July 1962	Year 1961	Jan.–July 1962	Year 1961	Jan.–May 1962	Year 1961	Jan.–May 1962
Total	5,756	3,477	3,109	2,066	5,771	2,618	3,864	1,868
Agricultural and vegetable products	1,087	599	183	101	712	292	389	167
Animals and animal products	354	193	234	132	163	63	95	37
Fibers, textiles, and products	45	27	13	7	457	212	231	114
Wood, wood products, and paper	1,639	977	1,276	780	286	126	242	108
Iron and products	595	402	323	254	2,025	979	1,593	796
Nonferrous metals and products	1,210	703	551	373	509	242	325	170
Nonmetallic minerals and products	431	307	323	256	685	255	266	101
Chemicals and allied products	248	142	101	70	371	159	306	133
Miscellaneous commodities	147	127	105	93	563	290	417	242

United States. Imports from Britain dropped by about 6% during the year, although those from the rest of the world expanded somewhat. Especially buoyant were imports of various types of textile fibers and textile products, industrial machinery, electrical apparatus, and aircraft.

The Canadian balance of international payments in the first half of 1962 reflected unusual developments. From the end of 1961 through June 24, 1962, there was a loss of about half of the official holdings of gold and foreign exchange, or almost C$1 billion. On June 26 the government instituted a comprehensive program to relieve pressure on the Canadian dollar and to bring about a stabilization of Canada's foreign transactions, supported by large international borrowings. The substantial net outflow of capital, especially in short-term forms, was in contrast with predominant inflows—primarily long-term—which had characterized Canadian accounts for a prolonged period.

The current account deficit also worsened in the first two quarters from the like period of 1961. Unfavorable shifts both in trade and in nonmerchandise transactions caused a deterioration of C$77 million.

By November 1, Canada's exchange reserves had been greatly strengthened, and some of the emergency measures taken in June to halt losses were modified. The interest rate, which had been raised to 6%, was cut in two steps to 5%, and surcharges on some types of industrial machinery, steel, and other products, amounting to imports of C$250 million, were removed. Other surcharges of from 5 to 15%, which had been levied on about half of Canada's imports, remained.

Latin America.—The international trade of the Latin American republics deteriorated through the first half of 1962. Exports of these countries as a group continued at their static level of the last several years, while imports were lower than in any year since 1959. The depressed export level was due primarily to reduced prices for many major Latin American exports. Coffee, sugar, cocoa, tin, copper, and cotton all were selling below the levels of the previous year. The downward price trends reflected the fact that demand for these products had risen far more slowly than supply. The expansion of supply had been encouraged by improved production techniques, increased mechanization, and new mineral finds.

Among the major republics, exports from Brazil were the most depressed in 1962, dropping in value by 25% in the first nine months. Argentina and Venezuela, on the other hand, were notable by registering sizable export gains in this period. The imports of almost every republic, except Peru and Uruguay, either showed no change or, as in the case of Argentina, Brazil, Colombia, and Mexico, dropped considerably below the values of the previous year.

Regional efforts to deal with the sluggish trade situation, which in turn bears on the area's economic development, were primarily of two types: establishment of broader regional markets and the encouragement of international commodity agreements. The Central American Common Market was expanded to five countries in the summer of 1962, when Costa Rica added her signature to the General Treaty for Central American Economic Integration. In an effort to provide a broader base for economic expansion, these countries have moved a considerable distance toward setting up a common market. Eighty percent of all commodities are now imported under a common external tariff, and barriers have been eliminated on about half of the trade among the member countries.

The larger Latin American Free Trade Association, comprising Mexico and eight South American countries, met for its second annual trade conference in Mexico City in August 1962, where further tariff reductions were programmed. Concessions had been granted in the first year of operation on more than 1,000 products.

Following a United Nations conference during the summer months, a five-year international coffee agreement was drawn up, the first of its kind to which both producing and consuming countries have subscribed. The agreement established basic first-year export quotas at 1% less than in the previous year, and provided for a study of obstacles to increasing consumption. The successful completion of this cooperative agreement encouraged demands by Latin American countries for a consideration of others.

Table 5—TRADE OF PRINCIPAL LATIN AMERICAN REPUBLICS, 1961–62

(Millions of dollars)

Country	Year 1961	Jan.–Mar. 1962 (annual rates)	Apr.–June 1962 (annual rates)
Exports, f.o.b.:			
Argentina	964	1,220	1,240
Brazil	1,403	1,185	1,157
Chile	506	...[1]	...[1]
Colombia	433	397	383[2]
Mexico	826	984	821
Peru	494	524	512
Uruguay	175	178	172
Venezuela	2,415	2,578	2,567
Imports, c.i.f.:			
Argentina	1,460	1,378	1,338
Brazil	1,460	1,438	1,238
Chile	591	...[1]	...[1]
Colombia	557	543	505
Mexico	1,139	1,068	1,159
Peru	468	528	531
Uruguay	208	180	209
Venezuela	1,161	1,117	1,147

[1] Not available. [2] Partly estimated.

United Kingdom.—Following a decline in the latter part of 1961, British exports through September 1962 shifted to a firmly rising trend. This change resulted from a recovery in exports to the sterling area, which had fallen at the end of the previous year, and a continued growth in shipments to western Europe.

Imports, which had dropped considerably in 1961, expanded by about 1% through September 1962, with larger amounts of foodstuffs and fuels accounting for most of the increase. The deficit in the balance of trade for the first nine months was £425 million, only slightly less than in the comparable months of the previous year.

The United Kingdom balance of payments for the first half of 1962 continued to improve, as it had in the previous half-year, following adverse movements in the two preceding years. The first half-yearly surplus since 1959, totaling £96 million, was recorded in the current account. The trade deficit (for payments purposes, based on an f.o.b. calculation of imports) was only £16 million, compared with £115 million in the same period of 1961. The downturn in net earnings from "invisibles" was reversed, as the surplus of £112 million was double that for the first half of 1961. Increased interest, profit, and dividends accounted for much of this gain. A net outflow was recorded for long-term capital movements; thus, the current and capital accounts together showed a surplus of £55 million for the first six months of 1962.

Table 6—UNITED KINGDOM TRADE WITH PRINCIPAL COUNTRIES, 1961–62

(Millions of pounds sterling)

Country	General imports, Year 1961	General imports, Jan.–Sept. 1962	Exports, including re-exports, Year 1961	Exports, including re-exports, Jan.–Sept. 1962
Total	4,398	3,355	3,841	2,930
Commonwealth countries:				
Australia	174	137	204	169
Canada	350	254	228	151
Hong Kong	45	41	44	34
India	145	96	153	87
Kuwait	164	120	17	13
New Zealand	160	133	125	79
Nigeria, Federation of	78	58	77	49
Rhodesia and Nyasaland, Federation of	102	74	47	31
Other Commonwealth countries	446	251	582	299
Other countries:				
Argentina	75	74	51	41
Belgium	65	54	81	72
Denmark	142	114	94	80
Finland	95	65	52	42
France	143	99	124	112
Germany, Federal Republic	194	143	193	165
Ireland	146	103	140	105
Italy	102	87	123	109
Japan	39	41	43	34
Netherlands	172	148	144	117
Norway	75	50	87	61
South Africa	103	82	149	110
Spain	55	39	33	39
Sweden	161	113	145	115
Switzerland	49	39	59	50
USSR	85	60	69	43
United States	483	347	298	256
Venezuela	67	59	18	14
Other countries	483	474	461	453

United Kingdom exports of manufactured goods, accounting for roughly 85% of total exports, rose very little as a group in the first nine months of 1962, but there were a few significant shifts. Greater sales were registered for road motor vehicles, chemicals, and nonelectrical machinery, and lower sales for ships, iron and steel, and cotton yarns and fabrics. Mineral fuel exports climbed by almost 20% in the period, and basic materials—primarily metal ores and scrap to Germany, Japan, and others—rose by about 10%. There were likewise few major changes in imports in 1962. Increases in food imports reflected continued high consumer demand. These were almost balanced in value by declines in basic raw materials, as inventories were reduced. A net 8½% gain in petroleum purchases was accompanied by a shift in suppliers.

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INTERSTATE COMMERCE COMMISSION

This independent federal agency was created by Congress in 1887 to regulate railroad transportation. Subsequent amendments to the Interstate Commerce Act broadened the commission's jurisdiction to include interstate trucks and buses, barges, coastal and intercoastal shipping, freight forwarders, oil pipelines, express companies, and transportation brokers.

The 11 members of the commission are appointed by the president, subject to Senate approval, for seven-year terms or to fill unexpired terms. Commissioner Rupert L. Murphy was elected chairman for 1962, and Commissioner Laurence K. Walrath, vice chairman. The commission in 1962 was composed of six Democrats and five Republicans.

The authority of the Interstate Commerce Commission (ICC) generally embraces carrier rates and charges; issuance of securities; financial reorganization of railroads; mergers of carriers; approval of government guaranty of commercial loans to railroads; construction or abandonment of lines of railroad; discontinuance of passenger train service; approval of new operating services of carriers; rail and motor carrier safety; and land transportation of explosives.

Increased use of such innovations as piggyback (truck trailer-on-flatcar service), containerized shipping, and new types of rate structures increased an already record workload for the commission. As a result of a reorganization in 1961, however, formal cases were processed 11% faster. Changes included strengthening the chairmanship, creating the post of vice chairman, assigning opinion-writing responsibilities to individual commissioners, reducing commission divisions from four to three, and limiting the right of appeal before the entire commission.

ICC-regulated common carriers in 1962 again lost traffic and revenue to private and unregulated carriers. If the trend continues, it is estimated that by 1970 common carriers will handle only 60–64% of the total intercity traffic. The commission's recommendations to Congress included requests for restriction of exemptions for unregulated freight transportation. Earlier recommendations, for repeal of the 10% federal tax on passenger fares, and faster depreciation of transport equipment for tax purposes, were approved.

During the 1962 fiscal year, ending June 30, 1962, the carriers subject to ICC jurisdiction recorded $20.3 billion in operating revenues, compared with $18.8 billion for the previous year. The railroad portion of total intercity freight carried in 1961 was 43.2%, compared with 43.7% for the previous year. The volume of piggyback, however, expanded, and the number of flatcars assigned to piggyback operations was over 17% greater as of June 30, 1962, than a year earlier. Intercity traffic by truck increased in 1961 from 22.4% to 23.1% of the intercity total. The deficit incurred by railroads from passenger operations was $408.2 million, compared with $485.2 million for the previous year. Private automobiles accounted for some 90% of the total intercity passenger miles.

Rail carriers had operating revenues of $9,837,382,000; motor carriers of property, $8,228,512,000; motor carriers of passengers, $713,679,000; water carriers, $401,271,000; and oil pipelines, $802,449,000.

(See also MOTOR TRANSPORTATION; RAILROADS; URBAN TRANSIT.)

RUPERT L. MURPHY,
Chairman, Interstate Commerce Commission.

INVESTMENTS. For foreign investments, see FOREIGN INVESTMENTS; and for other investments, see the Index entry, *Investments.*

IONOSPHERE STUDIES. See ATMOSPHERE RESEARCH; and the Index entry, *Ionosphere.*

IOWA

A Central state of the United States, Iowa ranks 25th among the states in area (land, 56,032 square miles; inland water, 258) and 24th in population (2,777,000 on July 1, 1962, an 0.7% increase from the 1960 census figure of 2,757,537). Urban places with populations above 20,000 in 1960:

Ames	27,003	Fort Dodge	28,399
Burlington	32,430	Iowa City	33,443
Cedar Falls	21,195	Marshalltown	22,521
Cedar Rapids	92,035	Mason City	30,642
Clinton	33,589	Muscatine	20,997
Council Bluffs	55,641	Ottumwa	33,871
Davenport	88,981	Sioux City	89,159
Des Moines (*capital*)	208,982	Waterloo	71,755
Dubuque	56,606		

Government.—Chief executive and judicial officers in 1962 included Norman A. Erbe (Republican), governor, serving a two-year term; William L. Mooty, lieutenant governor; Melvin D. Synhorst, secretary of state; M. L. Abrahamson, treasurer; Chet B. Akers, auditor; Evan L. Hultman, attorney general; Paul F. Johnston, superintendent of public instruction; and Theodore G. Garfield, chief justice of the 9-member Supreme Court.

The Iowa General Assembly, which convenes in odd-numbered years, comprised 35 Republicans and 15 Democrats in the Senate in 1962 and 78 Republicans and 30 Democrats in the House of Representatives.

Finance.—In the 1962 fiscal year, revenue of $555,364,581 included $292,492,832 from state taxes and $108,371,995 in federal funds. Chief tax yields were the 2% general sales tax ($69,937,061), taxes on individual income ($41,015,909) and motor fuels ($73,143,535), and licensing ($54,818,949). Spending of $548,514,855 included $94,801,637 for education, $96,565,033 for health, welfare, and safety, and $150,443,953 for highways.

Education.—In the 1961–62 school year it was estimated that public elementary schools staffed by 15,925 teachers enrolled 398,500 students; secondary schools with 11,900 teachers enrolled 212,500; and parochial schools with 3,111 teachers enrolled 90,424. Colleges and universities enrolled 61,154.

Estimated public school spending in the 1961–62 school year totaled $270.8 million, including current expenditures of $222.5 million ($405 per pupil) and capital outlay of $40 million. Revenue of $276.9 million was drawn chiefly from state funds ($30 million) and local districts ($191 million). Teachers' salaries averaged $4,922 (high school, $5,572; elementary, $4,490). Actual spending for higher education (1961 fiscal year) totaled $69,541,000.

Public Assistance.—In the 1962 fiscal year, public assistance payments to a monthly average of 70,300 persons totaled $52,093,705. This amount included $36,082,610 for the aged and $13,912,157 for dependent children.

Transportation and Communications.—With 2,821 miles of highway construction and reconstruction completed in 1961, *highways and roads* as of Jan. 1, 1962, totaled 111,612 miles (101,421 surfaced). These served 1,476,317 *motor vehicles* (as registered during 1961), including 1,086,165 automobiles. Operating in the state were (1960) 24 *railroads* (using, 1960, 9,473 line miles of track); (1962) 4 regularly scheduled *airlines;* and 92 municipal *airports.*

Communications media included (1962) 82 AM and 14 FM *radio stations;* 13 *television stations;* 46 daily *newspapers* (1961 circulation, 947,674) and 386 other newspapers; and (Jan. 1, 1962) 248,000 business and 992,700 residential *telephones.*

Labor Force.—The state's work force in July 1962 included 325,900 agricultural workers. Nonagricultural employment totaled 848,800, compared with 829,400 a year earlier and an average of 839,100 for the 12 intervening months. Of wage and salary workers (except domestics), 25% were in manufacturing, 25% in trade, and 17% in government services. Unemployment in July 1962 stood at 31,300, compared with 40,300 a year earlier.

Manufacturing.—The state Development Commission estimated that manufacturing engaged an average of 170,700 workers in 1961 and provided

LEADING IOWA MANUFACTURES, 1960

Industry group	Total employees	Total payroll	Adjusted value added by mfr.[1]
		(in thousands)	
Totals	176,115	$922,829	$1,826,337
Food and kindred products	53,470	289,068	581,426
Nonelectrical machinery	32,291	185,832	286,909
Electrical machinery	18,622	97,150	217,159
Chemicals and products	4,846	26,111	107,152
Fabricated metals	9,101	47,381	85,616

[1] For definition, see footnote 1 in the article *Industrial Production.*
(Source: *1960 Annual Survey of Manufactures.*)

a payroll of $828 million. Value added by manufacture was estimated at $1,870 million.

Mining.—Iowa ranked 30th among the states in the value of its mineral output in 1961, with 0.50% of the national total. Output was about the same as in 1960, but the value declined because of very active competition. Iowa ranked third in production of gypsum. Accounting for more than three fourths of the total value of $90,764,000 were portland cement ($41,718,000) and stone ($28,916,000).

Agriculture.—Cash farm income for the first nine months of 1962 (excluding government payments) totaled $1,852,419,000, compared with $1,766,804,000 in the corresponding period of 1961. For the full year 1961, income comprised $1,957,433,000 from livestock, $584,408,000 from crops, and $129,568,000 in government payments. Principal income sources in 1961 were cattle, $856,320,000; hogs, $733,258,000; corn, $317,898,000; and soybeans, $209,486,000.

The state's 175,000 farms in 1959 had an acreage of 33,831,000 (22,873,000 in harvested cropland). Livestock on farms on Jan. 1, 1962, included 6,654,000 cattle, 12,930,000 hogs, 1,583,000 sheep, and 24,331,000 chickens. An average of 252,000 family and 37,000 hired workers engaged in farming during 1961.

IOWA CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Apples (1,000 bu.)	193	350	260
Corn for grain (1,000 bu.)	601,420	753,188	742,976
Hay (1,000 tons)	7,330	7,537	8,295
Oats (1,000 bu.)	198,565	140,896	129,516
Soybeans (1,000 bu.)	54,347	97,042	91,935
Wheat (1,000 bu.)	3,201	3,224	2,223

(Source: U.S. Department of Agriculture.)

Events, 1962.—In the primary elections held in June, Republican Gov. Norman A. Erbe defeated State Highway Commissioner William Nicholas, and Harold E. Hughes, Democratic member of the Iowa Commerce Commission, easily won nomination over the Rev. Lewis E. Lint, former secretary of the Iowa Tax Commission. In the November general election, in a vote that saw less than 50% of the eligible voters participate (the lightest vote since 1946), Hughes defeated Governor Erbe, 430,330 to 390,262. Iowa's senior U.S. Sen. Bourke B. Hickenlooper won his fourth consecutive six-year term by defeating Democrat Elbert B. Smith, 432,220 to 375,916.

Republican candidates retained all other state house elective posts, including Lt. Gov. William L. Mooty, Secretary of State Melvin D. Synhorst, Treasurer M. L. Abrahamson, Auditor Chet B. Akers, Secretary of Agriculture L. D. Liddy, and Attorney General Evan L. Hultman. The Republicans also won six of the seven seats in the U.S. House of Representatives, with only Neal Smith, incumbent in the 5th District, winning for the Democrats. Large Republican majorities were returned in both the state Senate and the state House of Representatives. The line-up for the 1963 General Assembly is 79 Republicans and 29 Democrats in the House, and 38 Republicans and 12 Democrats in the Senate (a Republican gain of 1 seat in the House and 3 in the Senate).

Iowa voters approved a constitutional amendment which reforms the method of selecting state judges. As of January 1963, Supreme Court and District Court judges will be appointed by the governor from a list drawn up by special judicial commissions composed of members of the bar and lay citizens. At the end of their terms, judges will run unopposed on a nonpartisan ballot; a judge failing to receive a majority of the vote will be replaced by an appointee.

On August 10, more than 25,000 Iowans witnessed the opening of the Herbert Hoover Library-Museum, at West Branch, the former president's hometown. The ceremony was attended by Mr. Hoover and former President Harry Truman. A 50-mile segment of a new highway (part of Interstate 80), extending from near West Branch to Davenport, was completed in 1962.

The Iowa corn crop in 1962 hit an all-time high as to the number of bushels produced per acre. The average yield was 76 bushels per acre, but the total of 744 million bushels fell short of the state's production record due to the reduced number of acres planted to corn.

State revenue increased by nearly 10% over that of 1961, with no change in the tax structure or tax rate. Property taxes continued to rise even more rapidly than the general state taxes. The state comptroller estimated that the treasury surplus at the end of the 1962–63 biennium would total between $20 and $22 million, thus keeping Iowa one of the few states free of indebtedness.

Unemployment in the state averaged less than half that of the national average in 1962. The number of persons employed in agriculture continued to decline, but this was offset by increased job opportunities in manufacturing. While the number of farms continued to decrease, the average size of farms showed a further increase, reaching approximately 190 acres per farm.

"Events" by: RUSSELL M. ROSS,
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IRAN

Known also as Persia, Iran is a constitutional monarchy in southwestern Asia bordering on the Soviet Union, Afghanistan, Pakistan, Iraq, and Turkey. Its area is estimated at 628,000 square miles, and its population (July 1, 1961) at 20,678,000. Principal cities and populations (1956 census): Teheran (Tehran), the capital, 1,512,082; Tabriz, 289,996; Isfahan, 254,708; Meshed, 241,989; Abadan, 226,083; Shiraz, 170,659; Kermanshah, 125,439; Ahwaz, 120,098; Resht, 109,491; and Hamadan, 99,909. About 30% of the population live in urban areas; some 13 million farmers live in 45,000 small villages. Less than 2 million nomadic and seminomadic tribesmen, including Kurds, Lurs, Bakhtiaris, Qashqais, Turkomans, Baluchi, Mamassani, Arabs, and Shahsavan, move seasonally between the hot lowlands and the cool valleys of the mountain ranges. Persian is the official language.

Government.—Executive power rests with the shah (Mohammed Riza Pahlavi: b. 1919; acceded Sept. 16, 1941), assisted by a prime minister (Assadullah Alam succeeded Ali Amini, who resigned on July 17, 1962) and a cabinet responsible to the Parliament. The lower house, or Majlis, consists of 200 deputies, elected every four years; the 20th Majlis opened on Feb. 21, 1961. The Senate, consisting of 60 members (30 appointed by the shah and 30 elected in two stages), serves for six years. On May 9, 1961, Parliament was dissolved by the shah, and the prime minister was given temporary power to rule by decree

WIDE WORLD

(*Above*) Iranian father in Dar Esfahan holds his son and weeps for his wife and four other sons, killed in devastating earthquakes on September 1–2. (*Right*) In Kiavan, on September 3, woman sifts the rubble for her belongings.

pending the holding of new elections. The major political organizations are the pro-government Nationalist (Mellioun) and People's (Mardom) parties; and the anti-government National Front, representing the urban centers, and the proscribed Communist (Tudeh) Party.

Education and Religion.—Primary education is free and compulsory; about 22% of the school-age population is in school. Number of schools (with enrollments), 1960: 9,289 primary (1,327,376); 1,163 secondary (252,746); 100 technical (8,997 in 1959); and 55 teacher-training (4,214 in 1959). The universities of Teheran, Tabriz, Meshed, Shiraz, Isfahan, and Ahwaz have about 20,000 students. Principal religion: Islam (Ithna 'Ashariyah Shi'ite sect); about 5% of the population are Sunni Muslims.

Defense.—Military service is compulsory. The Iranian armed forces total about 200,000 men. Since 1942, United States military missions have advised on the organization, training, and administration of the armed forces of Iran, including the gendarmerie; and since 1950 the United States has helped to provide the equipment of these forces. On July 1, 1962, the United States ended its $30 million annual subsidy for the maintenance of the Iranian Army. In March 1959, Iran and the United States concluded a bilateral agreement providing for the defense of Iran against aggression. Iran is a member of the Central Treaty Organization (CENTO).

Finance.—The total budget, including ordinary and special budgets, the Plan Organization, and the National Iranian Oil Company, for the calendar year 1341 (March 21, 1962–March 20, 1963) estimated revenue at 87.8 billion rials, and expenditure at 89.6 billion (at the official rate, 75.75 rials equal U.S.$1). In 1961, Iran's external debt approached $570 million ($559 million in 1961). In July 1962, gold and foreign holdings totaled $266 million ($242 in 1961).

Transportation and Communications.—Transport networks (miles): roads, 16,700, including all-weather, 10,700, and paved, 2,000; railroads, 2,370. Principal airport: Mehrabad at Teheran, served by the Iranian National Airlines and 20 foreign airlines. Other airports of entry: Abadan, Tabriz, Meshed, Isfahan, Shiraz, Ahwaz, Kermanshah, and Zahidan. Abadan is the principal port for petroleum exports; Khorramshahr is the chief port for other products (see also below, *Events, 1962*). Other communications data (1961): telephones, 90,000; radios, 900,000; television sets, 38,000; motor vehicles, 130,000.

Economic Development.—Iran's third development plan, prepared by the Plan Organization, was initiated on Sept. 23, 1962, and is to run until March 1968. Of the total planned outlay of 140 billion rials ($1,870 million), 100 billion rials will be derived from Iranian government allocations and 40 billion rials from anticipated foreign and domestic loans. Emphasis of the third plan will be on irrigation, schools, health centers, and roads to link isolated villages to highways, in addition to increasing Iran's production income by 6.5% annually (see also below, *Events, 1962.*)

Agriculture.—The economy is primarily agrarian; agriculture accounts for about 40 to 50% of Iran's $3 billion gross national product. Chief crops (metric tons, September 1960 census): wheat, 2,589,838; barley, 683,743; rice, 651,082; cotton, 236,540; sugar beets, 468,479; melons, squash, and cucumbers, 351,923; other vegetables, 209,366; alfalfa and sainfoin, 209,341; tobacco, 12,115. About 15 million acres are under cultivation, about one third of which are irrigated. Sheep (15,957,000 in 1960) and goats (12,080,000) graze on 50 million acres of range land.

Minerals.—Petroleum accounts for 15% of Iran's gross national product. In 1961, oil revenue totaled $291 million ($286 million in 1960). In 1962 average quarterly production of crude oil amounted to 15.4 million metric tons (14.5 million in 1961). Major oilfields: Mashid-i-Sulaiman, Haft Kel, Gach Saran, Naft-i-Safid, Naft-i-Shah, Agha Jari, Lali Ahwaz, and Alborz (Qum). Major terminals: Abadan, Kharg Island, and Bandur Mashur. Major refineries (barrels, 1960): Abadan, 119.5 million (109.1 million in 1959); Kermanshah, 919,000 (754,000); and Naft-i-Shah, 200,000 (556,000).

Iran's oil resources are controlled by the National Iranian Oil Company (NIOC). Under the terms of the agreement of Oct. 29, 1954, the management of existing fields and exploration of new fields was turned over to the Iranian Oil Exploration and Refining Company and the Iranian Oil Refining Company, both owned by a consortium of international oil companies. The Société Irano-Italienne des Petroles (SIRIP) and the Iran Pan American Oil Company (IPAC) also are actively engaged in petroleum exploration.

Other mineral production (metric tons, 1960): coal, 233,000; chromite, 55,000; iron ore, 60,000; lead ore, 87,000; rock salt, 80,000; sulfur ore, 10,000; zinc ore, 15,000; copper ore, 5,000. Production of natural gas in 1960 amounted to 266,454.2 million cubic feet.

Manufactures.—Chief industrial products (metric tons, 1960–61): cement, 800,000; sugar, 159,100; cotton piece goods, 206.5 million meters; cigarettes, 8.4 million; rubber footwear, 8.2 million pairs (in 1959). Of the total number of industrial units (4,430 in March 1960), 2,133 were located in Teheran; 3,133 employed 10 or fewer workers; and 4,355 were privately owned.

Foreign Trade.—Total exports, 1960–61 (Iranian year 1339): 61,750 million rials (8,359 million excluding petroleum); imports, 52,657 million. Principal exports other than petroleum products: raw cotton, dried fruits and nuts, carpets, wool, seeds and gums, rice, and animal casings. Chief imports: sugar, tea, machinery, motor vehicles, tires and tubes, iron and steel products, chemicals and pharmaceuticals. Major trading partners: West Germany, the United States, Great Britain, the USSR, India, Japan, and France.

Events, 1962. *Internal Affairs.*—Early in the year, demonstrations in Teheran by secondary school students protesting more stringent scholastic requirements spread to Teheran University; and in clashes on January 23 with security forces, a student was killed. The National Front, a coalition of elements opposed to the policies of the regime, called for a protest strike, but the call went unheeded. The government arrested both rightist and National Front leaders and stated that public order would be strictly enforced. On January 25, Iran accused the USSR of inciting the student demonstrations and interfering in its internal affairs. Teheran University was closed on February 4 and not reopened until early in April.

On January 9 the cabinet issued a land-reform law by decree in the absence of the Parliament which had been dissolved in June 1961. The decree stated that all landowners must sell their holdings in excess of one village to the government, which, in turn, would sell these lands to landless peasants. In March the shah presided over the initial distribution of such lands to farmers in the northwestern province of Azerbaijan, and the program of distribution spread to other areas in the following months.

Throughout the spring Prime Minister Ali Amini pushed forward with his anticorruption program, bringing ranking military officers and civilian officials to trial. At the same time great

emphasis was placed on an effort to achieve financial stability. By June it had become certain that the United States would not provide the funds to close a $70 million budget deficit. On July 17, Prime Minister Amini, unable to obtain full cooperation from his cabinet in trimming expenditures and physically exhausted by his efforts, resigned. He asserted that "tardy economic aid" and the cutting off of military assistance by the United States caused his government to fall. The U.S. State Department denied the prime minister's assertion, pointing out that it had given Iran $67 million in loans and grants and had committed $20 million more in development loans during Amini's 14 months in office. To succeed him the shah named Assadollah Alam, a personal friend and former head of the People's (Mardom) Party. Alam pledged himself to continue the reform program of the previous government, and stressed that he would initiate a decentralization of the government's authority by conferring wide powers on the provincial governors. On August 25, U.S. Vice President Lyndon Johnson arrived in Teheran and took advantage of the occasion to assure the shah and the prime minister of continuing American interest in and support for Iran.

On September 1 a major earthquake shook a 23,000-square-mile area some 75 miles to the west of Teheran; an estimated 12,400 persons were killed and scores of thousands were injured and made homeless. Iran's emergency facilities were augmented by generous contributions from many countries.

In February–March, Prime Minister Amini visited Bonn, Paris, Brussels, and London in an effort to line up financial support for an international consortium to lend $500 million to $800 million for Iran's third development plan. The consortium, under the auspices of the International Bank for Reconstruction and Development, failed to materialize during 1962 because of the inability of the Iranian government to halt its budgetary deficits. On September 13 it was announced that the third development plan's total anticipated expenditures would be cut from $2.5 billion to $1.86 billion. In addition, the Plan Organization, the body that designs and approves projects, will no longer execute the development plan. This aspect will be turned over to the regular government ministries. The prime minister and cabinet also assumed final authority for approval of all projects.

On September 16, Iran renewed its contract with the Development and Resources Corporation (New York) for the completion of the $140 million Dez River development project in Khuzistan. On May 13 the shah opened the 352-foot-high Manjil Dam on the Sefid Rud River. The $112 million dam, built by French engineers, will provide 132,000 kw. of electric power and sufficient water to irrigate 375,000 acres in the province of Gilan.

External Affairs.—On April 11 the shah, together with Empress Farah, arrived in Washington, where he engaged in talks with President Kennedy and other high officials. Agreement was reached between the two countries for the development of a new port at Bandar Abbas and the construction of a transport network to open for development southern Iran's mineral resources. It would also provide landlocked Afghanistan with a new outlet to the sea. On July 26 the shah went to Afghanistan and Pakistan, on the invitation of the heads of those states, in an effort to mediate the differences which had led to a break in their diplomatic relations the previous year (see also AFGHANISTAN).

Although a $5.5 million trade pact between the USSR and Iran was renewed in June, the Soviet Union continued to attack the shah and his government by press and radio. These attacks ceased on September 15 with the announcement that Iran had pledged to the USSR that no foreign rocket bases would be established on its soil.

(See also MIDDLE EAST.)

DONALD N. WILBER,
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IRAQ

The Republic of Iraq is situated in southwestern Asia at the head of the Persian Gulf, and is bounded on the north by Turkey, on the west by Syria and Jordan, on the east by Iran, and on the south by Saudi Arabia and Kuwait. It has an area of 171,599 square miles (more than 45% desert), and a population of 7,085,000 (June 30, 1960 est.), composed principally of Arabs (75%), Kurds (15%), Iranians, and Turkomans. Chief cities and populations (1960 est.): Baghdad, the capital, 830,000; Basra, the main port, 165,000; Mosul, 180,000; and Kirkuk, 150,000. The official language is Arabic.

Government.—Iraq was governed in 1962 under the provisional constitution of 1958 which declared the country to be an independent, sovereign, and Islamic republic and an integral part of the Arab nation. A three-member Council of Sovereignty (Muhammad Najib al-Rubei, president) acted as the titular head of state. All legislative and executive power was vested in the Council of Ministers, headed by Gen. Abdul Karim al-Kassem. Political parties resumed limited activities in 1960; but by the end of 1962, parliamentary elections had not been held.

(The government was overthrown by a junta of young army officers who seized Baghdad in a coup d'état on Feb. 8, 1963. On the following day Premier Kassem was executed by a firing squad.)

Education and Religion.—Number of schools (with enrollments), 1959–60: 99 nurseries and kindergartens (9,594); 3,228 primary (642,665); 362 secondary (120,155); 38 technical (7,382); 65 teacher-training (11,050); and 5 institutions of higher education (12,115). Principal religions: Shi'ite Islam (a slight majority) and Sunnite Islam. There are also about 150,000 Christians and a few Jews.

Finance.—Government revenue (1962–63 fiscal year est.): 118.5 million Iraqi dinars (112 million in 1961–62); expenditures, 127 million dinars (120.7 million). These figures do not include the share of oil revenues allocated to economic development (an estimated 54 million dinars in 1962–63). The Iraqi dinar (ID) remained stable throughout 1962 at a par value of £1 or U.S.$2.80. Monetary supply (March 31, 1962): ID109.4 million, of which ID74.6 million was currency. Gold and foreign exchange holdings of the Central Bank: $272.8 million as of March 31, 1962 (down $30 million from a year earlier).

Transportation and Communications.—Transport networks: state-owned railways, 1,250 miles; roads suitable for vehicular traffic, 6,800 miles (about 1,900 hard-surfaced). Other data for 1960: passenger cars, 39,200; commercial vehicles, 20,000; telephones, 54,250 (1961); radio receivers, 100,000 (1959); television sets, 35,000.

Economic Indicators.—National income: ID422.1 million in 1960 (up 13.1% from 1959). Wholesale price index (1958 = 100): 112 at the end of March 1962 (unchanged from March 1961). Consumer price index (1958 = 100): 104 at the end of March 1962 (103 in March 1961).

Agriculture.—About 70% of the population is engaged in agriculture, which provides nearly one fourth of the gross national product. Chief crops (in metric tons, 1961–62 crop year estimates): barley, 900,000 (804,000 in 1960–61); wheat, 851,000 (592,000); rice, 115,000 (118,000); lint cotton, 9,000 (8,000); cottonseed, 9,000 (16,000); sesame, 5,700 (6,600). The annual date crop averages about 350,000 metric tons. In 1961 there were 9,450,000 head of sheep; wool production totaled 70,000 quintals.

Mineral Production and Manufactures.—The petroleum industry provides nearly 30% of the gross national product. Crude petroleum production in 1961 totaled 49,021,842 metric tons (47,482,948 in 1960). Chief industrial products (metric tons, 1960): gasoline, 286,000; kerosene, 307,000; distillate fuel oils, 420,000; residual fuel oils, 1,044,000; cement, 487,000; cotton yarn, 2,700 (1959); beer, 43,800 hectoliters; electrical energy, 852,000 kw.-hr.

Foreign Trade.—Total exports, 1961: ID236.3 million (ID233.6 million in 1960); imports, ID145.6 million (ID139.5 million in 1960). Principal exports (in million dinars, 1961): crude petroleum, 223.1; dates, 2.8; barley, 0.8; cement; and hides and skins. Principal imports: textiles, clothing, motor vehicles, industrial machinery, iron

and steel goods, tea, sugar, and cereal grains. Principal customers in 1961 (excluding crude petroleum exports): Lebanon, India, Soviet Union, United States, Saudi Arabia, Syria. Principal suppliers (with value of imports in millions of dinars): Great Britain (32), United States (15), West Germany (13). Imports from the Soviet bloc were valued at ID14.6 million (up ID1.1 million over 1960).

Events, 1962.—After four successive years of unfavorable agricultural conditions and partial crop failures, Iraq harvested good though not bumper crops in the 1961–62 crop year. Barley exports were increased, and the need to import other foodstuffs was reduced. Political uncertainty and intensified Kurdish unrest in the north tended to restrict economic activity, but work moved ahead during 1962 on the five-year development plan announced in October 1961 to strengthen the country's agriculture, industry, and communications. Total cost of the program was estimated at $1,586 million of which $884 million was expected to come from oil revenues, $182 million from a Soviet loan, and $33 million from a Czech loan.

Plans were laid and surveys commenced for a new 100-mile railroad to link Sulaimaniya with Kirkuk. The project is to cost $56 million and is scheduled for completion in 1963. Work on the transformation of the Baghdad-Basra railway from narrow to standard gauge was pushed forward, and plans were made for the extension of the line southward to the new deep-water port being constructed at Um Qasr on the Persian Gulf. Plans for establishing a national merchant marine were implemented on July 8 when *The Fourteenth of July*, an 8,200-ton freighter built in Japan, began to load cargo at Basra for destinations on the Persian Gulf.

During 1962 many foreign firms and agencies doing business in Iraq were in the process of reorganization to comply with nationalization legislation requiring majority ownership by Iraqi citizens. The licensing system introduced in 1961 to curb imports was continued, but tariffs, rather than quotas, were used increasingly to regulate foreign trade and stimulate local industry.

The Iraq government had announced (Dec. 12, 1961) that the concession areas of the foreign-owned (British, American, French, and Dutch) Iraq Petroleum Company and its affiliates, covering most of the country, were being restricted to the approximately 750 square miles where oil was actually being produced by the company. On Jan. 4, 1962, the Iraq Petroleum Company formally protested this action and asked for arbitration. This request went unanswered. On March 12 the company complied with the law and turned over to the government its records and surveys dealing with the lapsed concession areas.

Under these circumstances, Iraq did not immediately press its earlier demands for oil royalties in excess of the current 50% of profits or for ownership of 20% of the company's capital stock. Petroleum production continued at the company's existing wells at Kirkuk, Bai Hassan, Jambour, Ain Zala, and Batma in the north, and at Rumaila and Zubair in the south. On March 31 the Iraq Petroleum Company paid ID21.5 million to the government on account of royalties for the first quarter of 1962.

Premier Abdul Karim al-Kassem announced on September 29 that a state-owned Iraq National Oil Company would be established with a capitalization of $56 million to operate at all levels of the petroleum industry, and to exploit oil in all areas outside the reduced concession of the Iraq Petroleum Company.

On March 24, Premier Kassem revealed that a committee would shortly be established to prepare a draft permanent constitution which would be submitted either to a plebiscite or to a popularly elected national assembly for ratification. Constitutional development, however, was again delayed by civil strife.

The Kurdish revolt in the north, led by Mullah Mustafa Barzani, which had appeared to be crushed at the end of 1961, assumed larger and more threatening proportions in the spring of 1962. Guerrilla activities and military countermeasures continued throughout the year. Foreign news correspondents reported in August and September that most of northeastern Iraq, outside of the cities and towns, was under rebel control. The rebel leaders demanded the greater degree of Kurdish cultural and political autonomy which had been promised under the provisional constitution of 1958, a larger share of economic development expenditures in the Kurdish areas, and an end to the "incompetent dictatorship" of Premier Kassem.

Throughout 1962 the Iraq government reiterated its claims to sovereignty over the neighboring state of Kuwait and, in fulfillment of its threat to reconsider its relations with any government that gave diplomatic recognition to Kuwait, recalled its ambassadors from Jordan (January 18), Japan (March 17), Iran (March 18), Lebanon (May 10), the United States (June 2), and Tunisia (August 8). In each case Iraq requested the recall of the foreign ambassador in Baghdad but did not sever diplomatic relations. The Iraqi government also continued to boycott the sessions of the Council of the Arab League, as it had since July 1961 when the league accepted Kuwait into membership.

Relations with Turkey were strained in the late summer as a result of Iraqi military activities in connection with the Kurdish revolt. Iraqi airplanes on August 15 attacked the Turkish border post of Rubaruk and the village of Biskan. On August 16, Turkish aircraft shot down one of two Iraqi jet planes which, the Turkish government claimed, were over Turkish territory. The disabled plane crashed inside the Iraqi frontier. Iraq apologized for the attacks of August 15 but charged that Turkish aircraft had violated Iraqi air space 15 times since 1959, and that the Iraqi plane had been shot down over Iraqi territory on August 16. In consequence of an increasingly bitter dispute, Turkey recalled its ambassador from Baghdad.

Only with Syria, among Iraq's neighbors, were relations markedly improved during 1962. On January 21, Hashim Jawad, the Iraqi foreign minister, went to Damascus with a large delegation to explore areas of cooperation between the two countries. On March 14–16, Premier Kassem met with Syrian President Nazem el-Kodsi at Rutba, near the Syrian border. The joint communiqué issued after this meeting suggested the assembling of a conference of all Arab states within three months to create new organs of Arab military and economic cooperation. This statement, despite Syrian and Iraqi assurances to the contrary, was widely regarded as directed against the Arab League. On June 18, Syria and Iraq signed a supplement to their agreement of Nov. 3, 1961, on economic cooperation.

(See also MIDDLE EAST.)

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IRELAND

Ireland lies to the west of England, separated from it by St. George's Channel and the Irish Sea. The Republic of Ireland (Eire), a sovereign, in-

dependent state since April 18, 1949, exercises jurisdiction in 26 counties (area, 27,136 square miles); six other counties north of a border fixed in 1925 constitute Northern Ireland (q.v.). The population (2,898,264 in 1956) had fallen to 2,814,703 at the 1961 census, emigration having averaged 43,118 persons annually in the intercensal period. Dublin (pop., 716,156 in 1961) is the capital, largest city, and principal port.

Government.—The National Parliament (Oireachtas) consists of a president (Eamon de Valera, elected June 17, 1959); a 60-member senate (Seanad Eireann); and a 144-member house of representatives (Dail Eireann), constituted in 1961 as follows: Fianna Fail, 70 members; Fine Gael, 47; Labour, 16; Independent, 6; other parties, 5. The country is governed by a cabinet, headed by a prime minister (Sean F. Lemass since June 23, 1959), subject to the confidence of the Dail.

Education and Religion.—Number of schools (with enrollments), 1960: national elementary, 4,882 (506,208); recognized secondary, 526 (76,843); vocational, 718 (94,162). University facilities: Trinity College, Dublin (enrollment, 1960: 2,748); National University, comprising University Colleges in Dublin, Cork, and Galway, and St. Patrick's College, Maynooth (aggregate enrollment, 1959–60: 7,805; Dublin college had 5,311 students in 1961). Educational expenditure, 1960: £17,514,000. Roman Catholics numbered 2,786,033 (1946 census); other denominations, 169,074.

Finance.—The Irish pound is on par value with the pound sterling. Revenue receipts, fiscal 1961–62 (in thousands): £145,288 (customs, £42,115; income taxes, £32,200; excise, £31,505); exchequer expenditure, £161,720 (agricultural, £27,628; social welfare, £26,379; debt service, £30,622).

Transportation and Communications.—Main roads, 1960: 9,857 miles; country roads, 40,489 miles. State railways, 1960: 2,458 miles; passengers, 11,053,487; freight carried, 2,510,382 tons. Passengers on Aer Lingus European and domestic routes, 1961–62: 778,522 (up 9% from 1960–61); on Irish International Airlines (transatlantic, 1961–62): 55,077 (up 57%). Cork Airport (opened Oct. 16, 1961) handled 38,000 passengers and 105,000 kilograms of freight in its first eight months of operation. Tourist receipts: £47 million (up 11% from 1960). Automobiles, 1960: 169,681. Telephones, 1960: 160,354; radio sets, 1961: 494,452; television sets, 1960 est., 75,000.

Economic Indicators.—Consumer price index (1953 = 100), 120.3 in 1961 (117.0 in 1960); volume index of production (1961) in major industries (1953 = 100): manufacturing, 134.0 (up 8.5% from 1960); mining and quarrying, 198.6 (up 17% from 1960); transportable goods, 136.8. Gross national product (1961) at current market prices: £704 million (up 6% from 1960). National income in current terms, 1961: £582 million (up £42 million from 1960).

Manufacturing.—In 1961, manufacturing engaged 158,300 persons (up 5,310 from 1960); production included butter, 963,600 cwt.; flour, 567.8 million pounds; beer, 915,720 barrels; potable spirits, 948,480 gallons; and tobacco, 12.5 million pounds. Electricity generated in the year ended March 31, 1962, totaled 2,453 million kw-hr., used by 642,753 consumers. Products of sea fisheries were valued at £1,357,242.

Agriculture.—In 1961 pasture acreage totaled 7,779,900 (up 2.7% from 1960); crop acreage, 3,487,900 (down 4.6%). Acreage of state forests (1960): 305,829. Chief crops, 1961, in acres (with yields in thousand tons): wheat, 344,800 (462); oats, 367,800 (375); barley, 361,700 (507); potatoes, 233,785 (2,111); and hay, 1,630,947 (3,343). In January 1962, cattle numbered 4,129,200 (down 2.6% from January 1961); sheep, 3,375,900 (up 8.7%); pigs, 1,079,700 (up 14.3%); and poultry, 7,552,700 (down 4.8%). Net value of agricultural output, 1961: £169 million.

Foreign Trade.—Ireland's external trade again attained a record level. Total exports, 1961: £180.3 million (up 18.1% from 1960, agricultural produce accounting for 51.8% of total exports); imports, £261.3 million (up 15.0%). Exports to the United States: £13.9 million (in 1960, £11.1 million). Exports (1961) were chiefly foodstuffs (£62.7 million); live animals (£55.4); and manufactured goods (£46.8). Imports (1961) included manufactured goods (£191.1 million); food, drink, and tobacco (£38.7); and live animals (£15.4).

Events, 1962.—Celebrating his 80th birthday on October 14, President de Valera said the outlook for Ireland was better than he could remember. With unemployment falling to less than 5%, and diminishing emigration, the country's buoyant economy in 1962 seemed certain to sustain or surpass the 5% annual growth rate recorded in recent years. Exports of industrial raw materials and manufactured goods had risen from £25 million in 1958 to £50 million in 1961. Having made application on July 31, 1961, to join the European Economic Community, the government instructed working parties in 1962 to study methods of improving Ireland's production of export commodities; on the European continent, survey teams of the Irish Export Board investigated potential new markets.

Using a transmitter on Kippure Mountain, an Irish television service began a regular schedule of 42 hours of programs weekly on January 1.

The Irish Republican Army announced on February 26 the end of a campaign of violence which in the five previous years had caused damage estimated at $14 million and taken the lives of six Northern Ireland policemen and nine IRA terrorists.

The appointment was confirmed by the U.S. Senate on July 12 of Matthew H. McCloskey as United States ambassador to Ireland.

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IRELAND, Northern. See NORTHERN IRELAND.
IRIAN. See WEST NEW GUINEA.

IRON AND STEEL

During 1962 the iron and steel industry continued its worldwide expansion and improvements in the basic oxygen-converter steelmaking process. In June, planned worldwide expenditures for expansion of plants in 1962 were estimated at $6 billion, as follows: United States, $1.3 billion if adequate profits were earned during 1962; Latin American countries, $300 million; United Kingdom, $400 million; European Coal and Steel Community countries, $1 billion; other western European countries, $300 million; USSR, $1 billion; other eastern European countries, $500 million; Japan, $750 million; Canada, Turkey, India, Singapore, Union of South Africa, Australia, and other countries, $450 million.

The world production of crude steel in 1961 was estimated at 392,647,000 net tons. Expansion beyond 1962 was estimated to result in a world annual steelmaking capacity of 591,680,000 tons in 1965.

United States.—Production of crude steel in 1962 was estimated at 98,329,900 net tons, an increase of 313,360 tons or 0.32% over 1961.

On April 6, 1962, collective bargaining agreements, effective July 1, were signed by the United Steelworkers of America and steel companies, about three months in advance of the expiration of the basic labor agreements executed in January 1960. On April 10 the president of the United States and the press were informed that the United States Steel Corporation intended to raise steel prices by an average of 3½%, or $6 a ton. Within two days several steel companies announced their intentions to raise prices. At a press conference on April 11 the president stated that raising steel prices was "wholly unjustifiable and irresponsible defiance of the public interest." Immediate action taken by governmental agencies resulted in decisions by concerned steel producers to withdraw the price increases. (See also LABOR.)

Joint exploration of an iron mineral deposit at Bourbon, Mo., by Granite City Steel Company and American Zinc, Lead & Smelting Company, indicated an estimated 100 million tons of iron ore.

The world's largest plate mill began operating in March at United States Steel Corporation's Gary Works, Gary, Ind. This is the only plant designed as two mills in one (a 160-inch mill and a

210-inch mill) for maximum flexibility in rolling plates up to about 206 inches wide.

Canada.—Crest Exploration, Ltd., a subsidiary of Standard Oil Company of California, discovered a large iron ore deposit between the Snake and Cranswick Rivers in the Yukon.

The Nakina, Ontario, mines of The Anaconda Company were estimated to contain 2 billion tons of iron ore.

The Iron Ore Company of Canada began shipments of concentrated ore in July from its mining operation in Labrador City (formerly Carol Lake), Labrador, and is building a $50 million pelletizing plant. Iron ore concentrates were shipped for furnace tests from nearby Wabush City, Labrador, by the Wabush Iron Company, which plans to reach a capacity of nearly 6 million tons a year by 1965.

The Steel Company of Canada, Ltd., announced a process of direct reduction of iron ore to "usable metallic iron."

Other Countries.—The USSR announced the opening of the surface Northern Mine in the Krivoi Rog area of the Ukraine. Expected annual production is 14 million metric tons of a low-grade ore known as iron quartzite.

PRODUCTION OF IRON ORE, PIG IRON AND FERROALLOYS AND STEEL INGOTS AND STEEL FOR CASTINGS, 1961

(Iron ore data in gross tons of 2,240 lbs.; pig iron and steel ingot data in net tons of 2,000 lbs.)

Country	Iron ore, concentrates, and agglomerates	Pig iron and ferroalloys	Steel ingots and steel for castings[1]
Algeria	2,844,000	...	...
Angola	787,000	...	...
Argentina	118,000	220,000	490,000
Australia	4,724,000	3,538,000	4,295,000
Austria	3,661,000	2,495,000	3,418,000
Belgium	111,000	7,116,000	12,243,000[2]
Brazil	5,551,000	2,205,000	2,970,000
Bulgaria	404,000	221,000	331,000
Canada	16,486,000	4,701,000	6,466,000
Chile	4,872,000	353,000	431,000
China, Communist	59,053,000[1]	29,762,000	16,535,000
Colombia	394,000	209,000	195,000
Czechoslovakia	3,248,000	5,473,000	7,763,000
Denmark	340,000	72,000	358,000
Finland	472,000	121,000	320,000
France	66,324,000	15,872,000	19,400,000
Germany, East	1,673,000	2,226,000	3,748,000
Germany, West	18,568,000	28,033,000[3]	36,880,000[3]
Guinea, Republic of	443,000	...	...
Hungary	610,000	1,455,000	2,310,000
India	11,269,000	5,478,000	4,517,000
Italy	2,030,000	3,411,000	10,050,000
Japan	2,766,000	17,433,000	31,165,000
Korea, North	2,718,000[1]	1,102,000	871,000
Korea, Republic of	482,000[1]	...	25,000
Liberia	3,543,000	...	...
Luxembourg	7,341,000	4,160,000	...[2]
Malaya	6,988,000	...	...
Mexico	1,024,000	882,000	1,844,000
Morocco	1,496,000	...	...
Netherlands	...	1,604,000	2,168,000
New Caledonia	295,000	...	...
Norway	1,954,000	805,000	535,000
Peru	5,905,000	44,000	55,000
Philippines	1,181,000	...	75,000
Poland	2,323,000	4,894,000	7,826,000
Portugal	246,000	...	75,000
Portuguese India	2,953,000	...	...
Rhodesia-Nyasaland	157,000	99,000	90,000
Rumania	1,722,000	1,162,000	2,315,000
Sierra Leone	1,614,000	...	...
South Africa, Republic of	4,016,000	2,370,000	2,723,000
Spain	5,866,000	2,458,000	2,568,000
Sweden	22,647,000	1,941,000	3,921,000
Switzerland	79,000	55,000	313,000
Taiwan	...	44,000	150,000
Tunisia	925,000	...	...
Turkey	413,000	254,000	310,000
USSR	116,137,000	56,107,000	77,933,000
United Kingdom	16,521,000	16,517,000	24,736,000
United States	71,543,000	66,565,000	98,014,000
Venezuela	15,255,000	...	55,000
Yugoslavia	2,234,000	1,080,000	1,655,000
Other countries	390,000	...	505,000
Total[1]	504,716,000	292,537,000	392,647,000

[1] Estimate. [2] Figure includes data for Luxembourg. [3] Includes the Saar. (Sources: Bureau of Mines, U.S. Department of the Interior; Dominion Bureau of Statistics, Canada; *Monthly Bulletin of Statistics*, Statistical Office, United Nations; British Iron and Steel Federation, London; American Iron and Steel Institute, New York.)

WIDE WORLD

Roger Blough, chairman of U.S. Steel Corp., discusses his company's proposed price increase in television appearance April 12, the day before the $6-a-ton rise was rescinded.

It was reported that investment plans are expected to increase the annual steelmaking capacity of Brazil from 2.3 million tons to 4.5 million by 1965; the major investing countries are Belgium, France, Japan, Luxembourg, and West Germany. The State of Minas Gerais contains 56 billion tons of high-grade ore, but Brazil lacks adequate deposits of coking coal.

Nigeria's first six-year national development plan (1962–68) includes the establishment of its first iron and steel works, using local ore, limestone, coal, and electric power to produce between 125,000 and 250,000 tons of steel annually.

World Production.—The accompanying table shows the world production in 1961 of iron ore, pig iron and ferroalloys, and steel ingots and steel for castings.

Technical Developments.—United Austrian Iron & Steel Works (VOEST), Linz, Austria, reported that improvements in the LD (Linz-Donawitz) basic oxygen process make it possible to produce steel in a converter from a charge containing up to 95% scrap. Additional heat required to utilize large percentages of scrap is obtained by introducing fuel (coke or fuel oil) into the converter.

Republic Steel Corporation reported the development of a process of coating steel strip by passing it through a vacuum in which volatilized aluminum is deposited on the strip.

The British Iron and Steel Research Association developed the "Elphal" process, in which suspended charged particles of aluminum, under the influence of an electric field, are deposited on steel strip, and the aluminum is compacted by rolling and bonded to the strip by heating.

The process of "maraging" steels, the treatment by which it is possible to superimpose age-hardening on a basic martensitic structure, was developed by The International Nickel Company, Inc. The products possess high combinations of strength and toughness.

(See also METALLURGY; MINING.)

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IRRIGATION. See Index entry.
ISLAM. See RELIGION.
ISLE OF MAN. See GREAT BRITAIN.
ISOTOPES. See Index entry.

ISRAEL

A republic of the Middle East, Israel is situated on the eastern shore of the Mediterranean Sea. Its area of 7,993 square miles is about equal to that of New Jersey. The population according to the census estimate of May 22, 1961, was 2,-

170,082 (est. June 30, 1962: 2,293,000). The people are predominantly of Jewish descent; there are small minorities of Arab Muslims, Greeks, and Druzes. The Israeli-held sector of Jerusalem (est. pop., 166,000) is the nation's capital. Other large cities (with estimated populations): Tel Aviv–Jaffa (387,000); Haifa, the chief port (182,000); and Beersheba (42,000). The official language is Hebrew.

Government.—The president of the Israeli republic (Itzhak Ben-Zvi, who was re-elected to a third term on Oct. 30, 1962) is elected for a 5-year term by the Knesset (Assembly). The Knesset has 120 members elected by proportional representation for a 4-year term or less (if the Knesset is dissolved). Party seating (following elections of Aug. 15, 1961): Mapai, 42; Liberal, 17; Herut, 17; National Religious Front, 12; Mapam, 9; and Communist, 5. Premier David Ben-Gurion (Mapai Party) formed a new 4-party coalition government on Nov. 2, 1961.

Education.—The state educational system includes both general and religious primary schools. Primary education is free and compulsory for children aged 5 to 14. About 69% of the school-age population attended school in 1959. Number of schools (with enrollments), 1960–61: 1,151 primary (361,707); 177 secondary (34,576); 59 vocational (11,560); 29 agricultural (5,598); 160 Arab primary and secondary (34,934). Other schools include teachers colleges, Talmudic centers, and many kindergartens. Principal institutions of higher learning are the Hebrew University in Jerusalem (7,300 students in 1961), the Israel Institute of Technology in Haifa (4,900), and Tel Aviv University (825).

Religion.—The Jewish religion is the faith of the great majority, but there is no established church and freedom of religion prevails. The Sabbath and Jewish festivals are official days of rest, although each religious community has the right to observe its own holy days and weekly day of rest. Religious minorities include Muslims (about 166,000); Christians (48,000, chiefly Greek Catholics and Greek Orthodox); and Druzes (23,000).

Immigration.—From the establishment of the state on May 14, 1948, to March 31, 1962, about 1,050,000 immigrants entered Israel. Of the 1948–60 total, 46.6% came from Europe and the Americas, and 53.4% from Asia and Africa. New arrivals in the fiscal year 1961–62 numbered about 60,000. Most immigrants have been productively absorbed in the cities, towns, and agricultural settlements, but some 40,000 lived in temporary camps in early 1961.

Finance.—Estimated budget (ordinary and development), fiscal year 1962–63: I£2,357 million (up 18% from the fiscal year 1961–62). Effective as of Feb. 10, 1962, the Israeli pound was devaluated from a par value of I£1.8 to I£3 to the U.S. dollar. The ordinary budget, which provides for the normal expenditure of government, is covered by tax revenue. The budget for economic development is covered partly by domestic savings and partly by foreign funds, including State of Israel bonds, United States loans and other aid, and German reparations (which amounted to an estimated $110 million in 1961). It was announced on Sept. 23, 1962, that redemption of the first State of Israel bonds, issued in the United States in 1951 and amounting to $24.5 million, would be made beginning on May 1, 1963. Israeli gold and foreign exchange holdings: $275.9 million at the end of 1961 ($209.4 million a year earlier).

Transportation and Communications.—Transport networks (miles, 1960): railways, 392; paved roads, 1,893. Merchant marine (tonnage, 1961): 388,000. Lod International Airport, near Tel Aviv, is used by 11 international lines. El Al Israel Airlines and foreign lines carried 225,420 passengers into and out of Israel in 1960. Other data for 1960: passenger cars, 27,200; commercial vehicles, 25,400; telephones, 117,620; licensed radio sets, 400,000; daily newspapers, 24 (circulation: 500,000).

Economic Indicators.—Gross national product: I£4,451 million in 1960 (up 9% from 1959). General index of industrial production (1955 = 100): 185 in 1961 (160 in 1960). Cost-of-living index (1953 = 100): 155 in 1961 (145 in 1960). Number of workers in labor force: 735,000 in 1961; registered unemployed workers: 6,042 in 1960.

Manufactures and Minerals.—About 65% of Israeli industry (by investment) is operated privately, 20% by state enterprises (mainly in the exploitation of natural resources in the Negev), and 15% by cooperatives or companies controlled by the Histadrut, the General Federation of Labor. Principal manufactures include cut and polished diamonds, metal and electrical equipment, foodstuffs, textiles and apparel, chemicals, rubber goods, paper and cardboard, ceramic and glass products, and cement (846,000 metric tons in 1961). Chief minerals (in metric tons): phosphate rock, 230,000 (in 1960–61); petroleum, 139,000 (1961); potash, 98,000 (1960); copper ore, 435,000 (1959–60).

Agriculture.—Agriculture is organized largely along cooperative and collective lines, and provides about three fourths of the nation's food requirements. Chief crops and outputs (1961 est.): cotton, 65,000 bales of 480 pounds each (up 32% from 1960); tobacco, 5.5 million pounds (up 43%); wheat, 2 million bushels (up 33%); barley, 2 million bushels (up 67%); peanuts, 18,200 short tons (down less than 1%); and citrus (oranges, 13 million boxes of 70 pounds each; lemons, 500,000 boxes of 76 pounds each; and grapefruit, 1.8 million boxes of 80 pounds each).

Foreign Trade.—Total exports, 1961: I£431.3 million (up 9% from 1960); imports, I£1,044.6 million (up 16%). Chief exports: cut and polished diamonds (valued at I£127 million in 1961), citrus fruits (I£86.4 million), metal products, potash, copper, cement, tires, and vehicles. Tourism is another important source of foreign exchange; tourists numbered a record 159,600 in 1961. Israel imports a wide variety of raw materials and capital goods, as well as foodstuffs and other consumer products. Chief trading partners are Great Britain, the United States, and West Germany.

Events, 1962. *Domestic Affairs.*—The most significant internal development was the government's devaluation of the Israeli pound from a par value of I£1.8 to I£3.0 to the U.S. dollar, effective as of February 10. The government stated the action was taken in order to improve Israel's unfavorable balance of payments; make Israeli exports more competitive on the world market, particularly with regard to the European Economic Community; and place the economy on "a firm and stable basis." Commensurate with the introduction of the new exchange rate, existing premium export rates, subsidies for capital transfers, and special tourist rates were abolished. Customs duties on imported equipment and most raw materials were also eliminated, and other import duties were reduced. Subsidies and other governmental measures were subsequently implemented to prevent inflationary price increases.

The devaluation of the currency was a necessary stimulant to economic growth and preceded the government's introduction on June 26 of a four-year plan for economic development (1963–66). The main objective of the plan is to reduce Israel's balance of payments deficit from the $409 million registered in 1961 to an estimated $250 million in 1966 by increasing exports by 20% annually during the four-year period. Fullfillment of this goal requires a corresponding curb on consumer spending, and the plan calls for a reduction in national consumption from the current 90% of total production to 64% in 1966 by means of voluntary savings and, if necessary, direct taxation. Economic growth is to be fostered by governmental measures designed to increase the gross national product by 10% annually, and by development of underpopulated regions in the Negev and Galilee.

The devaluation program was an immediate success. An official estimate placed the annual rate of increase in national production in 1962 at about 10%, with the greatest gains occurring in the manufacturing and construction industries. In the first half of the year, exports rose by 10% and the balance of payments deficit decreased by 14%, to $149.5 million. Capital imports rose substantially, as did foreign investment. The number of unemployed persons declined, and prices registered only moderate increases.

Adolf Eichmann, who had been sentenced to death (on Dec. 15, 1961) by an Israeli tribunal for having directed the Nazi extermination of Jews during World War II, was executed by hanging at Ramleh prison on May 31. Although the execution was the first to take place in Israel, it received but cursory attention there and abroad, unlike Eichmann's four-month trial in 1961 which had aroused the indignation of the world against the bestial atrocities that had been committed by the Nazis. Eichmann's legal appeal against his conviction was rejected by the Israeli Supreme Court on May 29, 1962, and his plea for mercy was denied by President Itzhak Ben-Zvi shortly before the execution took place.

Israeli courts in January separately convicted

two Israeli citizens of having spied for an unspecified Communist country. Dr. Israel Beer, a former Defense Ministry official and an expert on military planning, was sentenced on January 14 to ten years' imprisonment after being convicted on charges of having supplied information to a foreign agent. Earlier, Aharon Cohen, a prominent member of the leftist Mapam Party, had been sentenced to five years' imprisonment following his conviction on similar charges. Beer's prison sentence was increased by five years on November 27 by the Supreme Court, which reversed a lower court's acquittal of the defendant on one charge concerning the transmission of security information.

Foreign Affairs.—Israeli-Arab conflicts in frontier areas continued to occur during the year. The major clash took place on March 17 when Israeli armed forces briefly invaded Syrian territory north of Nuqeib, on the Sea of Galilee, and destroyed Syrian fortifications. Israel claimed that 30 Syrian and six Israeli soldiers were killed; Syria reported 14 Syrian and 36 Israeli deaths. According to a communiqué issued by the Israeli Army, the raid was in retaliation for attacks by Syrian shore batteries on Israeli patrol boats in the Sea of Galilee early in the month.

Both Israel and Syria filed protests with the United Nations; the Israeli note of March 17 defended the army raid as an act of self-defense. The UN Security Council on April 9 indirectly censured Israel for the attack by reaffirming an earlier resolution (in 1956) which condemned Israeli military actions for violating the armistice agreement. The resolution was "categorically" rejected on April 10 by the Israeli Knesset, which upheld Israel's right to retaliate against military provocations in frontier areas.

Israel's long-standing request for defensive weapons was agreed to by the United States in September. The U.S. Department of State disclosed on September 26 that Israel would be supplied with short-range Hawk missiles. Washington's policy of not supplying any Middle Eastern country with large amounts of military equipment was reversed because of the threat to the military balance of power in the Middle East posed by recent shipments of Soviet missiles and jet aircraft to the United Arab Republic and other Arab countries. Israel will be the first non-Western nation to receive American-made missiles, and Israeli missile crews are to be trained in the United States. The first shipment of Hawk missiles is expected to arrive in Israel in late 1963.

The Israeli government on July 1 deported Dr. Robert A. Soblen,[1] convicted Communist spy who had jumped bail in the United States and had fled to Israel. Soblen's deportation was complicated by the lack of an extradition treaty between Israel and the United States, but Premier Ben-Gurion's cabinet ruled that the nation's Law of Return permitting any Jew to enter Israel and claim citizenship did not apply to criminal fugitives. An extradition treaty signed on December 10 by Israel and the United States was in part intended to prevent a recurrence of such an incident. The Supreme Court on December 6 ruled that a Jew who becomes a Christian convert "is not called a Jew" and is not entitled to claim Israeli citizenship under the Law of Return. The court ruling was made in the case of a Jewish-born Roman Catholic monk who had claimed Jewish nationality.

W. R. F.

[1] **Robert A. Soblen** was born near Kaunas, Lithuania, on Nov. 7, 1900; his name was originally Ruvelis Leiba Sobolevicius. He studied medicine in Germany and Switzerland. With his brother Jack (who anglicized his name as Soble), he joined the Communist Party in his youth; the brothers were expelled as Trotskyites in 1929, but immediately began spying on their former comrades for the Bolsheviks. Arriving in the United States in 1941, they settled in New York City and began spying for the Soviet Union. Soblen, a practicing psychiatrist, was indicted on a charge of espionage in November 1960, and was found guilty in United States District Court on July 13, 1961, after a month-long trial. (One of the chief government witnesses was Jack Soble, who himself was sentenced to prison for espionage in April 1957 and was released from custody on Aug. 31, 1962.) Sentenced to life imprisonment on Aug. 7, 1961, Soblen was freed on $100,000 bond and began a fruitless series of appeals. On June 25, 1962, the day before he was to begin serving his sentence, he forfeited bond and disappeared. Discovered in Tel Aviv, Israel, on June 28, he was placed aboard a plane for New York on July 1, but stabbed himself while en route in an attempt to win asylum in England. He was ordered deported from Great Britain after a long legal battle. On September 6, while being taken to the London airport for a flight to New York, he swallowed a large quantity of barbiturates which apparently had been smuggled to him and which resulted in his death on September 11.

ITALIAN LITERATURE

The two best sellers that received the main Italian literary prizes awarded in 1962 represent different aesthetic trends. Mario Tobino's *Il Clandestino*, crowned by the Strega Prize, is a lengthy chronicle of the Resistance movement on the Tuscan coast. It abounds in comic and tragic episodes and in sketchy character portrayals. Despite its authenticity and honesty, this long-winded narrative seems more a historical document than a work of imaginative fiction, and its success can be explained precisely by its truthfulness to life. In that sense it is akin to a series of novels published recently in Italy and hailed by all the lovers of representational art in the 19th-century style. Such is the case of Michele Prisco's *La dama di piazza* (1961), the story of a Neapolitan family between 1919 and 1945, centered around the adventures of its heroine, an upstart from the lower middle class. Another realistic picture, this time of a Roman family at the end of the last century, can be found in *Le finestre di piazza Navona* (1961), a posthumous autobiographical novel by the theater historian and critic Silvio D'Amico. Neorealistic novels also fared well with the public. *Un cuore arido* (1961), by Carlo Cassola, depicting the love life of a Tuscan seamstress in prewar Italy, sold over 50,000 copies.

A different current is represented by *Il Giardino dei Finzi-Contini*, by Giorgio Bassani, awarded the Viareggio Prize. A psychological novel, almost in Proustian manner, it is the story of an unrequited love projected against the background of the tiny Jewish community in Ferrara. The elusive quality of the heroine, the subtle analysis of thoughts and feelings of all the protagonists, and the poetic aura that envelops their tragic fate make this book moving and captivating. It sold 100,000 copies in a few months, and Bassani is now becoming one of Italy's leading literary figures. Other psychological novels included: Manlio Cancogni's *Parlami, dimmi qualcosa*, a bitter, half-lyrical, half-ironical analysis of a disintegrating marriage; *Una lunga pazzia*, by Antonio Barolini, who depicts religious obsession in a Venetian family; *Lungo equinozio*, by Angela Bianchini, awarded the Borletta Prize for her first work of fiction, which analyzes the inner world of an Italian girl living in New York and then returning to Rome; and *L'uomo di sfiducia*, Tullio Kezich's sequence of novelettes portraying the moods of a movie director.

Somewhere between the purely psychological and environmental novels stands the greatly discussed *Le mosche d'oro*, by Anna Banti; it is an ambitious attempt to depict modern youth and its anxieties by unfolding the lives of Denise, a Parisian of well-to-do family, and her lover Liberio,

a peasant painter from Tuscany, whom she abandons, leaving him her child. The descriptive part of the book is more convincing than its pseudo-Freudian exploration of Denise's pathological extravagances and Liberio's anger and frustration.

A place apart has been occupied lately in Italian fiction by satirical novels whose authors are strongly attracted by the grotesque and the existentialist notion of the absurd. The long list of works in this category is led by *Il maestro di Vigevano,* by Lucio Mastronardi, a teacher in the Lombard town that he describes. This somewhat eccentric, compact, and highly imaginative work is more than a satire and an attack on middle-class bigotry and meanness: its rendition of a provincial way of life becomes a symbol of man's spiritual and sexual anxieties. Several Italian critics consider this book the most interesting literary event of the year. Very close to Mastronardi's spirit are *Il calcinaccio,* a satirical picture of a private school in Rome, by Giuseppe Cassieri; *La torre di torture,* short stories by Fernando Tempesti, a young Tuscan; and *Il sosia,* novelettes by the Triestino, Stelio Mattoni.

Alberto Moravia published *Un' idea dell' India,* a small book of travel impressions which do not go beyond journalistic sketches. The case of Lorenzo Calogero, a physician of Calabria who died in 1960 and whose posthumously published poems provoked great critical enthusiasm, gave rise to a number of essays and polemics in Italian periodicals.

Translations.—The following is a selected list of Italian books translated and published in English in 1962 (unless otherwise noted): Alvaro, Corrado, *Revolt in Aspromonte,* tr. by Frances Frenaye from *Gente in Aspromonte;* Arpino, Giovanni, *The Novice* (1961), tr. by Peter Green from *La suora giovane;* Calvino, Italo, *The Nonexistent Knight* and *The Cloven Viscount,* tr. by Archibald Colquhoun from *Il cavaliere inesistente* and *Il visconte dimezzato;* Cassola, Carlo, *Bebo's Girl,* tr. by Marguerite Waldman from *La ragazza di Bube;* Celletti, Rodolfo, *Marta,* tr. by Raymond Rosenthal from *Viale Bianca Maria;* Levi, Carlo, *The Linden Tree,* tr. by Joseph M. Bernstein from *La doppia notte dei tigli;* Roberto, Federico de, *The Viceroys,* tr. by Archibald Colquhoun from *I vicerè;* Silone, Ignazio, *Bread and Wine,* tr. by Harvey Fergusson II from the revised version of *Pane e vino;* Strati, Saverio, *Terrarossa,* tr. by Elizabeth Ellman from *La teda;* and Golino, Carlo L., ed., *Contemporary Italian Poetry.*

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ITALY

The Italian Republic consists of a boot-shaped peninsula extending southeastward from the European mainland into the Mediterranean Sea, the large islands of Sicily (with adjacent islands, 9,926 square miles; 1961 pop., 4,711,783) and Sardinia (with adjacent islands, 9,301 square miles; 1961 pop., 1,413,289), and about 70 smaller islands. Its total area is 116,303 square miles. The country is divided into 19 regions, which are subdivided into 92 provinces and 8,007 communes. Thus far only Sicily, Sardinia, Valle d'Aosta, and Trentino-Alto Adige have gained regional semiautonomy, but plans are being made to expand such decentralization.

Population.—Italy's population totaled 50,463,762 at the Oct. 15, 1961, census. The largest cities, with 1961 census populations, are Rome, the capital, 2,160,773; Milan, 1,580,978; Naples, 1,179,608; Turin, 1,019,230; Genoa, 775,106; and Palermo, 587,063.

Government.—Parliament is composed of a Chamber of Deputies of 596 members elected for 5 years, and a Senate of 248 members, of whom 246 are elected for 6 years and 2 are life members. In the Parliament elected on May 25–26, 1958, party alignments are as follows:

	Chamber of Deputies[1]	Senate[1]
Christian Democrats	273	123
Communists	140[2]	59
Italian Socialists	84[3]	36[4]
Monarchists	25[5]	6[6]
Italian Social Movement (MSI)	24	9[7]
Democratic Socialists	22[8]	5
Liberals	17[9]	4
Republican-Radicals	6	0
South Tirol People's Party	3	2
Others	2[10]	2[11]
Total	596	246[12]

[1] By Jan. 1, 1962, deaths and party switches had resulted in the following changes: [2] 141; [3] 86; [4] 35; [5] 19; [6] 7; [7] 8; [8] 18; [9] 22; [10] 4; [11] 3; [12] plus 2 senators for life.

On May 6, 1962, at a joint session of Parliament in which 10 delegates from the regional councils also participated, Antonio Segni, a Christian Democrat, was elected to a 7-year term as president of the republic, replacing Giovanni Gronchi, another Christian Democrat, he was sworn in on May 11. Amintore Fanfani, also a Christian Democrat, became premier for the fourth time on Feb. 22, 1962.

A Constitutional Court of 15 judges has functions similar to those of the Supreme Court of the United States.

Religion.—Except for about 150,000 Protestants, 40,000 Jews, and several thousand persons of the Orthodox faith, Italy is a Roman Catholic country, but absolute freedom of worship is guaranteed by the constitution of 1948. As of 1960 there were 280 Roman Catholic dioceses and 25,930 parishes.

Education.—In the 1958–59 school year enrollment was as follows: kindergartens, 1,088,428; elementary schools, 4,606,940; junior high schools, 590,394; vocational schools, 559,663; technical schools, 359,693; scientific secondary schools, 53,698; classical secondary schools, 144,280; normal schools, 105,432; and art schools, 28,752. Universities and other institutions of higher education had 163,945 regular and 67,145 special students. Since 1958–59 enrollment has increased enormously, causing the Fanfani government to scrap its 1958 10-year educational development program and substitute a high-priority three-year plan for 1962–65 (approved by Parliament in July 1962).

Because of stricter enforcement of the compulsory education law (ages 6 to 14) and expansion of facilities for the education of illiterate and semi-illiterate adults, the number of illiterates declined from 5,056,685 in 1951 to about 3,300,000 in 1960, of whom approximately 2,044,000 could still be taught.

Budget.—The 1961–62 budget provided for expenditures of 4,025,858 million lire (620.6 lire equal U.S.$1) and revenue of 3,651,956 million, leaving a deficit of 373,902 million. The 1962–63 budget estimates called for expenditures of 4,585,994 million lire and a deficit of 276,800 million.

Transportation and Communications.—As of Dec. 31, 1960, Italy had 13,226 miles of railways, of which 10,185 miles were operated by the Italian State Railways. Of the latter, 4,803 miles had been electrified, and about one fourth were double tracked. Impressive new stations in Naples (Central) and Milan (Porta Garibaldi) were opened in 1961. In 1960, 547,396,000 passengers were carried on all types of railways. Though the number of rail passengers increased somewhat over 1959, the amount of freight hauled by rail declined slightly, to 69 million metric tons. By way of contrast, freight hauled by truck, water, and air increased in volume.

As of Dec. 31, 1960, there were 118,419 miles of roads, 1,994,724 cars, 17,306 buses, 439,115 trucks, and 3,916,783 motorcycles. Boring of the 3.6-mile highway tunnel to Switzerland through the Great St. Bernard Pass was completed on April 5, 1962, and boring of the 7.2-mile tunnel to France through Mont Blanc on Aug. 14, 1962.

There are 5 international, 20 national, and 33 club airports in the country. During 1961, 3,765,000 passengers were flown in domestic and international traffic, as compared with 2,911,000 in 1960.

The merchant marine on March 31, 1962, consisted of 3,863 vessels of 5,502,113 gross tons, making it the sixth largest in the world. In 1960, 74,678,000 metric tons of cargo were unloaded and 27,091,000 tons loaded in Italian ports.

Telephones numbered 3,860,849 on Jan. 1, 1961; radio sets, 8,487,860 on Dec. 31, 1961; and television sets, 3,202,450 in 1962.

Economic Conditions.—Italy's "economic miracle" continued for a second year in 1961, but the boom leveled off somewhat in 1962. The main factors behind the country's unaccustomed prosperity are a sharp increase in domestic purchasing power (wages and salaries rose by 9.9% in 1961); a steady foreign demand for Italian products, facilitated by Italy's improved trading position as a member of the European Economic Community

(EEC; Common Market); and satisfactory gold and foreign currency reserves. Whereas the economy prospered in 1961 without inflation (the wholesale price index rose by only 0.2% and the retail index by 2.1%), in the first 6 months of 1962 the cost-of-living index (1938 = 1) climbed from 70 to 75. Even so, the rise was less than that in other western European countries. To combat price increases, Italy adopted in August 1962 a 10% tariff reduction on many items.

Measured in real terms (that is, after allowing for price increases), the gross national product increased by 7.9% in 1961, compared with 6.8% in 1960, 8% in 1959, and an average of 5.8% in the decade 1950–60. Resources available for use in Italy (which amount to $39.8 billion if the value of imports is added to the gross national product) rose by 9% over 1960 (7.6% in real terms), and were distributed as follows: $24.9 billion for consumption, $8.6 billion for investments, and $6.3 billion for exports. One of the most significant aspects of the bright economic picture in 1961 was that the three sectors of the economy (agriculture, industry, and services) achieved a closer balance than in 1960. Industrial activity, which in 1960 had increased by 13%, rose by about 9% in 1961. Agriculture, which had registered gains of only 2% in the past few years, went up by 5.3% in 1961. Service activities increased by about 9%.

For the first time, the south's rate of economic growth exceeded that of the rest of the country in 1961. Net per capita income rose by 14%, compared with 8.9% in the center and north, and 9.9% in the country as a whole. Despite such improvement, the disparity between north and south remained troublesome. During 1962, however, huge new basic industries were launched in Taranto, Brindisi, Ferrandina, and northeastern Sicily.

Unemployment, which for several years after World War II had hovered at 2,000,000 (in a work force of 20,000,000), was cut in half by 1960, and at the end of 1961 stood at about 500,000, most of whom were unskilled. An acute shortage of skilled labor exists, and efforts are being made to train such workers. There is a steady migration from the south to the more industrialized north. From 1960 to 1961, employment increased in Italy by 2.4%, a higher rate than in any other EEC country.

The general index of industrial production (1958 = 100) rose from 128 in 1960 to 140 in 1961; in the first 6 months of 1962, it averaged 152. Expansion of production was concentrated in the chemical, petrochemical, mechanical, and building industries. Chemical production in 1961 was 12.8% greater than in 1960. The output of portable typewriters and calculators jumped from 721,781 units in 1960 to 1,029,500 in 1961, while that of motor vehicles rose from 693,400 to 883,820 and, in the first 7 months of 1962, by a further 21.9%. Output of other important industrial products, in thousands of metric tons, was as follows in 1961 (1960 figures in parentheses): iron ore, 1,200 (1,248); coal and lignite, 2,254 (1,532); cement, 17,568 (15,636); crude petroleum, 1,968 (2,016); ferroalloys, 144 (141); pig iron, 3,056 (2,683); crude steel, 9,126 (8,229); and hot rolled steel, 7,195 (6,631).

Except for synthetic fibers, textile production was only moderately good in 1961. Shipbuilding was in crisis, and the output of motor scooters dropped. Despite a 23.3% increase in gasoline consumption, the oil refining industry was in difficulties. On the other hand, production of natural gas rose from 6,444 million cubic meters in 1960 to 6,888 million in 1961, and that of electricity from 54,288 million kw.-hr. to 58,668 million.

PICTORIAL PARADE

President Antonio Segni (left) and Premier Amintore Fanfani (right) of Italy talk cordially with U.S. Secretary of State Dean Rusk during his visit to Rome on June 23.

Antonio Segni was born in Sassari, Sardinia, on Feb. 2, 1891. A graduate of the University of Rome (1913), he served as an artillery sergeant in World War I and subsequently taught at the universities of Perugia (1920–25), Cagliari (1925–29), Pavia (1929–31), Sassari (1931–54), and Rome (1954–55). Segni entered politics in 1919 as an anti-Fascist member of the Italian Popular Party, the predecessor of the Christian Democratic Party. After World War II, Segni was elected to the Constituent Assembly which drafted the Italian Constitution, and in 1948 he became a member of the Chamber of Deputies. While minister of agriculture (1946–51), he played a prominent part in obtaining land reform legislation. After serving as minister of public information (1954), he led a coalition government (1955–57) without the support of leftist parties. Strongly pro-Western, Segni again served as premier in 1959–60. Later, as foreign minister (1960–62), he continued to advocate a policy of firm alliance with the West. On May 6, 1962, Segni was elected to a 7-year term as president of the republic.

Amintore Fanfani was born in Pieve Santo Stefano, Tuscany, Feb. 6, 1908. After receiving a doctorate from the Catholic University of Milan (1932), he taught there and in Venice from 1936 to 1943, when he fled to Switzerland until the end of World War II. The author of some 40 books, he has held the title of professor at the University of Rome since 1954. Fanfani entered politics in 1946 as a Christian Democrat. While minister of labor and social welfare under Alcide de Gasperi (1947–50) he achieved notable success in planning workers' housing and organizing non-Communist labor unions. He also served as minister of agriculture (1951) and interior (1953). In 1954 and again in 1958–59 he was premier. Progressive minded and pro-Western, he led a coalition government of Christian Democrats and other center parties from July 27, 1960, until Feb. 2, 1962, when he resigned and formed a new cabinet with the support of the Nenni Socialists on February 21.

Palmiro Togliatti, leader of the Italian Communist Party, waves a cigar presented to him by Blas Roca, Cuban delegate to the Italian Communist Party Congress, December 5.

UPI

The agricultural sector of the economy, after two poor years, showed a 5.3% increase in the volume of gross salable production in 1961, with a net product of $4.9 billion, or 10.9% above 1960. Costs continued to increase out of all proportion to revenue. Production of major crops in 1961, in thousands of metric tons (with 1960 figures in parentheses), was as follows: wheat, 8,292 (6,794); corn, 3,940 (3,813); rough rice, 674 (622); barley, 279 (232); oats, 585 (431); potatoes, 3,932 (3,818); tomatoes, 2,684 (2,708); sugar beets, 6,750 (7,554); dry broad beans, 391 (440); apples, 2,150 (1,832); pears, 790 (622); figs, 319 (295); grapes, 8,515 (8,642); olive oil, 390 (380); oranges and tangerines, 983 (824); and lemons, 378 (351). Mechanization of agriculture resulted in the migration of 300,000 farm workers to cities in 1961, while the number of tractors rose from 248,985 to 272,849.

Fund for the South.—From its inception in 1950 through March 1962, the Fund for the South (Cassa per il Mezzogiorno), a 15-year program for the rehabilitation of depressed areas in southern Italy, Sicily, and Sardinia, approved and started 13,292 public works projects ($1.9 billion) and 201,020 privately operated projects (over $800 million). The program was accelerated sharply in the fall of 1961.

UPI

Rome's historic Castle Sant' Angelo, near the Vatican, is illuminated while the 21st Ecumenical Council is in session.

Foreign Trade.—From 1958 through 1961, Italian exports rose by 62.5%. In 1961 they were valued at 2,617.3 billion lire, as compared with 2,280.2 billion in 1960. Imports amounted to 3,264.0 billion lire (2,953.2 billion in 1960). Imports from EEC countries comprised 29.5% of the total value in the first 11 months of 1961, while exports to these countries made up 31.7% of the total. In the first 6 months of 1962, total exports were valued at 1,416.1 billion lire, and imports at 1,813.3 billion. Because of tourist expenditures and other invisible exports, Italy's gold and foreign exchange reserves rose from $3,080 million on Dec. 31, 1960, to $3,419 million on Dec. 31, 1961. In July 1962, to help the United States alleviate its balance-of-payments deficit, Italy repaid in advance postwar loans and other aid amounting to $178.1 million, plus interest. The number of foreigners visiting Italy increased from an estimated 18 million in 1960 to 19 million in 1961 and to 20 million in 1962.

Events, 1962. *Domestic Affairs.*—The most significant political development early in 1962 was the decision (February 1) of the Christian Democratic Party Congress, dominated by Party Secretary Aldo Moro, to seek a parliamentary alliance with Pietro Nenni's Italian Socialist Party, now that the latter had renounced its "unity of action" pact with the Communists. This long-awaited "opening to the left" by the Christian Democrats, who lacked a majority in the Chamber of Deputies, cleared the way for a new governing coalition to enact reform legislation that hitherto had been blocked by the chronic parliamentary stalemate. Implementing the decision of his party's congress, Premier Fanfani on February 2 tendered the resignation of his cabinet, which had been in office since July 1960 with the support of Republicans, Democratic Socialists, and Liberals. On February 10, President Gronchi asked Fanfani to form a new cabinet, which he did on February 21; it was sworn in the next day.

The new center-left government consisted of 19 Christian Democrats, 3 Democratic Socialists, and 2 Republicans. Addressing Parliament on March 2, Premier Fanfani promised that he would avoid totalitarianism, safeguard the North Atlantic Treaty Organization (NATO), decentralize and modernize public administration, nationalize the electric power system, and work for programmed economic development, with special emphasis being given to the south, land redistribution, and tax reform.

Though Nenni's left-wing Socialists were not included in the cabinet, they provided Fanfani with indispensable support in Parliament. At the municipal level and in labor organizations, however, they often still cooperated with the Communists. In October, Nenni offered the Christian Democratic Party a five-year agreement on economic planning if the government took immediate steps to implement regional autonomies.

The seven-year term of President Giovanni Gronchi ended in May. After a heated contest between Democratic Socialist Giuseppe Saragat and Christian Democrat Antonio Segni, the latter was elected president on May 6 by a joint session of Parliament in which 10 delegates from the regional councils also voted. The new president is a native of Sardinia. As ex-president, Gronchi automatically became a senator for life.

On June 10–11, municipal elections, involving 9.7% of the nation's voters, took place in Rome, Naples, Bari, Foggia, Pisa, and several other cities. The new center-left coalition was gratified by the results, for the Communists lost votes to the two Socialist parties, while the Monarchists lost to the Liberals. The neo-Fascistic MSI remained isolated. Christian Democrats suffered minor losses. In elections held on November 11–12 in 268 municipalities, the Liberals and Christian Democrats registered gains.

Notable legislation adopted by Parliament included a bill enacted in May to authorize the expenditure of $645 million for the economic development of Sardinia. On July 24, the Chamber of Deputies approved the first reading of a government bill to grant semiautonomy to the region of Friuli-Venezia Giulia. The bill was opposed by conservatives, who feared that its adoption might prejudice Italian claims to territory east of Trieste. As a constitutional measure, it must be submitted in two successive sessions at an interval of not less than three months and be approved by an absolute majority of each house.

In light of the 1961 census, the Chamber of Deputies voted on August 7, and the Senate on September 21, to increase the size of the next Parliament, which would have 630 deputies instead of 596 and 315 senators rather than 248. The term of office of senators was reduced from six to five years, the same as that served by deputies.

On September 21, the Chamber of Deputies passed a government bill to nationalize the electric power industry; it received final parliamentary

approval on November 27. Anxious to avoid isolation, Communists voted for the measure; opposition came from Liberals, Monarchists, and the MSI. Christian Democratic leaders argued that the measure was necessary to destroy the influence of private monopolies, but made it clear they had no intention of nationalizing other sectors of the economy.

Foreign Affairs.—On Nov. 28, 1961, the UN General Assembly had passed an Italian-backed resolution urging the resumption of bilateral negotiations by Austria and Italy on the problem of the degree of autonomy that should be granted to the 250,000 German-speaking inhabitants of the Alto Adige (South Tirol). Sporadic violence continued in this region in January and February 1962, and again in July and October, when bombs exploded in Bolzano and Trent. In March, Austria expressed willingness to resume talks. Foreign Ministers Attilio Piccioni and Bruno Kreisky met in Venice on July 31. In September, they agreed not to raise the dispute in the UN General Assembly because a study committee appointed by Italy indicated hope for progress. Meanwhile, on September 15, Italy rescinded a requirement (in effect since July 1961) that Austrians obtain visas to enter Italy. (See also AUSTRIA.)

When Premier Fanfani formed his center-left government, concern was voiced that, in view of Nenni's qualified support of NATO, the new cabinet might tend toward neutralism. While disclaiming any possibility of neutralism, the government did seek to improve relations with the Soviet bloc and with nonaligned countries. At the same time, it firmly maintained its commitment to NATO, which has important bases in Italy. Faced by considerable leftist sympathy for Cuba during the October world crisis, Fanfani noted that NATO was not directly involved, and expressed pleasure that the United States was willing to let the United Nations help solve the crisis.

In addition to maintaining its allegiance to NATO and to the United Nations (for example, by purchasing $8,960,000 in United Nations bonds), Italy remained a staunch member of the EEC. She encouraged discussions between France and Great Britain concerning the latter's admission to the EEC. Italy favored early British entry, provided that London agreed to abide by the basic rules of the Common Market. She hoped that the political unification of Europe would result from economic integration.

Italian relations with the United States remained very cordial. In February, Attorney General Robert F. Kennedy visited leaders in Rome, while in August, Mrs. John F. Kennedy and her daughter vacationed in Ravello. Secretary of State Dean Rusk conferred with high officials in Rome on June 23, and on September 4–7, Vice President Lyndon B. Johnson paid an official visit to Rome, where he initialed a convention calling for collaboration in space studies. On September 17, Defense Minister Giulio Andreotti and Gen. Giuseppe Aloia, chief of staff of the Italian Army, arrived in Washington for a two-week tour of United States military installations.

Italy's interest in Africa was underlined by Premier Fanfani's visit to Morocco in January, his visit to Tunis in June, his prompt recognition of the new Algerian Republic in July, and the visit to Rome in September of President Habib Bourguiba of Tunisia. Meanwhile, the 11th Italy-Africa Congress met in Milan in May, and the annual Fair of the Levant in Bari emphasized commercial relations with Africa.

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IVORY COAST

The Republic of Ivory Coast is situated on the Gulf of Guinea in western Africa, and has an estimated area of 124,503 square miles. The population of 3,300,000 (mid-1961 est.) consists chiefly of African tribesmen, and includes about 25,000 persons of French descent. French is the official language. Principal cities: Abidjan (1960 est. pop., 187,500), the capital and chief port; and Bouaké (1959 est., 70,000).

Government.—This former French overseas territory within French West Africa became independent on Aug. 7, 1960. The president of the republic and a cabinet are responsible to a 70-member National Assembly, elected directly by universal suffrage for a five-year term. In national elections of Nov. 27, 1960, Félix Houphouët-Boigny, leader of the African Democratic Rally, was elected president, and his party won all the assembly's seats. Ivory Coast is a member of the Council of the Entente within the French Community.

Education and Religion.—An estimated 45% of the school-age population attended school in 1962. School enrollment, 1961: primary, 234,364; secondary, 11,349; technical, 4,546; and higher, 126 (1959). About 65% of the population are animists; 23.5% are Muslims; and 12.5% are Christians.

Finance.—The ordinary budget for 1962 was balanced at an estimated 26,800 million francs CFA (246.85 francs CFA equal the U.S. dollar). The development budget totaled about 1,000 million francs CFA. French aid in 1961 was equivalent to $50 million. In early 1962 the government established a National Fund for Investment, to be financed by compulsory loans from business and real estate enterprises.

Transportation and Communications.—Transport networks (miles, 1960): railways (Abidjan-Ouagadougou, Upper Volta), 375; surfaced roads, 6,200; asphalt roads, 520. Abidjan has an international airport. Number of motor vehicles: 25,470 (1960); licensed radio receivers, 50,000 (1959 est.).

Agriculture.—About 90% of the working population is engaged in agriculture, forestry, and fishing. Chief subsistence crops are yams, cassava, taro, rice, millet, corn, and peanuts. Chief cash crops (metric tons exported, 1961): green coffee, 153,766; bananas, 91,483; cacao, 88,467; palm kernels, 12,487; and groundnuts, 24,000 (est. output, 1960–61 crop year). The thick tropical forests yield mahogany, rubber, and timber (792,691 metric tons exported in 1961).

Manufactures and Minerals.—Industrial production, 1960: 10 billion francs CFA (up 17% from 1958). In-

President Houphouët-Boigny of the Republic of Ivory Coast and his wife are guests of President and Mrs. Kennedy at a state dinner during visit to the United States in May.

WIDE WORLD

dustries include a French-owned automobile assembly plant, some 30 sawmills and two plywood factories, and a few soap factories, textile mills, and plants for producing palm oil, margarine, canned fruits and fruit juice, and canned tuna. Output of electric power, 1961: 92.3 million kw.-hr. (up 37% from 1960). The only minerals mined are manganese ore and diamonds (106 kilograms exported in 1961).

Foreign Trade.—Total exports, 1961: 43,603 million francs CFA (up 17% from 1960); imports, 37,008 million (up 25%). Chief exports (in million francs CFA, 1961): green coffee, 20,174; cacao, 9,809; and timber, 8,341. Main imports are machinery, vehicles, textiles, and other manufactures. France in 1961 took 51% of Ivory Coast's exports and supplied 70% of its imports.

Events, 1962.—Unlike the strongly anticolonialist and neutralist regimes in neighboring Ghana and Guinea, the government of the Ivory Coast continues to maintain close cooperation with France and to pursue pro-Western policies. President Houphouët-Boigny, in an address to the National Assembly early in the year, pointedly referred to France as "our best friend," and reiterated his intention of retaining French technicians and administrators to supervise the nation's economy until his own people are able to take over within a few years. France virtually monopolizes the country's trade and commerce, invests heavily in new industries, and assumes responsibility for military defense. The resultant economic progress and political stability in the Ivory Coast has served to vindicate the government's policies, and both political opposition and popular discontent are slight.

President Houphouët-Boigny visited the United States from May 9 to 29. He conferred in Washington with President Kennedy on May 22–23, and a joint communiqué issued after the talks announced that the United States would provide aid to the Ivory Coast for economic and social development, including a loan of $5 million to help the nation set up a development bank.

W. R. F.

JAMAICA—Princess Margaret is saluted in Kingston at ceremonies marking former colony's independence.

WIDE WORLD

JAMAICA

Formerly a member of the West Indies federation (q.v.) and an internally self-governing British colony, the Caribbean island of Jamaica became an independent dominion within the Commonwealth of Nations on Aug. 6, 1962. Jamaica is situated in the Greater Antilles, about 90 miles south of Cuba. The area is 4,411 square miles. The census population of April 7, 1960, was 1,613,880 (March 1962 est., 1,647,000), most of whom were of Negro stock. The capital and chief seaport is Kingston (1961 pop., 141,306).

Jamaica's flag bears a diagonal gold cross on a field of vertical triangles of emerald green and horizontal triangles of black.

Government.—Jamaica is a constitutional monarchy; Queen Elizabeth II is the sovereign. The new constitution, effective as of Aug. 6, 1962, provides for a governor-general (Sir Kenneth Blackburne, who had served as governor since 1957) appointed by the sovereign; a Privy Council of six members appointed by the governor-general; and a cabinet consisting of a prime minister and at least 11 other ministers. The bicameral legislature comprises a Senate of 21 members appointed by the governor-general, and a House of Representatives of 45 members elected by universal adult suffrage for five-year terms. Party seating in the House following the elections of April 10, 1962 (with previous number of seats held in parentheses): Jamaica Labour Party, 26 (15); People's National Party, 19 (27); and independents, 0 (3). Sir Alexander Bustamante (Labour) was sworn in as prime minister on April 24, 1962. (See also below, *Events, 1962.*)

Education and Religion.—About half of the school-age population attends school. Number of public schools (with enrollments), 1961: 725 primary (281,779); 41 secondary (16,258); 4 technical; 5 teacher-training; and one college of arts, science, and technology. The University of the West Indies at Mona, St. Andrew, became an autonomous institution in 1962. The population is predominantly Protestant, most of whom belong to the Church of England; Roman Catholics numbered 111,600 in 1960.

Finance.—Government revenue, fiscal year 1962–63 est.: £43,663,861 (£43,130,983 in fiscal 1961–62); expenditure: £43,239,493 (£42,007,645). Public debt: £37,368,719 at end of 1960–61.

Transportation and Communications.—Transport networks (miles, 1961): railways, 249; main roads, 2,678; local roads, 6,204. Ship arrivals (1960): 1,459 vessels (net tonnage, 4,410,441). British West Indian Airways and ten other airlines serve the island. Passenger cars (1960), 34,000; telephones, 34,976; radio receivers (1959), 147,000.

Production.—Principal economic activities are mining and agriculture, but manufacturing is of growing importance. Jamaica is the world's largest exporter of bauxite (4,975,000 metric tons in 1961) and an important supplier of alumina (703,000 metric tons). Chief crops for export are sugar (380,000 metric tons in 1961) and bananas (307 million pounds).

Foreign Trade.—Domestic exports, 1961: £60.6 million (up 4% from 1960); total imports: £75.2 million (down 3%). Chief exports and 1961 values: alumina, £16.9 million; sugar, £14.5 million; bauxite, £13.1 million; and bananas, £4.6 million. The trade deficit was partly offset by foreign exchange earnings of £13.5 million from tourism in 1961, when there were 224,492 visitors to Jamaica.

Events, 1962.—Jamaica on August 6 became the first of the British West Indian dependencies to attain full sovereignty and independence. Princess Margaret of Great Britain, accompanied by her husband, Lord Snowdon, represented the queen at the colorful independence celebrations in Kingston. She presided at the opening session of

the new Jamaican Parliament on August 7, and expressed the personal good wishes of Queen Elizabeth for the success of the new nation. In his address of reply, Prime Minister Sir Alexander Bustamante paid tribute to Britain for the enlightened rule of the island during the past 307 years. The United States was represented at the independence ceremonies by Vice President Lyndon B. Johnson.

Provisions for independence were agreed to by British and Jamaican representatives at a constitutional conference held in London from February 1 to 9. The conferees set the date for independence, applied for Jamaica's membership as an independent state within the Commonwealth, approved the new constitution, and arranged for continued Jamaican support of common services of the West Indies federation, from which Jamaica had elected (in a referendum of Sept. 19, 1961) to secede. The Jamaican Independence Bill was enacted by the British Parliament on July 19.

In preparation for independence the people of Jamaica chose a new government in general elections of April 10. About 72% of the electorate went to the polls and turned out the ruling People's National Party of Prime Minister Norman W. Manley in favor of the Jamaican Labour Party headed by Sir Alexander Bustamante. The popular vote was very close; Labour won 49.7% of the ballots, and the People's National Party, 48.9%. As his party received a majority of 26 seats in the 45-member House, Bustamante became prime minister and formed a Labour cabinet which took office on April 24.

Jamaica was admitted to the United Nations on September 18.

W. R. F.

JAMMU AND KASHMIR. See KASHMIR.

JAPAN

A constitutional monarchy consisting of the four main islands of Hokkaido, Honshu, Shikoku, and Kyushu and of more than 3,000 smaller islands, Japan has a total area of 142,726 square miles. For administrative purposes, it is divided into 46 prefectures, each of which elects its own governor.

Population.—Japan's population totaled 93,418,501 at the Oct. 1, 1960, census and was estimated at 94,870,000 on June 1, 1962. The population density is 665 persons per square mile. The birth rate in 1961 reached a record low of 16.9 per 1,000 (17.2 in 1960), while the death rate was 7.4 per 1,000 (7.6 in 1960).

On Sept. 1, 1962, the population of Greater Tokyo was estimated at 10,172,877. The estimated populations of other major cities in June 1962 were as follows: Osaka, 3,143,255; Nagoya, 1,687,156; Yokohama, 1,492,635; Kyoto, 1,305,215; and Kobe, 1,160,544. As of July 31, 1962, there were 568,996 registered Koreans and 46,858 Chinese in Japan.

Government.—Japan is a constitutional monarchy, the powers of Emperor Hirohito being restricted to ceremonial functions. Executive power rests in the hands of a cabinet whose prime minister is chosen by the national Diet or Parliament. The Diet is divided into a lower house, the House of Representatives, whose 467 members are elected every 4 years unless the Diet has previously been dissolved; and an upper house, the House of Councilors, representing both national and prefecturewide constituencies, half of whose 250 members are elected every 3 years for 6-year terms. Lower house elections were held on Nov. 20, 1960, and upper house elections on July 1, 1962.

Defense.—Legislation enacted in 1962 raised the total authorized strength of Japan's self-defense forces from 268,333 to 273,578. Armed forces strengths in September 1962 were as follows: ground self-defense force, 156,917 men and 276 aircraft; maritime self-defense force, 36,009 men, 477 ships (127,022 tons), and 228 aircraft; and air self-defense force, 40,434 men and 1,125 planes. The defense budget for the fiscal year ending March 31, 1963, totaled 205.8 billion yen (U.S.$1 equals 360 yen), or 8.5% of the national budget. A second defense buildup program for 1962–66, which was approved by the National Defense Council on July 18, 1961, calls for 180,000 men in the ground forces, 143,000 tons of ships, and 1,030 aircraft by 1966.

Hayato Ikeda, prime minister since July 1960, was born in Yoshina, Hiroshima Prefecture, on Dec. 3, 1899. After graduating from Kyoto Imperial University in 1925, he entered the civil service in the Ministry of Finance. By 1945 he was director of the tax bureau of the ministry, and in 1947–48 served as vice minister of finance. Elected to the House of Representatives in 1949, he joined Prime Minister Shigeru Yoshida's cabinet, and while minister of finance (1949–52) was responsible for anti-inflationary measures that speeded Japan's postwar recovery. Opposition to the government's austerity program prevented his reappointment as finance minister in October 1952 and effected his removal from the post of trade minister a month later, but Ikeda subsequently held cabinet rank in both positions (finance, 1956–57; trade, 1959–60) and as minister without portfolio (1958). He succeeded outgoing Prime Minister Nobusuke Kishi as head of the Liberal-Democratic Party on July 14, 1960, and five days later was installed as prime minister.

Education.—Compulsory education requirements stipulate six years of elementary school and three years of junior high school; there is almost universal literacy. As of May 1, 1962, there were 11,056,915 students in 26,615 elementary schools, 7,328,344 students in 12,647 junior high schools, and 3,281,474 students in 3,711 high schools. There were 670,192 students in 250 colleges and universities as of May 1, 1961.

Religion.—Shintō and Buddhism are the dominant religions in Japan, many Japanese believing in both faiths. As of Dec. 31, 1960, there were 78,470,338 Shintoists, 54,930,739 Buddhists, 669,225 Christians, and more than 4,000,000 believers in other religions.

Transportation and Communications.—The railway network as of Sept. 1, 1962, included 12,820 miles of National Railway Corporation lines (16% electrified) and 4,629 miles of private lines. As of March 31, 1962, there were 607,950 miles of roads, of which 18,639 miles were paved. Registered motor vehicles included 1,106,066 motorcycles, 1,634,543 trucks, 676,999 passenger cars, and 69,660 buses in August 1962.

Japanese airlines carried 2,050,107 domestic and 150,547 international passengers in 1961. (See also AERONAUTICS.) As of December 1961, the merchant fleet consisted of 28,509 vessels totaling 9,992,871 gross tons.

There were 6,345,000 telephones in March 1962. As of July 1962, there were 11,222,802 television sets, served by 252 stations; and 17,716,987 radio sets, served by 390 stations. Newspaper circulation in March 1962 was estimated at 39,000,000.

Economic Conditions.—Despite government measures, introduced gradually beginning in mid-1961, to slow down Japan's unusually high rate of economic growth in order to relieve pressures on the balance of payments, there was no slackening in

Princess Margaret and her husband, Lord Snowdon, stop in Kingston while attending Jamaica's independence ceremonies, August 6–7. In back, at left, is Prime Minister Bustamante.

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industrial production throughout 1961 and the first quarter of 1962. The index of industrial production (1955 = 100), which averaged 273.5 in 1961, reached a new peak of 325.8 in March 1962. Some tendency toward leveling off was indicated in the second quarter of 1962, however, and in July the index stood at 295.1. The gross national product for the fiscal year 1961–62 totaled 17,420 billion yen, or 18.9% higher in nominal terms and slightly less than 13% in real terms than in 1960–61. There were 47,060,000 employed and only 370,000 classified as totally unemployed in June 1962. The wholesale price index (1952 = 100) declined slightly after a high of 106.9 reached in September 1961, and stood at 104.0 in June 1962; the consumer price index (1960 = 100) continued to rise, however, from 105.0 in July 1961 to 113.2 in July 1962. Currency in circulation in July 1962 totaled 1,370 billion yen, as compared with 1,178 billion a year earlier.

The national budget for the fiscal year 1962–63 totaled 2,426.8 billion yen, or 15% more than the revised budget for 1961–62. Major increases were made in national debt reduction (70%), social insurance (16%), and defense (13%). A supplementary budget approved in December 1962 totaled 54 billion yen, chiefly to provide for disaster relief and salary increases for government workers.

During 1962, Japan received a standby credit of $300 million from the International Monetary Fund and credits of $68.6 million from the Export-Import Bank of Washington. Gold and foreign exchange reserves rose from $1,486 million on Dec. 31, 1961, to $1,561 million on March 31, 1962, and by September 30 had reached $1,720 million.

Production.—Production continued to increase in most Japanese industries during 1961 and the first half of 1962. Electric power output in 1961 totaled 112,794 million kw.-hr., as compared with 97,829 million in 1960; of this total, slightly over 50% was produced in hydroelectric plants. Coal production continued to rise, from 51.1 million metric tons in 1960 to 54.5 million in 1961; production for the first half of 1962 totaled 29.1 million tons. Refined petroleum production continued to expand, with a new high of 37,220,000 kiloliters attained in 1961; 21,794,000 kiloliters were produced in the first half of 1962.

The output of ordinary hot rolled steel for the first half of 1962 aggregated 10,030,000 metric tons, as compared with annual totals of 15,347,000 tons for 1960 and 19,586,000 tons for 1961. Ship launchings increased slightly, from 1,731,656 gross tons in 1960 to 1,835,000 tons in 1961. Production of other goods in the first half of 1962, with figures for the full year 1961 in parentheses, was as follows: cotton yarn, 246,390 metric tons (558,640); cotton fabrics, 1,598 million square meters (3,383 million); rayon staple fabrics, 413 million square meters (981 million); and cement, 13,643,000 tons (24,632,000).

Brown rice production declined from the 1960 high of 12,858,000 metric tons to 12,419,000 tons in 1961, but another bumper crop of about 13,004,000 tons was forecast for 1962. The 1962 wheat crop totaled 1,629,000 metric tons, as compared with 1,781,000 tons in 1961. The output of common barley was 1,014,000 metric tons (1,127,000 in 1961); that of naked barley, 703,000 tons (849,000 in 1961). In 1961, 81,392 metric tons of tea and 18,678 metric tons of raw silk were produced. The 1961 record fish catch (excluding whales) totaled 6,710,500 metric tons, or 8.4% over 1960.

Foreign Trade.—Both exports and imports rose in 1961 and the first half of 1962, although by the second quarter of 1962 imports showed a tendency to hold steady. Exports increased from $4,055 million in 1960 to $4,236 million in 1961, and imports from $4,491 million to $5,810 million. Special dollar receipts derived from the spending of United States forces and procurement in Japan by the Agency for International Development amounted to $439 million in 1961. In the first half of 1962 exports totaled $2,224 million ($1,962 million in the first half of 1961), and imports $2,955 million ($2,760 million).

The principal exports (in millions) for the first half of 1962 (figures for the full year 1961 in parentheses) were iron and steel products, $229.0 ($380.0); cotton fabrics, $158.3 ($347.7); fish and fish preparations, $112.1 ($162.7); ships, $96.3 ($278.4); clothing, $90.7 ($191.1); chemicals and drugs, $131.6 ($188.7); and fabricated metal products, $82.7 ($158.7). Major imports (in millions) included petroleum, $411.3 ($722.0); raw cotton, $205.8 ($530.0); machinery, $382.6 ($599.2); wool, $168.3 ($344.6); iron ore, $162.1 ($301.9); chemicals and drugs, $157.0 ($336.0); and wood, $152.0 ($260.4).

Exports to the United States, Japan's principal trading partner, decreased slightly, to $1,066.9 million in 1961, but began to rise again in the first half of 1962, to $636.4 million, as compared with $450.8 million in the same period of the previous year. On the other hand, imports, which had increased to $2,095.8 million in 1961, began to fall off in the first half of 1962, to $1,007.0 million ($1,018.0 million in the first half of 1961). Japan's other leading customers (in millions) in 1961, with figures for January–June 1962 in parentheses, were Indonesia, $154.2 ($59.1); Hong Kong, $153.5 ($89.7); Thailand, $133.9 ($70.9); Malaya and Singapore, $132.7 ($63.5); the Philippines, $128.2 ($61.3); South Korea, $125.9 ($57.4); Canada, $116.6 ($64.0); and the United Kingdom, $114.7 ($83.3). Other principal sources of imports were Australia, $451.8 ($229.1); Saudi Arabia and Kuwait, $368.0 ($207.7); Canada, $265.8 ($132.2); Malaya and Singapore, $224.1 (108.4); West Germany, $193.2 ($109.9); the Philippines, $156.0 ($87.9); the USSR, $145.4 ($67.7); and the United Kingdom, $137.1 ($76.8).

Domestic Affairs, 1962. *Political Developments.*—The political scene remained calm in 1962, as Japan concentrated its attention on problems of economic adjustment and on its increasingly complex international relations. Reconvening on January 17 following the customary year-end recess, the regular session of the Diet passed a record-high budget on March 31, after which deliberations focused on the government's request for approval of agreements reached with the United States in settlement of postwar aid to Japan (GARIOA) and with Thailand in repayment of World War II special yen accounts (see below, *Foreign Affairs*). Although the opposition attacked both agreements, threats of mass demonstrations failed to materialize and, except for a brief Socialist Party (JSP) boycott of proceedings, debate was orderly. Both agreements were passed on May 4, but implementing legislation for the GARIOA settlement was sacrificed in the upper house in order to overcome JSP opposition to passage, just before the session closed on May 7, of a bill providing for minor revision of election procedures.

Other important legislation enacted during the session included bills implementing the agricultural standards law adopted in 1961 and increasing the authorized strength of the defense establishment. Seeking to avoid a major clash with the opposition, the government abandoned efforts to pass an anti-political violence bill.

(*Above*) Attorney General Robert Kennedy debates with Japanese student at Waseda University on February 6, on his tour of the country. (*Right*) Members of the Zengakuren student federation demonstrate in front of United States embassy on April 27, protesting resumption of nuclear tests.

WIDE WORLD

The triennial election of half the members of the upper house (125 plus 2 vacancies) was held on July 1. Following a relatively quiet campaign in which interest centered in economic issues, election day brought to the polls a near-record total of 68.2% of the eligible voters. Although the results showed a decline in the conservative share of the total popular vote to 47.2% (52.0% in 1959) and a rise in the combined left to 44.8% (37.4%), the Liberal-Democratic Party (LDP) was able to increase its upper-house strength by 5 seats, with the JSP gaining only 1, while the Democratic Socialist Party (DSP) lost 5.

Prime Minister Hayato Ikeda was reelected LDP president at the party's convention on July 14. The intensification of intraparty rivalries, however, was reflected in the fourth reorganization of his administration (July 18), when all but one of the major factional leaders remained outside the cabinet.

As the extraordinary Diet session (August 4–September 2) opened, party strengths were as follows:

Party	House of Representatives	House of Councilors
Liberal-Democrats	295	142
Socialists	143	66
Democratic Socialists	15	11
Soka Gakkai	..	15
Doshikai	..	7
Communists	3	4
Minor party and independents	2	5
Vacancies	9	...
Total	467	250

During the session the only major item of business was the GARIOA implementing legislation, which was passed on September 1 with only perfunctory Socialist opposition. Although a second extraordinary session, from December 8 to 22, was marred by the JSP's resort to obstructionist tactics in the lower house, the government obtained passage of a supplementary budget and key bills relating to its plans for rationalizing the coal industry.

Within the JSP, the more moderate trend evident in 1961 was strengthened after its convention on January 20–22, when Jotaro Kawakami and Saburo Eda were reelected chairman and secretary general, respectively. Throughout 1962 the party emphasized parliamentary action in an effort to develop a broader base of popular support. Following an open clash between JSP and Communist delegates at the Eighth World Convention Against Nuclear Weapons, held in Tokyo on August 4–6, in which the Communists refused to condemn Soviet nuclear tests, the JSP became increasingly critical of the Japanese Communist Party (JCP) and refused to participate in joint "peace campaigns." The JSP foreign policy platform remained unchanged, however, and in addition to demanding abrogation of the United States–Japan Treaty of Mutual Cooperation and Security and closer relations with the Communist bloc, the party agreed in October to cooperate with the JCP in opposing negotiations for the normalization of relations with South Korea. At a JSP convention held on November 27–29, Eda was replaced as secretary general by Tomomi Narita, also a moderate.

The DSP, at its annual convention on January 25–27, adopted a platform emphasizing welfare state goals and recognizing the necessity for minimal self-defense measures, although opposing rearmament of Japan. In view of the necessity for maintaining unity before the upper house election, there was no challenge to the reelection of Suehiro Nishio and Eki Sone as chairman and secretary general, respectively. Strong demands for a change in leadership following the party's defeat in the election, however, prompted the party to advance its annual convention to October 15–17, when Nishio was reelected chairman, but Eiichi Nishimura was chosen to replace Sone.

There were no major demonstrations or acts of political violence during 1962. The tenth anniversary of the coming into force of the Japanese Peace Treaty was marked on April 28 by quiet ceremonies in which government spokesmen emphasized Japan's postwar recovery and progress under conservative leadership. Although sentiment in favor of a total prohibition of nuclear tests remained strong, Japanese reactions on this sensitive issue reflected recognition that the Soviet Union had taken the initiative in breaking the moratorium and had continued to block an effective international test ban agreement by its refusal to accept minimal measures for inspection. Demonstrations against the resumption of atmospheric testing by the United States therefore were relatively restrained. Perhaps reflecting a growing sense of national pride, there was some improvement in public attitudes toward Japan's own defense establishment. Thus, despite organized left-wing opposition, equipment procured from the United States for Japan's first surface-to-air missile battalion was unloaded and moved to installation sites in September without serious incident. The year 1962 closed on a more turbulent note, however, as strikes by coal

miners and the largest mass demonstrations in Tokyo since 1960 were staged late in December by the JSP and organized labor in an unsuccessful effort to force amendment of the government's rationalization plan for the coal industry.

Communism.—The JCP continued efforts to increase its membership, which reached an estimated 87,000 to 90,000 in 1962, augmented by a Democratic Youth League of about 72,000, of whom approximately one third were JCP members. In the upper house election the JCP made its strongest showing since 1950, polling approximately 4.8% of the total vote to elect 1 candidate from the prefectural constituencies (Party Chairman Sanzo Nozaka) and 2 in the national constituencies, raising its total to 4.

Labor.—As of June 30, 1961, there were 8,359,876 organized workers in Japan, of whom 3,968,123 belonged to Sohyo (General Council of Japanese Trade Unions) and 1,107,867 to Zenro (Japanese Trade Union Council). The National Council of Labor Federations (Domei Kaigi) was inaugurated on April 26, 1962, as a liaison body of right-wing organizations, including Zenro. Except for a two-week shipping strike, ending on May 10 with the granting of a 48-hour week, and coal mine work stoppages in December, the labor scene remained relatively quiet. Negotiated settlements during the spring brought average wage increases of 2,340 yen to public employees and 2,700 yen to workers in private industry.

Foreign Affairs, 1962. *United States.*—An agreement providing for repayment of $490 million in final settlement of United States postwar aid to Japan (GARIOA) was signed on January 9. In accompanying notes the United States expressed its intent, subject to congressional action, to utilize a major portion of this sum for economic assistance to underdeveloped countries and to consult with Japan on the economic development of eastern Asia. It was also agreed that $25 million would be repaid in yen for use in promoting educational and cultural exchange between Japan and the United States.

In accordance with the agreement reached by President John F. Kennedy and Prime Minister Ikeda during the previous year, the first United States–Japan Conference on Cultural and Educational Interchange was held in Tokyo on January 25–31. A conference met in Tokyo on October 21–23 to discuss implementation of recommendations made to both governments by the first meeting of the United States–Japan Committee on Scientific Cooperation (Dec. 13–15, 1961), and the Joint Committee on Trade and Economic Affairs held its second meeting in Washington on December 3–5. The development of closer, cooperative relations between Japan and the United States was further strengthened through the Joint Security Consultative Committee, provided for under the United States–Japan security treaty, which met on August 1, and through cooperative planning in providing increased economic assistance to the Ryukyu Islands.

As a symbol of good fortune, Prime Minister Ikeda of Japan paints an eye on a statue of Dharma, a Buddhist sage, as his Liberal-Democratic Party gains in elections on July 1.

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During his visit to Japan on February 4–10, Attorney General Robert F. Kennedy met with a broad cross section of the Japanese people as well as with leaders of the government and major political parties. His willingness to engage in a frank exchange of views with all groups made a striking impression on the Japanese press and public, and his visit met with an enthusiastic reception. Leftist efforts to muster opposition to the visit either failed or backfired, as was the case when a vocal pro-Communist minority disrupted the attorney general's meeting with the student body of Waseda University.

USSR.—Japan's relations with the Soviet Union in 1962 were marked by heightened interest in the expansion of trade. The possibility of Japanese participation in the development of Siberia was emphasized by an industrial mission headed by Vice Premier Pavel I. Abroskin, which visited Japan in July. A Japanese industrial mission visiting the USSR in August concluded a $96 million export contract for 12 tankers, 5 freighters, and a number of auxiliary vessels and an eight-year contract for the Japanese purchase of lumber, to be balanced by the sale of capital and consumer goods for use in Siberia. Soviet-Japanese relations continued to be disturbed by the northern waters fisheries problem, however, and under a new agreement concluded in Moscow on May 9, Japanese salmon fishing in the area regulated by Japan's convention with the USSR was further limited.

Communist China.—Japanese interest in trade with Communist China was renewed in 1962 by the visit to Peking of a group of 5 LDP Diet members headed by Kenzo Matsumura (September 12–25), followed by a 34-man economic mission headed by Tatsunosuke Tacasaki. The latter mission on November 9 concluded a five-year agreement providing for an average annual trade exchange totaling about $100 million. Immediate realization of this level is unlikely, however, since Communist China has few commodities for which there is a large demand in Japan, and since the Japanese steel and fertilizer industries are reluctant to risk free world markets for trade with the Communist mainland. Although willing to explore trade possibilities, the Japanese government continued to avoid any move in the direction of political rapprochement with Communist China.

South Korea.—Foreign Minister Zentaro Kosaka met with South Korean Foreign Minister Choi Duk Shin on March 12–17, 1962, in an effort to break the long-deadlocked negotiations on normalizing relations with the Republic of Korea. Despite the failure of this effort, substantive Japanese-Korean discussions were reopened in Tokyo on August 21. By October, some progress had been made on the difficult problem of settling Korea's financial claims against Japan, but negotiation of other outstanding issues had only just begun, and final agreement was not expected before the spring of 1963.

A top-level Japanese economic mission visited South Korea on September 17–22. It was recognized on both sides, however, that a significant expansion of economic relations must await normalization of diplomatic relations.

Other Countries.—An agreement with Thailand, under which Japan agreed to pay $26.8 million in settlement of a long-standing dispute over

redemption of Thai World War II special yen accounts was signed in Bangkok on January 31. Foreign Minister Masayoshi Ohira, following his attendance at the opening of the 17th session of the UN General Assembly and a meeting in New York with Secretary of State Dean Rusk, visited western Europe (September 24–October 7) for general discussions with governmental leaders in London, Paris, Rome, and Bonn. On November 5–24, Prime Minister Ikeda made his first official visit to western Europe, for discussions with governmental leaders centering chiefly on Japan's relations with the European Economic Community.

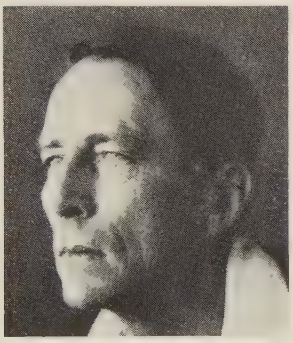
THOMAS P. SHOESMITH,
U.S. Department of State, Tokyo.

JARVIS. See PACIFIC ISLANDS.
JAVA. See INDONESIA.
JAZZ. See MUSIC; RECORDINGS.

JEFFERS, (John) Robinson

U.S. poet: b. Allegheny (now part of Pittsburgh), Pa., Jan. 10, 1887; d. Carmel, Calif., Jan. 20, 1962.

Jeffers was a tragic poet, for whom pain, sorrow, and despair were the inevitable lot of evanescent humanity. Even the poet, he wrote, "builds



Robinson Jeffers (1887–1962)

UPI

his monument mockingly." Echoing the harsh fatalism of Greek tragedy and the stern doom of Old Testament prophecy, Jeffers was, according to Louis Untermeyer, a poet of "uncompromising negation" who perceived man's nobility, if any, in "his stoical acceptance of suffering and continual defeat." Critics differ widely in regard to both Jeffers' philosophy and his poetic technique. For some he was "Homeric," "vastly important," "magnificent"; for others, "loose, turgid, and careless," "limited," and "self conscious." Whatever the critical appraisal, though, he was, certainly, a major American poet of his generation, who reflected in powerful, somewhat dithyrambic utterances the essentially unhappy and helpless condition of contemporary mankind.

He attended private schools in the United States and abroad, and studied at the Western University of Pennsylvania (now the University of Pittsburgh) and Occidental College, graduating from the latter in 1905. After further study, including three years of medical training at the University of Southern California, he decided to devote his life to poetry—a decision rendered practical by an inheritance that was sufficient to insure his financial independence. His first book, *Flagons and Apples,* was published privately in 1912.

About this time Jeffers moved to Carmel, Calif., where, on a bluff overlooking the sea, he erected, largely with his own hands, his famous stone residence and tower, Tor House. Except for occasional trips, the poet spent the remainder of his life there in relative seclusion; and the Carmel area, with the Pacific Ocean as a backdrop, figured importantly in his work.

His volumes of poetry include *Californians* (1916), *Roan Stallion, Tamar, and Other Poems* (1925), *The Women at Point Sur* (1927), *Dear Judas, and Other Poems* (1929), *Thurso's Landing, and Other Poems* (1932), *Give Your Heart to the Hawks, and Other Poems* (1933), *The Double Axe, and Other Poems* (1948), and *Hungerfield, and Other Poems* (1954). He also wrote several plays, notably *Medea,* a free translation of Euripides' tragedy, which was produced on Broadway in 1947 with Judith Anderson in the title role.

JEWELRY AND WATCHES

The major economic trend in the watch and jewelry industry in 1961–62 was the continuing entry of low-margin retailers into the watch and jewelry field. One example was the opening of several diamond departments in Woolworth stores in some of the largest metropolitan areas. There was also a trend for discount houses with jewelry and watch departments to operate more on the order of department stores, and for department stores to adopt discount house techniques.

Despite a bearish stock market through most of 1962, independent retail jewelers in the United States reported better sales results at midyear than in 1961, and several manufacturers of fine watches reported gross sales 10 to 20% higher than in 1961. Merchandise sales at retail jewelry stores and department store jewelry counters in 1962 were expected to remain in the vicinity of $2 billion. The 1961 Annual Survey of Manufactures reported that the value of shipments of watches and clocks in 1961 was $391,511,000.

Technical improvements were reflected in the new Hamilton "505" Electric Watch, a modified version of the "500" with a simpler movement and a more efficient contact system; a new Swiss Ebauches S.A. Caliber with a two-year battery life; an 8/0 Elgin Electric—the smallest and lightest-weight battery-operated watch designed to date; and a Wittnauer Electric Watch.

Bulova in the summer of 1962 placed an Accutron electronic timepiece in the Telstar communication satellite with the purpose of switching off its radio beam in the summer of 1964.

Perhaps the most dramatic technological developments in the jewelry field were the appearance of a machine-faceted diamond which saves carat weight by elimination of the traditional deep girdle, and the development of blended colored gold with multiple colors and excellent color separation.

ORVILLE R. HAGANS,
Editor and Publisher,
"American Horologist and Jeweler."

JEWISH AFFAIRS. See RELIGION—*Judaism.*

JOHN XXIII (Angelo Giuseppe Roncalli)

Pope of the Roman Catholic Church: b. Sotto il Monte, Bergamo Province (Lombardy), Italy, Nov. 25, 1881.

The son of a tenant farmer, Angelo Giuseppe Roncalli was educated at seminaries in Bergamo and Rome, and received a laureate in theology in 1904, the year he was ordained priest. He was secretary to the bishop of Bergamo until World War I, when he served in the medical and chaplain's corps of the Italian Army. In 1921 he was assigned to reorganize the Italian Society for the Propagation of the Faith. Roncalli's long diplomatic career began in 1925, when Pope Pius XI appointed him titular archbishop of Areopolis and sent him to Bulgaria as apostolic visitor. Apostolic delegate to Greece and Turkey from 1935 to 1944, then papal nuncio in France, he was made cardinal and named patriarch of Venice in 1953.

On Oct. 28, 1958, the College of Cardinals elected him 261st supreme pontiff of the Roman Catholic Church,

WIDE WORLD

Pope John XXIII celebrates his 81st birthday on November 25. Later, he blessed the crowds in St. Peter's Square.

to succeed Pope Pius XII; he was crowned John XXIII the following November 4. Almost immediately he enlarged the College of Cardinals to 75, and in 1959 he announced an ecumenical council for 1962. In 1961 he issued the encyclical letter *Mater et Magistra* (1961), urging the prosperous nations to share their wealth with undeveloped areas and stating the Church's position on a wide variety of social questions.

The Second Vatican Ecumenical Council, 21st universal gathering of the Roman Catholic hierarchy and second to be held in St. Peter's Basilica, Rome, opened Oct. 11, 1962. The first session recessed December 8. Some 2,800 church dignitaries attended, including the 39 Eastern Orthodox and Protestant guests or observers received by the pope in special audience on October 13. Addressing the council opening, Pope John called for the "visible unity" of all Christians, but avoided reference to the "return of the separated brethren," a phrase that earlier had offended Protestants and non-Roman Catholics. Although the council was understood to have as its long-range objective the removal of obstacles preventing the union of Roman Catholic and other (especially Eastern Orthodox) Christians, its primary task, the pope made clear, was to effect reforms of a pastoral rather than doctrinal nature—to make "a doctrinal penetration and a formation of consciences, in faithful and perfect conformity with the authentic doctrine, [but] studied and expounded through the methods of research and through the literary forms of modern thought."

The creation of ten new cardinals on March 19 raised the membership of the Sacred College to 90, of whom 87 were publicly known. Papal proclamation of the sainthood of Blessed Martín de Porres on May 6 emphasized the universality of the Church; the saint, a Dominican lay-brother who died in 1639, was a Peruvian mulatto. Three other saints were canonized on December 9.

On October 4, the pope made a 450-mile train trip to the shrines of Loreto and Assisi, marking the first time that a pontiff had traveled by train since 1863. Fears that Pope John might not live to see the end of the Ecumenical Council (Christmas 1963) were expressed after he was taken ill on November 27, but abated somewhat when he resumed holding audiences on December 12.

(See also RELIGION—*Catholicism;* ROMAN CATHOLIC CHURCH.)

JOHN BIRCH SOCIETY. See Index entry.

JOHNSON, Lyndon Baines

Vice president of the United States: b. near Stonewall, Texas, Aug. 27, 1908.

After graduating from Southwest Texas State Teachers College in 1930, Johnson taught for two years in Houston's public schools, then went to Washington, D.C., as a member of the staff of Texas Congressman Richard Kleberg. He returned to Texas in 1935 to serve as state director of the National Youth Administration, but resigned in 1937 to run for Congress in a special election, which he won. Except for duty with the U.S. Navy in 1941–42, Johnson served continuously in the House of Representatives until 1948, when he won his seat in the Senate. He was elected majority whip in 1951, and in 1953 became, as minority leader, the youngest Senate party leader in American history. In 1955, after the Democrats gained control of the Senate, he was chosen majority leader. Nominated in 1960 by the Democratic National Convention as the running mate of Sen. John F. Kennedy, he was elected vice president on Nov. 8, 1960, and was inaugurated on Jan. 20, 1961.

The vice president's most important foreign mission of 1962 was a trip to the Mediterranean and Middle East, August 22 to September 7. Conferring with the leaders of Lebanon, Iran, Turkey, Cyprus, Greece, and Italy, he explained the shift of emphasis in United States foreign aid from outright grants to long-term loans for economic development. In Rome, he had a 40-minute audience with Pope John XXIII, and, while in the Italian capital, signed an agreement with Italy on joint space research.

On July 25, Johnson went to Puerto Rico with President Kennedy's letter endorsing the plan of Gov. Luis Muñoz Marín for a plebiscite to decide the future political status of Puerto Rico. Later, he represented the United States government at Jamaican independence ceremonies, August 6–7.

At the height of the pre-election campaign, on October 22, Vice President Johnson canceled all political appearances because of the Cuban crisis.

JORDAN

The Hashemite Kingdom of Jordan, an Arab monarchy in southwestern Asia, is bounded on the north by Syria, on the west by Israel, and on the east and south by Saudi Arabia and the Gulf of 'Aqaba. It has an area of about 37,300 square miles (85% desert) and a population of 1,690,123 (1961 census), of whom 630,725 (as of June 30, 1961) are Palestine refugees. Principal cities are Amman, the capital (1961 census est., 245,000), Nablus, Irbid, Hebron, Ramallah, Jenin, and Jerusalem (Jordanian sector; 1961 census est., 60,000). Arabic is the official language.

Government.—Jordan is a constitutional monarchy of the British type. The hereditary ruler is King Hussein I (b. 1935), who acceded to the throne under a regency in 1952, and assumed rule in 1953. Executive authority is delegated to a cabinet, headed since Jan. 27, 1962, by Premier Wasfi al-Tal. The bicameral legislature or Parliament is composed of a Council of Notables of 30 members (appointed by the king for staggered eight-year terms) and a Council of Representatives of 60 members (elected directly for normal four-year terms by male suffrage). Political parties have been banned since 1957. Jordan is a member of the Arab League and of the United Nations.

Education and Religion.—Educational institutions are operated by the government, by private and religious agencies, and (for Palestine refugees) by the United Nations Relief and Works Agency (UNRWA). Number of schools (with enrollments), 1959–60: 28 preprimary (11,595); 1,088 primary (210,802); 385 secondary (54,475); 10 technical (1,292); 6 teacher-training (624); 2 special (70). Jordan's first university, formerly the Jubeiha Agricultural College (near Amman), was opened in September

1962. Principal religion: Sunnite Islam (about 90% of the population are adherents).

Finance.—Government revenue (1962–63 fiscal year est.): 38,680,000 Jordanian dinars (31,820,000 in 1961–62); expenditure, 39,241,000 dinars (33,420,000). United States grants-in-aid, 1962–63: $37.5 million ($40.5 million in 1961–62); British financial aid, £1.5 million (£2 million). The Jordanian dinar (JD) is valued at £1 or U.S. $2.80. Monetary supply (June 30, 1962): JD32.67 million, of which JD18.97 million was currency. Gold and foreign exchange holdings of the Jordan Currency Board (June 30, 1962): $55.3 million (up $5.3 million from a year earlier).

Transportation and Communications.—Transport networks: state-owned railways, 180 miles; motor roads, 2,800 miles (hard-surfaced, 1,300). Jordan Airways operates scheduled services from Amman and Jerusalem; seven foreign airlines also serve Jordan. Other data for 1960: passenger cars, 6,300; commercial vehicles, 4,600; telephones, 24,400 (1961); radio receivers, 60,000 (1959).

Agriculture.—About 85% of the labor force is engaged in agricultural or pastoral pursuits. Chief crops (metric tons for the 1960–61 crop year): wheat, 44,000; barley, 33,000; olives, 17,000; olive oil, 3,000; chickpeas, 2,000. There were 609,000 head of sheep in 1959–60.

Minerals and Manufactures.—Chief minerals and manufactured products (metric tons, 1961): phosphate rock, 550,000; cement, 223,200; salt, 12,300 (1960); cotton yarn, 3,800 (1959). In 1959 there were 6,667 factories and workshops, which employed 22,000 persons and had a total output valued at JD5.7 million.

Foreign Trade.—Total exports, 1961: JD5,280,000 (JD3,950,000 in 1960); imports, JD41,830,000 (JD42,860,000). The unfavorable trade balance was met in part by donations from foreign governments (JD25,330,000 in 1961) and income from tourism. Principal exports (in million dinars, 1961): phosphates (1.55), olive oil (0.05). Principal imports: cereal grains, textiles, machinery, automobiles, iron and steel, and petroleum products. Chief customers: Syria, Lebanon, Kuwait, Saudi Arabia. Chief suppliers: Great Britain, United States, West Germany, Italy, Syria, Lebanon.

Events, 1962.—After a series of poor harvests caused by successive droughts, agricultural production in the 1961–62 crop year was markedly improved. A five-year economic development plan inaugurated in 1962 placed major emphasis on expanding the productive factors of agriculture, mining, industry, and tourism. Goals for 1967 included a national income of $360 million (up 50% from 1961), exports of $140 million (up 275%), imports of $180 million (up only 30%), and income from tourism of $30 million (up 200%). The total cost of the plan was estimated at $355 million, of which foreign loans and credits would supply at least 45%, and the government and local private capital the remainder.

The 1962–63 state budget allocated JD5,650,000 to the Jordan Development Board to inaugurate the program, and on April 4, 1962, agreement was reached with Kuwait for a loan of JD7,500,000 in support of the development project. On October 17, the Jordan government announced that it was attempting to establish an international consortium, consisting of the United States, Great Britain, West Germany, the World Bank, and possibly Kuwait and Saudi Arabia, to contribute $240 million in development loans and grants over an eight-year period. If this plan materialized, the five-year development plan would be transformed into an eight-year program aimed at achieving an economically self-supporting status for Jordan by 1970.

During 1962 work continued on the second stage of the Yarmuk-Jordan Valley irrigation scheme; plans were made to construct a commercial plant to extract minerals from the Dead Sea; and a contract for the reconstruction of the Hejaz Railway between Damascus, Syria, and Medina, Saudi Arabia, was signed. Under a new agreement reached with the Trans-Arabian Pipeline Company concerning transit rights for petroleum from Saudi Arabia to Saida, Lebanon, Jordan is to receive more than $4 million annually ($850,000 previously) and a lump sum payment of $10 million in settlement of prior claims.

At the eighth session of the Arab League's Economic Council in Cairo on June 6, Jordan, Syria, Kuwait, and the United Arab Republic signed a convention looking toward the creation of an Arab common market. On August 29, King Saud of Saudi Arabia and King Hussein, meeting at Taif in Saudi Arabia, agreed to coordinate the economic policies of their governments and to abolish all restrictions on the free movement of persons and capital between Saudi Arabia and Jordan.

The cabinet of Premier Bahjet Talhouni, which had held office since August 1960, was replaced on January 27 by a 12-man ministry headed by Wasfi al-Tal. It consisted of Western-educated young men, none of whom had previously held cabinet positions and none of whom was a member of Parliament. The new premier was known as an advocate of the so-called "fertile crescent" plan for the political unification of Jordan, Lebanon, Syria, and Iraq, and as an opponent of the policies of President Nasser of the United Arab Republic.

King Hussein stated that the policy of the new government should be to strengthen cooperation with other Arab lands, maintain a clean and honest administration, and strive to make Jordan an economic model among developing countries. The government undertook a housecleaning both in the civil service and in the officer corps of the military establishment.

On September 26 the cabinet decided to dissolve Parliament, which had been elected on Oct. 19, 1961, and to hold new elections within four months. More than 70% of the 450,000 registered voters went to the polls on November 24, and elected 60 members to the Council of Representatives from among 166 candidates (of whom three were unopposed). The cabinet of Premier al-Tal was reinstated in office on December 3 under a mandate from the king to introduce electoral reforms which would give the vote to women and to members of the armed forces.

Relations with Iraq remained strained throughout 1962 as a result of Jordan's support of Kuwait against Iraqi threats of annexation. On January 18, Premier Abdul Karim al-Kassem of Iraq recalled his ambassador from Amman and requested the withdrawal of the Jordanian ambassador in Baghdad in consequence of King Hussein's acceptance of a Kuwaiti ambassador.

Relations with the United Arab Republic were also far from good as a result of Jordan's support of Syria's secession from the UAR in September 1961, and because of Jordan's sympathy for the royalist cause in Yemen following the revolt there in September 1962. King Hussein's autobiography, *Uneasy Lies the Head*, published in London on June 17, charged President Nasser with persistent efforts to destroy both Hussein himself and the Jordanian state. On August 7 it was reported that a plot against King Hussein's life had been foiled during his visit to Rabat, Morocco, and Premier al-Tal charged that the plot was one of a series directed by President Nasser.

Jordan's relations with Saudi Arabia were improved as the two countries were drawn together by common opposition to President Nasser's programs of Arab socialism and pan-Arab nationalism. The aforementioned meeting of the Jordanian and Saudi Arabian sovereigns at Taif in August resulted not only in an agreement for economic cooperation, but in a commitment to settle long-standing frontier disputes and to create a joint command over the armed forces of the two countries.

Diplomatic relations with France, broken in 1956 during the Suez crisis and not resumed be-

cause of the Algerian struggle for independence, were re-established on September 10.

The Jordanian government continued its policy of nonrecognition of Israel and of insistence on Arab rights in Palestine. In his directive to the new ministry on January 27, King Hussein wrote: "We firmly adhere to our full sacred right in Palestine and will never allow anybody or any force to interfere in this right." During an Israeli reprisal raid on Syrian positions on the eastern shore of the Sea of Galilee on the night of March 16–17, an Israeli aircraft dropped two bombs on Jordanian territory. Israel stated that this violation of Jordan's territory had been unintentional, but on March 18, Jordanian Foreign Minister Hazem Nusseibah informed the Syrian ambassador of Jordan's readiness to support Syria in case of an Israeli attack.

An Israeli border patrolman was killed and three others were wounded by Jordanian gunfire on June 14 in the Jerusalem area. On July 4, Israeli and Jordanian soldiers exchanged gunfire for an hour in the same region; two Israeli soldiers and one civilian were killed. At a meeting of the Israeli-Jordanian Mixed Armistice Commission on July 16, agreement was reached to establish a joint border committee to seek ways of preventing future frontier clashes, but on September 30 another Israeli border patrolman was killed by Jordanian gunfire near Baka al Gharbia.

A son was born to King Hussein and his wife, Lady Muna al-Hussein (the former Antoinette Gardiner), on Jan. 30, 1962. The child, named Abdullah after King Hussein's grandfather, the first king of Jordan, was proclaimed crown prince.

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JOURNALISM. See NEWSPAPERS; MAGAZINES.
JUDAISM. See RELIGION—*Judaism.*
JUVENILE DELINQUENCY. See CHILDREN AND YOUTH; CRIME.

K

KENNEDY—In fluent Spanish, the first lady addresses liberated Cuban prisoners in Miami, Fla., on December 29.

WIDE WORLD

KANSAS

A Central state of the United States, Kansas ranks 14th among the states in area (land, 82,048 square miles; inland water, 216) and 29th in population (2,219,000 on July 1, 1962, a 1.8% increase from the 1960 census figure of 2,178,611). Urban places with populations above 12,000 in 1960:

Arkansas City	14,262	Leavenworth	22,052
Atchison	12,529	Liberal	13,813
Coffeyville	17,382	Manhattan	22,993
Dodge City	13,520	Newton	14,877
El Dorado	12,523	Overland Park (uninc.)	21,110
Emporia	18,190	Parsons	13,929
Great Bend	16,670	Pittsburg	18,678
Hutchinson	37,574	Prairie Village	25,356
Junction City	18,700	Salina	43,202
Kansas City	121,901	Topeka (*capital*)	119,484
Lawrence	32,858	Wichita	254,698

Government.—Chief executive and judicial officers in 1962 included John Anderson, Jr. (Republican), governor, serving a two-year term; Harold H. Chase, lieutenant governor; Paul R. Shanahan, secretary of state; Walter H. Peery, treasurer; Clay E. Hedrick, auditor; William M. Ferguson, attorney general; Adel F. Throckmorton, superintendent of public instruction; and Jay S. Parker, chief justice of the 7-member Supreme Court.

The Kansas Legislature, which convenes annually, comprised 32 Republicans and 8 Democrats in the Senate in 1962 and 82 Republicans and 43 Democrats in the House of Representatives.

Legislation, 1962.—Appropriations totaling $401 million were made by the Kansas Legislature in its budget session, January 9–February 6. Education received substantial increases—a boost of $5 per pupil in emergency school aid (from $20 to $25), and increased assistance to state colleges and universities, including salary raises for most faculty members. The building program at state colleges and universities was increased nearly $3 million, and another $3 million was provided for construction at state mental hospitals.

Most controversial of the bills was one making a token appropriation of $100,000 toward acquiring land for a proposed Prairie National Park in Pottawatomie County. Although the park is advocated by the National Park Service, a strong opposition in the area probably contributed to the status quo situation which prevailed during the balance of 1962.

In the November general elections two proposed constitutional amendments were approved: (1) to permit persons with 45 days of residence in Kansas to vote for president and vice president; and (2) to allow legislators to fix their own pay by statute, instead of having it done by constitutional amendment.

Finance.—In the 1962 fiscal year, operating revenue of $382,626,666 included $245,656,843 from state taxes and $89,459,021 in federal funds. Chief tax yields were the 2½% general sales tax ($79,765,182), and taxes on individual incomes ($27,103,906) and motor fuels ($51,725,362). Spending of $375,899,473 included $124,422,618 for education, $104,306,394 for health, welfare, and safety, and $105,917,398 for highways.

Education.—In the 1961–62 school year, public elementary schools staffed by 11,185 teachers enrolled 317,849 pupils; secondary schools with 8,300 teachers enrolled 122,627; and private and parochial schools with 1,667 teachers enrolled 48,197. College enrollment totaled 50,181 in 43 institutions, including 14 junior colleges and 29 senior colleges and universities.

Estimated public school spending in the 1961–62 school year totaled $244,225,000, including $177,725,000 for current expenditures ($410 per pupil) and $55 million in capital outlays. Revenue of $261 million was drawn

chiefly from state funds ($47 million) and local districts ($172 million). The state reported teachers' salaries averaging $4,872 (high school, $5,197; elementary, $4,628). Actual spending for higher education (1961 fiscal year) totaled $54,128,000.

Public Assistance.—In the 1962 fiscal year, public assistance payments to a monthly average of 71,216 persons totaled $46,203,608. This amount included $22,758,997 for the aged and $9,752,280 for dependent children.

Transportation and Communications.—A total of 940 miles of highway construction and reconstruction was completed during the 1962 fiscal year. *Highways and roads* on Dec. 31, 1961, totaled 132,873 miles (84,524 surfaced). These served 1,214,443 *motor vehicles* (as registered on Dec. 31, 1961), including 896,775 automobiles. Operating in the state in 1961 were 14 *railroads* (using 9,056 line miles of track); (1962) 10 regularly scheduled *airlines;* and 214 *airports and airfields.*

Communications media included (1962) 52 AM and 15 FM *radio stations;* 12 VHF *television stations;* 49 daily *newspapers* (circulation, 667,079); and (January 1) 220,400 business and 702,600 residential *telephones.*

Labor Force.—The state's labor force on July 15, 1962, included 139,900 agricultural workers. Nonagricultural wage and salary employees totaled 574,900, compared with 561,700 a year earlier and an average of 558,900 for the full year 1961. Of nonfarm wage and salary employees, 23.5% were in trade, 20.8% in manufacturing, and 19.8% in government services. Unemployment on July 15, 1962, was down to 27,200 from the 39,100 reported a year earlier.

Manufacturing.—Manufacturing engaged 110,672 workers in 1960, including 91,010 in production, and provided a payroll of $599,099,000. Adjusted value added by manufacture totaled $1,229,551,000.

LEADING KANSAS MANUFACTURES, 1960

Industry group	Total employees	Total payroll	Adjusted value added by mfr.[1] (in thousands)
Transportation equipment	36,725	$230,166	$363,875
Food and kindred products	21,380	107,865	224,689
Chemicals and products	5,968	34,837	139,977
Petroleum and coal products	4,141	27,094	104,563
Stone, clay, glass products	5,661	31,551	78,192
Nonelectrical machinery	7,096	34,016	66,202
Fabricated metals	6,275	31,854	57,484
Printing and publishing	7,825	31,602	50,789

[1] For definition, see footnote 1 in the article *Industrial Production.* (Source: *1960 Annual Survey of Manufactures.*)

Mining.—Kansas ranked ninth among the states in the value of its mineral output in 1961, with 2.68% of the national total. Kansas was fourth in output of helium; fifth in natural gas; sixth in petroleum; and seventh in salt. Mineral fuels supplied about 87% of the total value of minerals.

KANSAS MINERAL PRODUCTION, 1961

(In short tons, except as noted)

Mineral	Quantity	Value
Cement:		
Portland (376 lb. bbl.)	8,028,000	$ 25,605,000
Masonry (280 lb. bbl.)	379,000	1,156,000
Clays	954,000	1,225,000
Coal	664,000	3,102,000
Helium (cu. ft.)	23,251,000	434,000
Lead (recoverable content of ores)	1,449	298,000
Natural gas (1,000 cu. ft.)	649,083,000	81,135,000
Natural gasoline (1,000 gal.)	132,180	5,790,000
Petroleum (1,000 bbl.)	112,241[1]	324,376,000
Petroleum gases (1,000 gal.)	135,643	5,916,000
Salt, common[2]	914,000	11,409,000
Sand and gravel	11,366,000	7,781,000
Stone[3]	12,328,000	16,411,000
Zinc (recoverable content of ores)	2,446	563,000
Other minerals	...	3,397,000
Total	...	$485,872,000[4]

[1] Preliminary. [2] Excludes salt in brine, value for which is included in "Other minerals." [3] Excludes certain stone, value for which is included in "Other minerals." [4] Excludes duplication of clays and stone. (Source: U.S. Bureau of Mines.)

Agriculture.—Cash farm income for the first nine months of 1962 (excluding government payments) totaled $1,014,620,000, compared with $1,061,695,000 for the corresponding period of 1961. For the full year 1961 income comprised $683,195,000 from livestock, $658,835,000 from crops, and $83,260,000 in government payments. Principal income sources in 1961 were cattle, $497,858,000; wheat, $485,662,000; and hogs, $70,512,000.

The state's 104,345 farms in 1959 had an acreage of 50,152,791 (20,529,347 in harvested cropland). Livestock on farms on Jan. 1, 1962, included 4,881,000 cattle, 1,302,000 hogs, 880,000 sheep, and 6,951,000 chickens. An average of 130,000 family and 24,000 hired workers engaged in farming during 1961. (See also below, *Events, 1962.*)

KANSAS CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Apples (1,000 bu.)	221	240	180
Barley (1,000 bu.)	11,370	26,040	13,091
Corn for grain (1,000 bu.)	46,935	58,800	66,198
Corn for silage (1,000 tons)	1,503	1,570	2,211
Hay (1,000 tons)	3,447	4,270	4,509
Sorghum grain (1,000 bu.)	78,142	111,680	128,760
Soybeans (1,000 bu.)	5,840	15,114	16,452
Wheat (1,000 bu.)	192,985	273,718	211,171

(Source: U.S. Department of Agriculture.)

Events, 1962.—The November elections emphasized a continued Republican Party reign in Kansas as all of its major state and congressional nominees were decisively swept into office. U.S. Sen. Frank Carlson, running for a third six-year term, led the ticket by defeating his Democratic opponent, K. L. Smith of Wichita, 388,500 to 223,630. James B. Pearson of Prairie Village, who was appointed to the U.S. Senate seat of the late Andrew F. Schoeppel (died January 21), won the remaining four years of the term by defeating Democrat Paul Aylward of Ellsworth, 344,689 to 260,756.

A hard-fought congressional race in the mammoth new 1st District (the western half of Kansas) ended with Rep. Robert Dole of Russell defeating Rep. J. Floyd Breeding, Democrat, of Rolla. The two incumbents were pitted against each other as a result of the redistricting which followed Kansas' loss of one seat.

Gov. John Anderson, Jr., in his bid for a second term, defeated his Democratic opponent, Dale Saffels of Garden City, 341,257 to 291,285.

Republicans also gained 7 seats in the Kansas House of Representatives, making the new lineup 89 Republicans and 36 Democrats. The only state Senate seat up for election was won by a Republican, whose party's 32–8 advantage remained unchanged.

Toward the end of the legislative session the Kansas Supreme Court held the 1961 School Unification Act unconstitutional. In lieu of a special session to rework the act, the Legislature directed its council to study school organization and to make recommendations to the 1963 session.

An 1855 "blue law" forbidding Sunday sales of anything except groceries, drugs, and "necessities" was ruled void in March by the state Supreme Court. Thus the disputed operation of theaters, filling stations, discount stores, chain groceries, and other businesses which had stayed open on Sundays was, in effect, legalized.

Kansas crop production in 1962 was the fourth largest of record, even though the acreage of crops harvested was the smallest since 1939. The 1962 wheat crop, estimated at 211 million bushels, was the 10th largest in history. Sorghum grain production, estimated at 129 million bushels, was the fourth largest crop of record. New record yields per acre were predicted for sorghum grain and silage, corn, and sugar beet crops. The year

was also excellent for livestock production, with numbers at or near record levels.

Although gains in agricultural and livestock production in the past few years have been phenomenal, the number of persons employed in these occupations meanwhile has steadily declined, due to improved farming methods and mechanization. To offset this employment loss, Kansas has been encouraging and developing manufacturing, and the point has been reached where manufacturing payrolls now exceed farm net income and wages.

Former President Eisenhower delivered an address on May 1 at the dedication of the Eisenhower Library in Abilene, scene of his boyhood days. The $3 million stone and marble structure houses the former chief executive's papers, books, and other material.

"Legislation" and "Events" by: NYLE H. MILLER, *Secretary, Kansas State Historical Society.*

KASHMIR

This disputed state (known also as JAMMU AND KASHMIR) occupies 86,024 square miles in the westernmost Himalayas; the population of the India-controlled area was 3,583,585 at the 1961 census. Beyond a cease-fire line established in 1948, Pakistan-controlled Azad (Free) Kashmir occupies about a third of the state. Forces of Communist China crossed the northern border in 1959, and before the October 1962 offensive had occupied 12,000 square miles of Ladakh district (see below, *Events, 1962*).

Srinagar (pop. est., 230,000 in 1959) is the Indian capital; Muzaffarabad is the seat of government in Pakistani-controlled Kashmir.

Indian-Controlled Kashmir.—Under the 1957 constitution, Kashmir has an elected head of state (Yuvraj Karan Singh, reelected for a second 5-year term in 1957); a Legislative Assembly, numbering 77 members in 1961 (23 other seats being in abeyance); and a Legislative Council of 36. The state sends 6 appointed representatives to the House of the People. At elections to the Assembly held in Jammu (Feb. 24, 1962) and in the Kashmir Valley (March 15) the National Conference Party won 68 out of 73 seats, with 33 of its candidates returned unopposed. Resuming office as prime minister, Bakshi Ghulam Mohammed was sworn in on April 6.

Educational facilities in 1959 consisted of the following: primary schools, 2,627 (pupils, 197,000); middle, 328; high, 136; arts and science colleges, 12; technical colleges, 13; other colleges, 4 (and a state university in Srinagar). In 1961, 3,179 students were sent to the United States and other countries. The literacy rate in 1962 was 12%. Kashmir Moslems, according to the 1951 census, amounted to 77% of the population.

Government revenue in 1961–62 was Rs.171.8 million (1 rupee equals U.S.$0.21); expenditure, Rs.138.2 million. State income in 1961 (at 1955–56 prices) was Rs.160 million.

In 1959 there were 278 miles of state roads, and according to a 1961 estimate there were 40 miles of minor roads per 100 square miles.

Areas and production of principal crops, 1960–61: rice, 511,000 acres (228,000 tons); maize (corn), 534,000 (199,000 tons); wheat, 410,000 (87,000 tons); rape and mustard (1959–60), 62,000 (16,000 tons). The manufacture of woolen textiles employs some 300,000 persons; the growing of silkworms, about 60,000. A project was begun in 1962 to increase the 30 sheep-development centers to 300.

Azad (Free) Kashmir.—Khurshid H. Khurshid, who took office in 1959 as president, is assisted by a nominated Council of Ministers. He was reported to have announced (July 15, 1962) that in view of the continuing deadlock between the Pakistani and Indian governments, and the reopening of the Kashmir question at the United Nations, the current budget and other economic data of Azad Kashmir were being withheld from publication. However, numerous development, health, and educational projects were going forward with economic assistance from the Pakistani government.

Events, 1962.—The dispute between India and Pakistan over Kashmir was overshadowed by further Communist Chinese encroachments in the Ladakh district, as well as in the North-East Frontier Agency. The Indian government warned Pakistan against any attempt to negotiate new boundaries with China. In the Ladakh fighting casualties numbered 19 on July 21, and 28 on October 11, according to Chinese reports. On October 20, the Chinese launched a full-scale attack in Ladakh and advanced rapidly despite determined Indian opposition. In the first two days of fighting, there were over 100 casualties, and the Indians lost 11 posts.

A government white paper submitted to the Indian Parliament on August 6 showed that 90 Indian and 75 Chinese notes had been exchanged in the border dispute; deadlock resulted from the Indian government's requirement that Chinese forces be withdrawn from Ladakh as the precondition of a settlement, based on a 1961 report by Chinese and Indian officials.

At the instance of Pakistan in January, the Kashmir issue was again raised in the United Nations, where it was disclosed that President Kennedy had offered the services of Eugene R. Black, president of the World Bank, as mediator. Action by the Security Council was frustrated by a Soviet veto on June 22 after Indian Defense Minister V. K. Krishna Menon had rejected a proposed plebiscite, asserting that Kashmir's accession to India was "full, complete, and final." Talks between India and Pakistan, aimed at settling their dispute over Kashmir, were held on December 27–29 at Rawalpindi, Pakistan.

DONOVAN ROWSE,
Author and Publicist.

KENDREW, John Cowdery. See NOBEL PRIZES.

KENNEDY, John Fitzgerald

Thirty-fifth president of the United States: b. Brookline, Mass., May 29, 1917.

Three times in 1962 President Kennedy exerted the powers of his office on a scale seldom seen in peacetime, and three times his antagonists abruptly changed course. In April, the nation's steel industry buckled under federal pressure and canceled a price increase within a few days of the president's angry denunciation of it. In October, as federal marshals and troops were ordered into Oxford, Miss., officials who swore never to admit a Negro to the state university admitted one. And later in October, the Soviet Union, after a confrontation with the United States that brought the world perilously close to nuclear war, agreed to withdraw its offensive weapons from Cuba. The principles underlying these massive displays of force were questioned by many; but in each case the consensus was that for the president to have acted differently, or not at all, would have resulted in graver consequences. His handling of the Cuban crisis, in particular, greatly enhanced his stature and prestige throughout the free world.

Kennedy attended public and private schools in Boston and New York, Choate Preparatory School, and Harvard College, where he was graduated *cum laude* in 1940 as an economics major. Earlier, in 1935–36, he had studied at the London School of Economics, and during his junior year at Harvard had taken a leave to serve in London as secretary to his father, Ambassador Joseph P. Kennedy, Sr. In September 1941, Kennedy was commissioned lieutenant junior grade in the Navy and served as commander of a PT boat in the southwestern Pacific in World War II. He narrowly escaped death in August 1943 when a Japanese destroyer rammed and sank his craft in night action near the Solomon Islands.

After his discharge from the service in March 1945, Kennedy became a special correspondent for International News Service. In the following year he won election to the U.S. House of Representatives from the 11th District of Boston. After twice winning reelection, he successfully ran for the Senate in 1952 against incumbent Henry Cabot Lodge, and was returned to the upper house in 1958. Kennedy's service in the Senate was interrupted for a lengthy period of hospitalization in 1954 when he under-

went two delicate spinal operations to correct a back injury suffered while a college athlete; the disability was complicated by Addison's disease. During the slow convalescence that followed, he wrote *Profiles in Courage* (1956), a best seller and winner of the Pulitzer Prize for biography in 1957. He is the author also of *Why England Slept* (1940) and *The Strategy of Peace* (1960).

As Democratic candidate for president in 1960, he was elected on November 8 by the slight margin of 119,450 votes over Vice President Richard M. Nixon. At his inauguration on Jan. 20, 1961, he thus became the first Roman Catholic to occupy the White House.

In 1961, President Kennedy, with a staff of young, vigorous assistants, drawn largely from academic ranks, set about to execute the "New Frontier" programs of his campaign. Despite his success in establishing such innovations as the Alliance for Progress and the Peace Corps, much of his program was retarded by the economic slump and by a Congress in which conservatives from both parties effectively blocked much legislation. Setbacks in Laos, the abortive invasion of Cuba, and the building of the Berlin wall further complicated the president's first year in office.

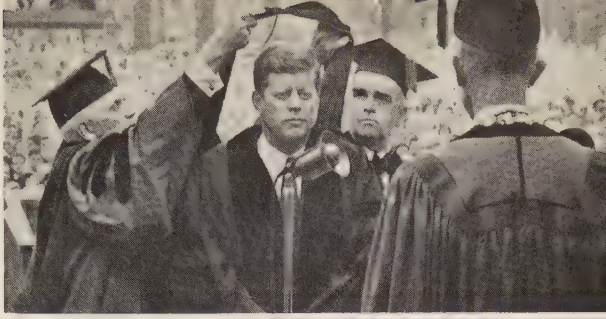
Confidence was the keynote of the president's major addresses at the beginning of 1962, as he attempted to reassure the nation of its regained economic momentum and of the favorable international outlook. In his State of the Union message on January 11, he asked for 34 items of politically moderate legislation. Emphasizing the need to meet the competition of the European Common Market, he asked that the expiring Reciprocal Trade Act be replaced with his Trade Expansion Act, which included broad authorization for the president to reduce tariffs (see also TARIFFS). To combat recessions, he asked for authorization to reduce personal income taxes, increase public works spending, and expand unemployment insurance—requests which he reiterated in his first annual Economic Report to Congress on January 22.

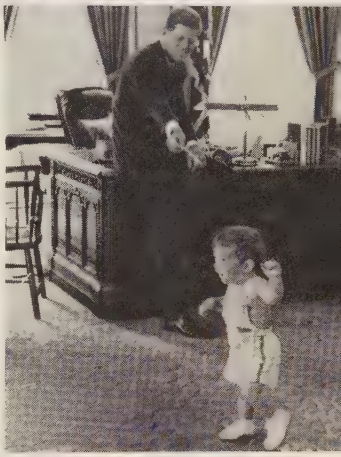
The first budget wholly of President Kennedy's making was presented to Congress on January 18. A balanced budget, it was the largest in peacetime history, proposing expenditures of $92.5 billion (more than half for defense) and estimating revenues at $93 billion. The revenues estimate, $3.9 billion over the preceding year's, was based on an assumed upward trend in the economy which failed to materialize. (In November, a $7.8 billion deficit was estimated for the fiscal year.)

Although the president was to praise the 87th Congress in the fall election campaign, his legislative program achieved at best a modest success. The primary item, the Trade Expansion Bill, was enacted, as was a bill to establish a private corporation for the communications satellite network. The federal aid to education bill again failed, however, as did other legislation that received his strong personal recommendation. His attempt to create a cabinet-level Department of Urban Affairs was blocked in both houses, and a bill to provide medical care for the aged under Social Security was killed on July 17.

The full influence of the president's office was manifested when an increase in the price of steel was announced on April 10–11. Imputing "utter contempt for the interest of 185 million Americans" to the steel executives, the angered president asserted that the administration had helped negotiate the industry's new labor contract—concluded a week before—precisely to avert such an increase. As the administration initiated antitrust proceedings and threatened to boycott the Big Steel companies, a complete price rollback was achieved by April 14. (See also LABOR.)

The president's subjugation of the gigantic industry was called "punitive, heavy-handed, and frightening" by Republican leaders and was blamed for the stock market decline in the late spring. Denying an antibusiness attitude, President Kennedy, at Yale University on June 11,



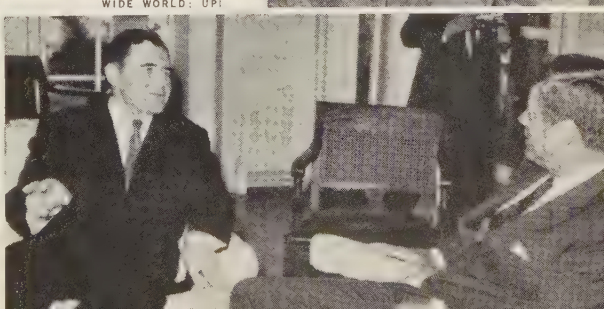


(*Above*) President Kennedy receives hood of honorary doctor of laws degree at Yale University commencement in New Haven, Conn., on June 11. (*Right*) John Jr., 2, prances around his father's office as Kennedy watches with a broad grin. (*Below*) President and Mrs. Kennedy stand with Chancellor Adenauer of Germany (l.) in Washington, November 14, as German leader arrives for official visit to the United States.

WIDE WORLD; PICTORIAL PARADE; WIDE WORLD

(*Right*) Mrs. Kennedy and Caroline leave New York hotel on August 7 for vacation in Italy. (*Below*) President and Soviet Foreign Minister Gromyko discuss world affairs in the White House, October 18. Gromyko assured Kennedy that Soviet missiles in Cuba were purely defensive, a statement the president later branded false.

WIDE WORLD; UPI



called for the cooperation of businessmen in making the economy work at full capacity.

The president's achievements in expanding civil rights were praised by the Southern Regional Council on March 25. Relying primarily on executive and court action, rather than on new legislation, the Kennedy administration had, in the council's words, "built momentum for civil rights into the structure and policies of government."

That momentum proved to be ineluctable during the crisis at the University of Mississippi over the admission of a Negro, James Meredith. President Kennedy spoke by telephone to Gov. Ross Barnett three times on September 29 in an effort to persuade him to comply with the court order to admit Meredith. The next day, in a television address, he appealed to Mississippians and students of the university: ". . . let us preserve both the law and the peace, and then healing those wounds that are within, we can turn to the greater crises that are without, and stand as one people in our pledge to man's freedom." Ultimately, with 26,000 troops within reach of Oxford, Meredith was registered on October 1, as the university became the first desegregated school in the state. (See also EDUCATION; MISSISSIPPI.)

On November 20, with the "stroke of the pen" he had promised during the presidential campaign 22 months earlier, the chief executive signed an executive order prohibiting racial or religious discrimination in certain federally aided housing.

The sixth president in history to risk the prestige of his office by campaigning in an off-year election, President Kennedy delivered his opening speech at Harrisburg, Pa., September 20. Exactly one month later, he canceled all further campaigning by himself and members of his cabinet because of the Cuban crisis.

The president had declared in September that Soviet weapons then in Cuba were defensive, adding: "Were it to be otherwise, the gravest issues would arise." Aerial photographs of offensive missile sites under construction were first showed to him on October 16, and he immediately assembled his advisers. While they secretly considered possible responses, the president maintained his regular schedule. On October 18 he met with Soviet Foreign Minister Gromyko, who was not informed of the reconnaissance, but was read an earlier statement by the president warning of the consequences if Soviet offensive weapons were installed in Cuba. On October 20, when the blockade (the term was later changed to "quarantine" by the president) had been decided on, the president announced from Chicago that he would cancel the rest of his campaign tour because of a head cold.

Tension and speculation mounted when it was announced that the president would speak on a matter of great urgency on October 22. In a radio-television address that day, the president exposed the "urgent transformation of Cuba into an important strategic base" and outlined six "initial" steps, including the naval quarantine of the island to neutralize the threat. Recalling false assurances of the defensive nature of Soviet weapons in Cuba, including those by Gromyko in the preceding week, he said, ". . . it shall be the policy of this nation to regard any nuclear missile launched from Cuba against any nation in the Western Hemisphere as an attack by the Soviet Union on the United States requiring a full retaliatory response on the Soviet Union."

When his bold stand culminated in the Soviet agreement to withdraw its missiles, announced October 28 after an exchange of several notes with Premier Khrushchev, President Kennedy was credited with having achieved a turning point in the cold war. His enormous personal popularity was thought to be the key to the Democratic successes in the November 6 elections.

Two highly publicized controversies involved the president in December. The first resulted from a magazine article on the Cuban confrontation by two correspondents close to the president. Allegations against Adlai Stevenson (q.v.) were assumed to imply presidential disfavor, and a "Dear Adlai" letter written by Kennedy on December 4, affirming confidence in Stevenson, failed to silence rumors of the United Nations ambassador's impending removal from office. The other issue arose from the administration's decision to halt development of the Skybolt missile, which Britain had been relying on for an independent nuclear capability. The subsequent agreement between the president and British Prime Minister Macmillan (q.v.), reached at Nassau on December 18–21, to substitute the submarine-launched Polaris for the air-launched Skybolt, was criticized by proponents of the Skybolt in both countries. (See also MISSILES.)

The controversies, however, did not seriously diminish the president's prestige. Appearing in an informal discussion with representatives of the three major television networks on December 17, he evaluated the current position of the United States by saying, "I think we ought to be rather pleased with ourselves this Christmas." That this view seemed to be shared by a substantial majority of his fellow citizens was a strong endorsement of President Kennedy's second year in office.

(See also CUBA; FOREIGN POLICY OF THE UNITED STATES; UNITED STATES—*The United States in 1962.*)

E. H. S.

KENNEDY, Robert Francis

Attorney general of the United States: b. Brookline, Mass., Nov. 20, 1925.

Robert Kennedy continued to occupy during 1962 a preeminent position in the administration of his brother, the president, not only as attorney general but as presidential adviser and trusted confidant in many areas outside the field of law enforcement.

The seventh of financier Joseph P. Kennedy's nine children, "Bobby" Kennedy graduated from Milton Academy (Mass.) and, after serving in the Navy in 1944–46, received a B.A. from Harvard University in 1948. He obtained a law degree at the University of Virginia in 1951 and entered government service as an attorney with the Justice Department's criminal division, resigning in 1952 to manage the successful senatorial campaign of his brother, John F. Kennedy (q.v.). The younger Kennedy subsequently served on the staff of the Senate's Permanent Investigating Subcommittee as an assistant counsel (1953), chief counsel for the Democratic minority (1954–55), and chief counsel and staff director (1955–56).

In 1957–59, as chief counsel of the Senate Select Committee on Improper Activities in the Labor or Management Field, headed by Sen. John L. McClellan, Kennedy attracted nationwide attention by his conduct of investigations of labor malpractices, particularly in the International Brotherhood of Teamsters. An account of the hearings is given in Kennedy's book, *The Enemy Within* (1960). During the 1960 presidential campaign, he was his brother's campaign manager.

Robert Kennedy emerged as a world figure in his own right in 1962, as a result of a month-long tour around the world. In many of the countries he and his wife visited, especially Japan and Indonesia, Kennedy reported finding widespread misunderstanding of the United States. Despite a "tremendous reservoir of goodwill toward the United States and the democratic way of life," Kennedy reported that many people have only a Communist picture of life under capitalism. During his world tour, which lasted from February 1

to 28, he spoke out forcefully to bring the position of the United States to the people of the countries he visited, and especially to student and labor groups. (Kennedy described his trip in a book, *Just Friends and Brave Enemies,* published on August 24).

A mid-December trip to Brazil for a conference with President Goulart on that country's spiraling inflation and its possible effect on United States economic aid underlined Robert Kennedy's role as spokesman for the administration.

Civil rights continued to dominate Kennedy's activities as attorney general. Testifying in favor of an administration bill to prevent the use of literacy tests as a device to keep Negroes in the South from voting, he clashed sharply with the chairman of the Senate subcommittee on constitutional rights, Sen. Sam J. Irwin (D, N.C.), on April 10. He played a key role in the crisis which arose in September over the enrollment of a Negro at the University of Mississippi and the subsequent intervention of federal marshals and troops (see EDUCATION; MISSISSIPPI).

KENTUCKY

A South Central state of the United States, Kentucky ranks 37th among the states in area (land, 39,863 square miles; inland water, 532) and 22d in population (3,082,000 on July 1, 1962, a 1.5% increase from the 1960 census figure of 3,038,156). Urban places with populations above 15,000 in 1960:

Ashland	31,283	Lexington	62,810
Bowling Green	28,338	Louisville	390,639
Covington	60,376	Newport	30,070
Frankfort (*capital*)	18,365	Owensboro	42,471
Henderson	16,892	Paducah	34,479
Hopkinsville	19,465	Shively	15,155

Government.—Chief executive and judicial officers in 1962 included Bert T. Combs (Democrat), governor, serving a four-year term; Wilson W. Wyatt, lieutenant governor; Henry H. Carter, secretary of state; Mrs. Thelma Stovall, treasurer; Joseph Schneider, auditor; John B. Breckinridge, attorney general; Wendell P. Butler, superintendent of public instruction; and Brady M. Stewart, chief justice of the 7-member Court of Appeals.

The Kentucky General Assembly, which convenes in even-numbered years, comprised 29 Democrats and 9 Republicans in the Senate in 1962 and 74 Democrats and 26 Republicans in the House of Representatives.

Legislation, 1962.—The General Assembly met in January–March in what was perhaps the quietest session of this body since 1900. There were no burning issues before the lawmakers, and Gov. Bert Combs attempted to make his second legislative session as peaceable as possible. The governor presented a general fund budget calling for the appropriation of $237,995,467 for the fiscal year 1962–63, and $245,340,906 for the year 1963–64. The Democrats controlled 29 of 38 seats in the Senate, and 74 of 100 members in the House. Political sparring in the Assembly was between Democrats and Republicans on the one hand, and the two factions of the Democratic Party on the other. Contributing to the calm of the session was the fact that no new taxes were proposed, and the legislature adhered largely to the administrative budget which was submitted.

The most important single piece of legislation was the adoption of a reorganization bill which departmentalized the functions of state government. Among the new departments and commissions are those relating to state affairs, public safety, the treasury, finance, commerce, public information, libraries, corrections, mental health, public health, children and youth, the aging, and mines and minerals. The departments of health and welfare involved the most marked changes.

Another important piece of legislation concerned the removal of Kentucky's annoying restrictions on public salaries. A constitutional amendment in effect repealed all limitations on salaries. In other action, the number of congressional districts was reduced from eight to seven; an act was passed requiring that all new automobiles be equipped with safety belts; and automobile liability coverage was increased. Local interests were able to push through legislation requiring the use of Kentucky materials by public contractors, but the law left sufficient loopholes to destroy its basic intent. The manslaughter act was expanded to permit charging individuals who caused fatal injury to others with manslaughter in the first degree.

Finance.—In the 1962 fiscal year, revenue of $460,269,155 included $303,995,597 from state taxes and $134,888,212 in federal funds. Chief tax yields were the 3% general sales tax ($94,346,038) and taxes on individual incomes ($36,969,433) and motor fuels ($75,591,029). Spending of $557,284,389 (including General Obligation and Turnpike Authority bond funds not listed as revenue) was principally for education ($160,515,003), health, welfare, and safety ($136,791,065), and highways ($200,478,905).

Education.—In the 1961–62 school year, public elementary schools staffed by 15,599 teachers enrolled 449,989 pupils; junior high schools with 1,013 teachers enrolled 27,643; junior-senior high schools with 7,147 teachers enrolled 170,445; and private and parochial schools with 2,916 teachers enrolled 80,688. College enrollment totaled 49,467 in 10 junior colleges and 24 senior colleges and universities.

Public school operating expenditures in the 1961–62 school year totaled $160,797,097 ($274.93 per pupil) and capital outlays amounted to $36,441,325. Revenue was drawn chiefly from state funds ($90,528,765) and local districts ($64,640,433). Salaries of instructional personnel averaged $4,432 (high school teachers, $4,236; elementary, $3,900). Actual spending for higher education (1961 fiscal year) totaled $40,188,000.

Public Assistance.—In the 1962 fiscal year, public assistance payments to a monthly average of 152,280 persons totaled $67,649,362. This amount included $35,906,064 for the aged and $23,702,166 for dependent children.

Transportation and Communications.—A total of 64 miles of highway construction was completed in the 1962 fiscal year. *Highways and roads* in January 1962 totaled 69,083 miles (53,196 surfaced). These served 1,236,392 *motor vehicles* (as registered in 1961), including 970,829 automobiles. Operating in the state in 1962 were 22 *railroads* (using 2,226 line miles of track); 9 regularly scheduled *airlines;* and 5 commercial *airports.*

Communications media included (1961–62) 89 AM and 14 FM *radio stations;* 4 VHF and 3 UHF *television stations;* (1961) 26 daily *newspapers* (circulation, 645,350) and 139 other newspapers (343,310); and (Jan. 1, 1962) 214,900 business and 637,300 residential *telephones.*

Labor Force.—The state's labor force in June 1962 included 185,000 agricultural workers. Nonagricultural employment totaled 848,987, compared with 940,545 a year earlier. Wage and salary workers averaged 648,700 during 1961. Of all nonfarm employees, 25% were in manufacturing, 20.4% in trade, and 18.1% in government services. Unemployment in June 1962 was down to 76,709 from the 109,721 reported for the previous June.

LEADING KENTUCKY MANUFACTURES, 1960

Industry group	Total employees	Total payroll (in thousands)	Adjusted value added by mfr.[1] (in thousands)
Food and kindred products	25,386	$123,625	$389,345
Chemicals and products	10,693	71,005	241,616
Tobacco products	10,735	49,250	235,270
Electrical machinery	20,191	100,343	232,809
Nonelectrical machinery	12,942	74,058	159,508
Fabricated metals	12,432	63,685	127,520
Apparel and related products	19,738	52,010	96,446
Primary metals	9,228	58,706	94,174
Printing and publishing	8,311	42,638	65,930

[1] For definition, see footnote 1 in the article *Industrial Production.* (Source: *1960 Annual Survey of Manufactures.*)

Manufacturing.—Manufacturing engaged 172,714 workers in 1960, including 131,994 in production, and provided a payroll of $816,778,000. Adjusted value added by manufacture totaled $1,968,302,000.

KENTUCKY MINERAL PRODUCTION, 1961

(In short tons, except as noted)

Mineral	Quantity	Value
Clays[1]	906,000	$ 2,406,000
Coal	63,032,000	256,158,000
Fluorspar	38,898	1,755,000
Natural gas (1,000 cu. ft.)	70,937,000	17,592,000
Natural gas liquids (1,000 gal.)	...[2]	...[2]
Petroleum (1,000 bbl.)	18,643[3]	55,370,000[3]
Sand and gravel	5,582,000	5,540,000
Stone	17,085,000	23,309,000
Other minerals	...	24,894,000
Total	...	$386,013,000[4]

[1] Excludes certain clays, value of which is included in "Other minerals." [2] Figure withheld to avoid disclosing individual company's confidential data. [3] Preliminary. [4] Total adjusted to eliminate duplication in the value of clays and stone. (Source: U.S. Bureau of Mines.)

Mining.—Kentucky ranked 15th among the states in the value of its mineral output in 1961, with 2.13% of the national total. Mineral output declined 6%. It was second in fluorspar production and third in coal. Except for sand and gravel, employment decreased in all mineral industries.

Agriculture.—Cash farm income for the first nine months of 1962 (excluding government payments) totaled $305,828,000, compared with $313,130,000 for the corresponding period of 1961. For the full year 1961, income comprised $303,536,000 from livestock, $332,404,000 from crops, and $31,692,000 in government payments. Principal income sources in 1961 were tobacco, $272,460,000; cattle, $106,557,000; wholesale milk, $83,674,000; and hogs, $67,840,000.

The state's 150,986 farms in 1959 had an acreage of 17,030,675 (4,012,962 in harvested cropland). Livestock on farms on Jan. 1, 1962, included 2,242,000 cattle, 1,386,000 hogs, and 6,022,000 chickens. An average of 190,000 family and 46,000 hired workers engaged in farming in 1961.

KENTUCKY CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Apples (1,000 bu.)	315	290	375
Corn for grain (1,000 bu.)	69,837	61,380	64,728
Peaches (1,000 bu.)	218	220	245
Soybeans (1,000 bu.)	2,832	5,025	5,256
Strawberries (1,000 lb.)	8,140	3,680	3,961
Tobacco (1,000 lb.)	398,692	415,349	468,280
Wheat (1,000 bu.)	4,632	4,725	3,406

(Source: U.S. Department of Agriculture.)

Events, 1962.—In the general elections in November, U.S. Sen. Thruston B. Morton, Louisville Republican, was reelected over Lt. Gov. Wilson Wyatt, Democrat, by about 31,000 votes. Issues discussed in the campaign included Wyatt's effectiveness at persuading new industries to locate in Kentucky, his former association with the Americans for Democratic Action, Morton's record as a senator, the medicare issue, and the international crisis. Gov. Bert Combs backed Wyatt, and President Kennedy appeared in Kentucky on two different occasions on behalf of the Democratic candidate, as did former President Truman. Former President Eisenhower appeared in Louisville to support Morton, who also had the backing of the Kentucky medical profession, of business, and of a considerable portion of the middle-class population. All congressional incumbents were reelected except for Democrat Frank W. Burke, who was narrowly defeated in the 3d District by M. Gene Snyder (93,627 to 91,062).

Several problems of 1961 lingered into 1962. There was intense court activity in the Campbell County cases involving the drugging of George Ratterman, reform candidate who was elected county sheriff in 1961, and the general conditions of gambling and law enforcement in Newport. The jury did not reach a conclusion in the case, and the issue remained in suspension. The Carter County school issue was much in the press, with contests between former county Superintendent of Schools Heman McGuire and the Carter County Citizens League for Good Government. In the November school board election the anti-McGuire forces were victorious.

The 100th National Guard Division, called out in 1961 at the height of the Berlin crisis, was brought home and mustered out. President Frank Graves Dickey of the University of Kentucky resigned his post, effective July 1963, to accept a position with the Southern Association of Colleges and Secondary Schools. There was some slight confusion in connection with the integration of Frankfort and Nicholasville public schools, which in the case of Frankfort reached the federal District Court.

On the Ohio River north of Louisville, the U.S. Corps of Engineers completed the high-level Markland Dam, and it was opened to operation. The improvement will greatly facilitate commercial use of the Ohio. Interstate highways in Kentucky were extended during the year, as the state spent all of the funds allotted for these roads. Toll roads were extended into both eastern and western Kentucky, and were to be opened to traffic in 1963.

Western Kentucky faced a brief crisis during the latter part of the summer because of a heavy drought which injured pastures and the hay crop; some emergency relief was necessary. On the whole, however, this was an excellent growing season, and October crop estimates indicated increased agricultural production over that of the previous year.

The eastern Kentucky mining communities, especially those in Letcher and Perry counties, were troubled by labor disputes accompanied by some violence. Unemployment caused by increased mechanization of the mines has created a major social problem in the region.

"Legislation" and "Events" by: THOMAS D. CLARK, *Professor of History, University of Kentucky.*

KENYA

The British crown colony and protectorate of Kenya is situated in equatorial eastern Africa on the Indian Ocean, and extends inland to Victoria and Rudolf lakes. Its area of 224,960 square miles is slightly smaller than that of Texas. The population totals 7,287,000 (mid-1961 est.), including 6,998,000 Africans (mostly Bantu peoples), 178,000 Asians, 66,000 Europeans, and 39,000 Arabs. Kenya Protectorate is a coastal strip of about 2,000 square miles which belongs to and is leased from the sultan of Zanzibar. Principal cities are Nairobi (1961 est. pop., 297,000), the capital; and Mombasa (123,000), chief port in East Africa.

Government.—Pending implementation of a new constitution promulgated in early 1962, the governor (Malcolm MacDonald was appointed to the post on Nov. 17, 1962, succeeding Sir Patrick Muir Renison) is assisted by a Legislative Council of 70 members, including 53 who are directly elected (33 Africans, 10 Europeans, 8 Asians, and 2 Arabs) and 12 so-called national members who are specially elected (4 Africans, 4 Europeans, 3 Asians, and 1 Arab). Party seating in the Legislative Council (following elections of February 1961): Kenya African National Union, 19 directly elected members; Kenya African Democratic Union, 12; New Kenya Party, 4; Kenya Coalition, 3. The leaders of the two leading African parties, Jomo Kenyatta and Ronald Ngala, were designated ministers of state in a 14-member coalition cabinet which was sworn in on April 9–10, 1962. (See below, *Events, 1962.*)

Education and Religion.—The government maintains separate schools for Africans, Asians, Europeans, and Arabs. Christian mission schools make up over four fifths of the total number of schools. About 35% of all school-aged children were enrolled in schools in 1959. Number of schools (with enrollments), 1961: 5,546 African primary (817,758); 53 African secondary (6,442); 42 African teacher-training (3,897); 123 Asian primary (41,226); 36 Asian secondary (11,507); 3 Asian teacher-training (308); 45 European primary (8,213); 14 European secondary (3,069); 11 Arab primary (3,251); 1 Arab secondary (311). The inter-racial Royal College of East Africa at Nairobi had 478 students in 1961. Most of the population are animists; religious minorities include Christians (about 900,000), Muslims, and Hindus.

Finance.—Government revenue, fiscal year 1963 est.: £31,400,000 (£34,840,000 in fiscal year 1962); expenditure, £34,790,000 (£34,262,000). Additional expenditure in fiscal year 1962 for economic development was £9,151,000. British government loans and grants totaled an estimated £20 million in fiscal 1962.

Transportation and Communications.—Transport networks (miles, 1961): railways, 1,020; surfaced highways, 750; other all-weather roads, 3,739; secondary roads, 6,397. The airport at Nairobi is served by the East African Airways Corporation, which provides both internal and ex-

ternal services. Other data for 1960: passenger cars, 64,600; commercial vehicles, 13,100; telephones, 40,954; licensed radio receivers, 57,000.

Agriculture.—Farming and livestock raising are basic to the economy. Principal subsistence crops are maize, wheat, sugar, beans, and peanuts. Chief crops for export (metric tons, 1961): sisal fiber, 58,400 (down 9% from 1960); coffee, 32,700 (up 16%); tea, 9,900 (down 10%); and pyrethrum flowers and extract, 2,400 (down 8%). Livestock products for export (metric tons, 1961): meat, 7,400; butter, 1,900; and hides and skins, 7,300.

Manufactures and Minerals.—Manufacturing, principally of processed foods, building materials, and forest products, is of growing importance to the economy. Chief forest products for export (metric tons, 1961): logs, 15,200 (down 13% from 1960); sawn timber, 178,800 (down 6%); and wattle bark extract, 17,000 (up 18%). Chief minerals produced are gold (12,299 troy ounces in 1961), copper (2,600 long tons), cement (324,000 metric tons), soda ash, and salt. Electricity production (1961): 215 million kw.-hr. (down 2.7% from 1960).

Foreign Trade.—Total exports, 1961: £41.7 million (up 4% from 1960); imports: £68.9 million (down 2%). Chief exports: coffee (valued at £10.6 million in 1961), sisal, tea, pyrethrum, and meat products; chief imports: metal products, machinery, vehicles, chemicals, and fuels. Kenya's principal trading partners are Great Britain, West Germany, the United States, and Japan; trade with other members of the East African Common Market is also of growing importance.

Events, 1962.—Kenyan political leaders attended a constitutional conference held in London from February 14 to April 6, and agreed to form a transitional coalition government pending general elections. The majority Kenya African National Union (KANU) and the minority Kenya African Democratic Union (KADU) each received seven ministerial positions in the new cabinet. Jomo Kenyatta, president of KANU, and Ronald Ngala, head of KADU, were designated ministers of state, and Tom Mboya, general secretary of KANU, was named minister of labor.

The principles of a new constitution proposed by British Colonial Secretary Reginald Maudling were accepted by KANU leaders, representatives of the Kikuyu and other large tribes who want a strongly centralized government, and KADU leaders, members of smaller tribes who desire a federal-type decentralized government. A compromise agreement reached at the conference would establish a strong central government and six regional governments exercising local autonomy in tribal areas. The proposed constitution also provided for a bicameral legislature comprising a lower house to be elected by universal suffrage, and an upper house to consist of representatives from the six new regions.

Despite the agreement in principle concluded at the London conference, the political rivalry and strife between the two major African parties continued. In mid-August a national convention to promote national unity, held in Nairobi, was disrupted by tribal bickering. Both Kenyatta and Ngala failed to attend the meeting, and assailed the political tactics of each other's parties. Kenyatta's KANU party was weakened in mid-August when Luo tribesmen formed a new political movement and threatened to leave the party unless Kikuyu tribesmen ended their alleged practice of taking Mau Mau oaths. Tribal disputes also hindered the work of a British commission attempting to establish boundaries for Kenya's six new regions and the separate district of Nairobi.

Kenya's economy in the first half of 1962 was severely disrupted by more than 100 labor strikes called by unions demanding the rapid Africanization of industry. Minister of Labor Tom Mboya was able to settle most of the strikes, but on June 8 the government issued a statement expressing serious concern about the effect of the work stoppages in delaying the country's economic growth. Economic development was further hampered by an outflow of European capital because of political unrest and uncertainty. The economy continued to suffer from decreased production of coffee and sisal as the result of floods and drought.

Jomo Kenyatta (l.) and Tom Mboya of the Kenya African National Union attend the opening of the Kenya Constitutional Convention in London, February 14, at which an agreement was negotiated on the principles for a new constitution.

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The government's program to provide land for Africans by resettling native families in the so-called Scheduled Areas (formerly the White Highlands) was assisted by a British offer to pay for the purchase of 1 million acres of farmland from Europeans over a five-year period, and by a loan of $8.4 million from the World Bank.

W. R. F.

KHRUSHCHEV, Nikita Sergeyevich

Premier of the USSR: b. Kalinovka, Kursk Province, Russia, April 17, 1894.

The aggressive Soviet premier who, since the death of Stalin, has schemed, bullied, and clowned his way in and out of one crisis after another to keep international communism on the move, finally ran into an immovable wall in the fall of 1962 when he attempted to upset the cold war balance of power by secretly introducing offensive weapons into Cuba. Confronted by the might and determination of the United States, he once again remembered Lenin's maxim that a good revolutionist must be ready "to crawl in the mud on your belly," and withdrew from the brink of nuclear war. The Cuban showdown undoubtedly came as a considerable shock which will require a period of grudging strategy readjustment. In the meantime, the resourceful Communist leader assumed, at least within the Iron Curtain, the image of a man of peace who had just "saved" mankind from certain nuclear holocaust.

Born in poverty, the son of a coal miner, Khrushchev joined the Communists in 1918 and started his political career as a minor party worker in the Ukraine. By 1935 he had advanced to leadership of the Moscow Oblast party organization, and from 1938 to 1949 (except for a brief period in 1947) he directed the party in the Ukraine. He became a member of the Presidium (formerly the Political Bureau) of the Supreme Soviet in 1939. A lieutenant general in World War II, he returned as head of the Moscow organization in 1949, and on Sept. 13, 1953, was named first secretary of the Central Committee of the Communist Party, the most powerful political position in the USSR. On March 27, 1958, he was elected premier (chairman of the Council of Ministers) by the Supreme Soviet. He was renamed premier on April 24, 1962.

The Soviet agricultural program on which Khrushchev staked his domestic prestige ironically turned into one of his major administrative problems in early 1962. When he first came to power in 1957, Khrushchev predicted that he would overtake the United States in the production of meat and milk by 1960. But on March 5, 1962, he had to report to the Soviet nation, in a speech before the Communist Party Central Committee, that fulfillment of the 7-year farm plan was "in serious

Soviet Premier Nikita Khrushchev (second from left) is shown with his wife (r.), during a vacation in Yalta with their children and some of their grandchildren.

WIDE WORLD

danger" as a result of agricultural mismanagement. At his suggestion, a new farm plan was adopted which gave party functionaries additional controls over production and planning.

Throughout 1962, however, Khrushchev's principal preoccupation within the Communist realm was with the deteriorating Sino-Soviet relationship. His pledge of Soviet aid on July 2 to Communist China in the event of an assault on the Chinese mainland took on the appearance of an attempt to allay doubts of Sino-Soviet solidarity, but his efforts to reinstate Yugoslavia in the Soviet bloc met with stanch resistance from Peking.

The Sino-Soviet alliance was put to a test when Communist China attacked India, which Khrushchev had tried painstakingly to woo. His attempt to resolve the problem by temporizing brought bitter denunciations from the Chinese. When Peking also assailed the Soviet Union for its withdrawal of missiles from Cuba as "one hundred percent appeasement, a 'Munich' pure and simple," Sino-Soviet relations took a sharp turn for the worse. Bringing the ideological conflict out into the open, Khrushchev's Italian comrades attacked the Chinese directly for the first time in December at the Italian Communist Party congress in Rome, while Khrushchev himself royally entertained visiting Yugoslav President Tito in Moscow.

By the end of 1962, Khrushchev had shown no overwhelming desire to patch up the Sino-Soviet squabble. "There are those," he angrily said of the Chinese before the Supreme Soviet on December 12, "who, like a Buddha, wanted to tell the Soviet Union how to conduct its foreign policy." These "loudmouthed revolutionists" who think the United States is a "paper tiger," warned Khrushchev, had better realize that "the paper tiger has nuclear teeth."

In spite of his problems at home and abroad, Khrushchev, to no one's surprise, was renamed premier on April 24 by the Supreme Soviet. He was also appointed chairman of a newly established commission to draft a new Soviet constitution to replace the 1936 document. During 1962 he also received a host of foreign visitors, including Mali's President Modibo Keita in May; Raúl Castro, brother of the Cuban premier, in August; U.S. Secretary of the Interior Stewart L. Udall in September; and Finland's President Urho Kekkonen in October. He also found time to attend a concert presented in Moscow on May 30 by American jazz musician Benny Goodman, and made state visits to Bulgaria in May and to Rumania in June.

Busy as he was, Khrushchev did not fail to exercise his power as arbiter of Soviet art when he discovered much to his surprise and displeasure that some Soviet artists "don't see our life in the correct light." Walking past a row of abstract paintings in Moscow's Manège Exhibition Hall one day in December, he remarked that "one cannot figure out whether they were painted by a human's hand or smeared by a donkey's tail."

As Berlin remained a bone of contention between East and West, the issue continued to receive its share of Khrushchev's attention in 1962. After conferring in Moscow with East German leader Walter Ulbricht on February 26–27, the Soviet premier let it be known that the conclusion of a German peace treaty would end Western occupation rights in West Berlin. On July 10 he proposed the replacement of Western troops in Berlin by contingents from small nations under United Nations auspices. On August 18, when he was welcoming two Soviet cosmonauts, Maj. Andrian Nikolayev and Lt. Col. Pavel Popovich, who had just returned from record-breaking twin space flights, Khrushchev renewed his threats to conclude a bilateral German peace treaty "unless the West ends its occupation of West Berlin." He reiterated this Soviet position before the Supreme Soviet on December 12, although—significantly, in the wake of the Cuban showdown—he no longer insisted on a deadline. Two weeks later he accused West German Chancellor Adenauer of being the major stumbling block to a settlement of the Berlin issue. On December 31 he again proposed "to replace the NATO flag in West Berlin by the flag of the United Nations."

Earlier in 1962, the world looked on with guarded optimism when Khrushchev seemingly pursued his policy of "peaceful coexistence" in earnest by agreeing on February 21 to President Kennedy's proposal for United States-Soviet cooperation in the exploration of space. But never during the year did he miss an opportunity to rattle his rockets and bombs. On March 16 he announced that the Soviet Union had perfected a "global rocket" capable of evading Western detection or interception and of hitting a target in any part of the world. In announcing Soviet resumption of nuclear tests on May 16 he reminded the United States that in case of a major conflict between the superpowers "the United States would receive the most crushing reply" from Soviet rockets. On July 16 he declared that the Soviet Union had an antimissile missile that could hit "a fly in the sky." In a letter to Chancellor Adenauer on December 27, he warned that West Germany "will burn like a candle in the very first hours" of any major war.

To Robert Frost, the American poet who visited the USSR in October, Khrushchev remarked that the United States was "too liberal to fight." Presumably under this assumption, he had secretly begun a massive missile buildup in Cuba. To cover up the operation, Khrushchev personally assured U.S. Ambassador Foy D. Kohler that Soviet arms shipments to Cuba were purely for defensive purposes. Two days later, in a White House conference with President Kennedy, his foreign minister, Andrei Gromyko, again gave assurances of the weapons' defensive nature, unaware that the president had already received photographic evidence to the contrary.

After President Kennedy had imposed a naval quarantine on Cuba and demanded the dismantling and removal of all offensive weapons from the island, Khrushchev gave his unqualified support to UN Acting Secretary General U Thant's proposal of a two-to-three-week "suspension" of operations by both sides. When this proposal was

politely rejected by Kennedy, Khrushchev offered to withdraw his missiles from Cuba in exchange for the dismantling of United States missile bases in Turkey. During the fateful week of October 23–29 a series of outspoken and at times harsh messages were exchanged between the two world leaders. Realizing that the United States was resolute in its determination, that its stand was unanimously supported by the Organization of American States, and that overwhelming nuclear power was arrayed against him, Khrushchev finally yielded. On October 28 he notified Kennedy that the Soviet government had issued orders for the dismantling of the weapons and their return to the Soviet Union. He further agreed to let United Nations representatives verify the removal operation. (See also CUBA; INTER-AMERICAN AFFAIRS.)

The Cuban withdrawal was not only a source of extreme embarrassment for Khrushchev, but it also served to impose on him a period of cold war policy reappraisal and strategy readjustment. In his 1963 New Year's message, Khrushchev was content to confine his remarks to restatements of known Soviet positions. Absent from his speech were his customary threats and deadlines, and he sounded almost conciliatory. Meanwhile, he had begun to play the role of a "peacemaker" who had just "saved" the world from nuclear destruction.

(See also UNION OF SOVIET SOCIALIST REPUBLICS.)

F. R. H.

KOREA

A peninsula extending from northeastern Asia toward Japan, Korea has an area (including adjacent islands) of 85,286 square miles (South Korea, 38,031; North Korea, 46,768; demilitarized zone, 487). It borders on Siberia for 11 miles and on Manchuria for approximately 800 miles. Its western shore is washed by the Yellow Sea, and its eastern by the Sea of Japan. The mountainous northern half of the country, endowed with richer mineral, timber, and waterpower resources, has most of the heavy industries, mines, and hydroelectric plants. The less rugged south is chiefly agricultural, with light industries.

South Korea's estimated population on June 30, 1962, totaled 26,106,000, and that of Seoul, the capital, 2,911,430. At the 1960 census, Pusan and Taegu had populations of 1,162,614 and 678,277, respectively. At the end of 1960 the population of North Korea was estimated at 10,789,000; and that of its capital, Pyongyang, at 700,000.

SOUTH KOREA

Government.—To bring about the promised Korean independence and receive the surrender of Japanese troops in Korea, Soviet forces occupied the country north of the 38th parallel and United States forces the south in 1945. The perpetuation of this temporary division in the homogeneous nation resulted in a devastating war which began on June 25, 1950, and ended in a stalemate on July 27, 1953, with the signing of the Korean Armistice Agreement.

The 1945 Moscow agreement imposing on Korea a trusteeship for "a period of up to five years" failed to be implemented because of a United States–Soviet deadlock over Korean representation. In 1947 the UN General Assembly created the UN Temporary Commission on Korea to facilitate the establishment of a national government through general elections, but the Soviet Union boycotted the commission and denied it access to North Korea. The commission therefore observed an election of a Constituent Assembly, held on May 10, 1948, in South Korea alone. This legislature adopted a constitution providing for a unicameral National Assembly and, on July 20, elected Dr. Syngman Rhee as president. The formal proclamation of the Republic of Korea on Aug. 15, 1948, terminated United States military government in South Korea. On December 12, the UN General Assembly declared the government of the Republic of Korea a lawful regime in "that part of Korea."

The Rhee regime was overthrown on April 27, 1960, after more than a decade of tyranny. Rhee had changed the constitution in 1952 so as to succeed himself, and again in 1954 to enable himself to run for the presidency for life. Public resentment over the strong-arm methods used in the presidential election of March 15, 1960, culminated in spontaneous demonstrations. When Rhee resigned, he turned over the reins of government to Huh Chung, his newly appointed foreign minister.

On June 15, 1960, the National Assembly amended the constitution to establish a parliamentary system of government with a cabinet responsible to the assembly, to be composed of a House of Representatives and a House of Councillors. As a result of elections held on July 29, in which the Democratic Party was victorious, a government of the Second Republic was established, with Yun Posun taking office as president on August 13, and Chang Myun (John M. Chang) as prime minister on August 19. The formal inauguration of the Second Republic was proclaimed on October 1.

Although the Chang government restored many civil rights, its lack of dynamism in improving the sagging economy and in eliminating corruption and social evils caused popular discontent to mount. Finally, on May 16, 1961, the regime was overthrown by a military coup d'état led by Army Chief of Staff Lt. Gen. Chang Do Young.

The military junta dissolved both houses of the National Assembly and provincial legislatures, outlawed all political parties and labor unions and disbanded many social organizations, imposed stringent censorship on all publications, forbade indoor and outdoor assembly, froze bank deposits, and filled the jails with political prisoners on the usual charges of procommunism. The constitution was set aside, and the country was ruled by decrees. Executive, legislative, and judicial powers were vested in the Supreme Council for National Reconstruction (SCNR). On July 3, Gen. Chung Hee Park (Pak Chung Hi), deputy chairman of the SCNR (under Gen. Chang Do Young) and

(*Left*) Students of Seoul National University clash with police during anti-American riot on June 8. (*Below*) Gen. Chung Hee Park (at right) installs himself as prime minister of the country, June 19. (*Right*) Former Premier John M. Chang (l.) is guarded, September 1, after receiving a life sentence for conspiracy against the regime.

U.P.I.

actual leader of the coup, became head of the SCNR and later promised to return power "completely" to civilian control in 1963. A referendum on a new constitution, providing for a strong president and a weak unicameral National Assembly, was held on December 17. The voters gave their approval to the junta-sponsored document.

Education.—In the 1961–62 school year there were 3,854,779 pupils in 5,264 elementary schools, 723,951 students in 2,449 middle schools, 320,159 students in 981 high schools, and 144,822 students in 81 colleges and universities.

Religion.—There are no accurate statistics on adherents of all faiths, but Confucianism and Buddhism predominate over Chontoism (Chondo-kyo), Christianity, and Tankun-kyo (the religion of Tankun, mythical founder of Korea). The 1962 *Korea Statistical Yearbook* listed 1,140,134 adherents of Buddhism in 2,011 temples, 172,823 followers of Confucianism in 191 temples, 29,691 adherents of Tankun-kyo in 11 churches, and 22,366 followers of Chondo-kyo in 50 churches. Christians included 607,668 Protestants in 5,823 churches and 475,347 Roman Catholics in 826 churches.

Transportation and Communications.—In 1962 there were 16,883 miles of roads, 1,878 miles of railroads in operation, and 29,234 motor vehicles, and, in 1961, 12,213 vessels aggregating 369,014 gross tons. In 1962 a $14 million loan was received from the International Development Association for the purchase of railway cars. Air service is provided by Korean National Airlines and three foreign lines. There were 165,000 radio sets, 30,000 television receivers, and 97,016 telephone subscribers in 1962.

Economic Conditions.—South Korea has been sustained by United States assistance, which from 1945 through June 30, 1962, totaled $5,433.6 million ($3,431.4 million economic and $2,002.2 million military). More than 1,000,000 units of housing are urgently needed, but only 7,189 were constructed in 1961. An estimated 2,000,000 persons are unemployed, and 1,500,000 are underemployed.

Production of staple foods in 1961 included 3,725,000 metric tons of rough rice, 347,000 tons of potatoes, 5,550,000 bushels of wheat, and 47,700,000 bushels of barley. Food imports amounted to $9,174,000, and the fish and shellfish catch totaled 409,700 metric tons.

The general industrial production index (1958 = 100) rose from 125 in 1960 to 132 in 1961. Major textile manufactures in 1961 included, in square yards, cotton, 133,000,000; silk, 3,220,000; rayon, 55,239,000; and wool, 3,933,000. Electric power generation amounted to 1,770.5 million kw.-hr. Production of other commodities, in metric tons, was as follows: cement, 522,832; coal, 5,884,300; iron ore, 504,800; steel, 46,680; tungsten concentrates, 6,303; and salt, 121,746. The gold output was 2,599 kilograms.

In 1961, imports amounted to $300 million (including $197 million financed by foreign aid), and exports to $38.6 million. The money supply rose from the equivalent of 31.2 billion won on Dec. 31, 1961, to 38.3 billion on Sept. 15, 1962. Gold and foreign exchange holdings amounted to $207.0 million on Dec. 31, 1961, and to $186.3 million on July 31, 1962. The hwan, the rate of which had been set at 1,300 to U.S.$1 on Feb. 2, 1961, was replaced, effective June 10, 1962, by the won at 130 to $1. On June 16, the government froze all private accounts of more than $230 and announced plans to channel from 20% to 100% of all deposits (equivalent to $89 million) into the new $2,460 million Five-Year Plan (1962–66). When financial chaos resulted, the government released $17 million on June 30 and all deposits on July 13. Prices were frozen on basic commodities beginning on August 14.

The national budget for 1962 called for 67.5 billion won. In the fiscal year 1962 the United States provided $92.5 million in defense support, $25.2 million through the Development Loan Fund, $7.1 million in development grants, and $281.4 million in direct military aid.

Political Developments, 1962.—The military junta headed by Gen. Chung Hi Park has exerted every effort to cement its position. While continuing to promise a return to civilian government in 1963, it adopted a sweeping Political Activities Purification Law on March 16, 1962, which barred virtually all influential officials of former regimes, as well as other politicians and legislators, from political activity for the next six years. Although this law exempted President Yun Posun, he resigned on March 22, protesting that it "would injure harmony and unity among the people." General Park assumed the presidency two days later and, on June 18, the premiership as well, after Gen. Song Yo Chan (and Finance Minister Chun Byung Kyu) had resigned (June 16) in disagreement over the currency reform. He relinquished the premiership on July 10 to Kim Hyun Chul, finance minister under Syngman Rhee. Meanwhile, Gen. Chang Do Young, whose death sentence on charges of counterrevolutionary conspiracy had been commuted to life imprisonment on March 10, was freed on May 2.

In June, the South Korean Central Intelligence Agency claimed to have uncovered two plots to overthrow the junta and restore civilian rule. The first (announced on June 1), was allegedly led by Kim Sang Don, former Seoul mayor, and Cho Chung So, Democratic Party organization chief, and involved 41 persons. The second (announced on June 16) reportedly involved former Prime Minister Chang Myun. Chang was jailed on August 28 after an army court martial had demanded a life sentence for his alleged donation of $615 toward the plot. (Chang denied any involvement and insisted that the money had been a private gift to a friend for his family.) He was sentenced to a 10-year prison term on September 27, but was released on October 15.

The junta stressed "voluntary cooperation" on the part of the press, but on June 28 it announced a stringent policy reducing the number of newspapers by forced "mergers" and "voluntary closures." It set up strict standards of makeup and editing for the "enlightenment of the masses." Various newsmen were detained on antigovernment charges.

In June, following two incidents in which United States soldiers respectively killed and beat Koreans caught stealing from U.S. Army compounds, there was considerable agitation for a status-of-forces agreement between South Korea and the United States. Students of different colleges demanded "immediate conclusion" of such an agreement and marched on the United States embassy.

The Political and Security Committee of the UN General Assembly, on December 18, passed (65–11, with 26 abstentions) a resolution instructing the UN Commission for the Unification and Rehabilitation of Korea (UNCURK) to continue its efforts to bring about a unified, independent, and democratic Korea. This perfunctory act was approved by the Assembly on December 19.

North Korea

The Democratic People's Republic of Korea was established north of the 38th parallel on Sept. 9, 1948, after elections held independently of the UN Temporary Commission on Korea, and proclaimed itself the government of all Korea. It was headed by Kim Il Sung as premier and Kim Doo Bong as chairman of the Presidium of the Supreme People's Assembly. Kim Il Sung succeeded himself as premier on Sept. 20, 1957, but chairmanship of the Presidium passed to Choi Yong Kun. In the Supreme People's Assembly election of Oct. 8, 1962, 100% of the electorate reportedly voted for 100% of the 383 candidates, and Kim Il Sung and Choi Yong Kun succeeded themselves.

Industrialization and expansion of agriculture seem to be the cardinal aims of the Korean Workers' (Communist) Party and the North Korean regime. The North Koreans boast that their First Five-Year Plan, which began in 1957, was fulfilled in two and one-half years, and that they began a seven-year plan in 1961. Their claims for 1961 production included 4,830,000 metric tons of grain, 591,000 tons of seafood, about 12 million tons of coal, 930,000 tons of iron, 800,000 tons of steel, 2,300,000 tons of cement, 700,000 tons of chemical fertilizers, 190,000,000 meters of textile fabrics, and 10 billion kw.-hr. of electricity.

Just as South Korea is sustained by the United States, so is North Korea supported by the Communist world. The equivalent of $754,350,000 in aid was promised through 1957, including $360 million from China and $250 million from the USSR. A 1959 agreement contemplated Soviet delivery of equipment and materials amounting to nearly 500 million rubles ($125 million at the official rate), to be paid for in Korean goods. It was announced on Nov. 1, 1960, that the Soviet government had exempted North Korea from repayment of 760 million rubles in earlier loans. The Chinese government agreed on Oct. 13, 1960, to grant North Korea a loan of 420 million rubles between 1961 and 1964 to help build up its light industry.

In 1961–62 there were approximately 2,530,000 students in 8,500 schools of all levels, including 184,000 in 92 institutions of higher learning. Education is compulsory for the first seven years. Tuition is free at all levels.

Repatriation Agreement.—Representatives of the Red Cross societies of Japan and North Korea met in Geneva in 1959 to negotiate the problem of voluntary repatriation of Koreans in Japan, and a repatriation agreement was signed in Calcutta on August 13. The emigration program is being carried out under the observation of the International Red Cross Committee.

The first group of repatriates left Japan for North Korea on Dec. 14, 1959, and by Nov. 8, 1962, the total number had reached "some 80,000" (in 100 groups). On the same day the Red Cross societies of North Korea and Japan agreed to extend the repatriation arrangement for another year, to Nov. 12, 1963.

YONGJEUNG KIM,
President, Korean Affairs Institute.

KREISLER, Fritz

Austrian violinist: b. Vienna, Austria, Feb. 2, 1875; d. New York, N.Y., Jan. 29, 1962.

For over 50 years Fritz Kreisler was the symbol of virtuoso violin playing. His artistry, according to Deems Taylor, was "so nearly flawless that it [was] like a pane of glass through which one looks upon beauty." The leading solo violinist of his day, Kreisler was also a composer of note, and his music, light and melodic, holds wide popular appeal. "If the test of music is longevity," Harold C. Schonberg wrote, "Kreisler's music bids fair to be immortal."

Fritz Kreisler was a child prodigy, and his father, a physician and amateur violinist, carefully nurtured his son's exceptional musical talent. The boy attended the Vienna Conservatory—the youngest child to have studied there—and, at the age of ten, won the violin gold medal. He then was sent to the Paris Conservatory, where in 1887 he received his second gold medal, the Premier Grand Prix de Rome. He made his United States debut in 1888, and in 1889 toured that country with Moriz Rosenthal; the famous Polish pianist. Returning to Europe, he temporarily abandoned music for medical studies in Vienna, art training in Paris and Rome, and duty in the Austrian Army.

Resuming his career as a violinist, Kreisler made his debut as a mature musician in Berlin in 1899. He shortly visited the United States again, and there, as well as in Europe, his reputation as a soloist par excellence was quickly and firmly established. He joined the Austrian Army at the beginning of World War I, but was released in 1914 after being wounded on the Eastern Front. He spent the remainder of the war in the United States; however, because of a degree of ill feeling toward him as an enemy alien, he retired from the concert stage for the duration.

Kreisler returned to Europe to live in 1924, although he performed frequently in the United States. Following Nazi Germany's annexation of Austria in 1938, he became a French citizen. He moved permanently to the United States in 1940 and became an American citizen three years later. Although in 1941 he was badly injured and disabled for nine months as a result of being struck by a truck in New York City, he continued his public concert career until his retirement in 1950.

Kreisler's most popular compositions include the salon pieces *Liebesfreud, Liebeslied, Romance, Caprice Viennois,* and *Tambourin Chinois,* as well as the operetta *Apple Blossoms* (1919). An indication of Kreisler's skill as a composer may be found in the fact that a series of compositions ("Classical Manuscripts") which were published and accepted as his editions of works by such classical composers as Couperin, Porpora, and Vivaldi, were in reality his own music.

KUWAIT

An independent desert amirate, Kuwait is situated at the northwest corner of the Persian Gulf between Iraq and Saudi Arabia. Kuwait has an area of about 6,000 square miles and a population of 321,621 (1961 census). More than half the population are Arabs and Indians; there are also about 5,000 Europeans and Americans. Kuwait was a sheikhdom with special treaty arrangements with Great Britain from 1899 until 1961, when the treaty was terminated by mutual consent, and replaced by a treaty of friendship.

Government.—The ruler, Amir Sir Abdallah al-Salim al-Sabbah (acceded in 1950), is absolute in his own right and is chosen by members of the al-Sabbah family. Elections were held on Dec. 30, 1961, for the first Constituent Assembly, which comprised 20 members. On Jan. 1, 1962, the amir decreed a provisional constitution to be in effect until the Constituent Assembly drew up a permanent constitution. On January 17, he appointed the first cabinet of 14 members, 11 of whom were sheikhs of the al-Sabbah family. The Constituent Assembly was opened officially on January 20.

Administratively, Kuwait was divided in 1962 into three governorates: Kuwait, Lahuli, and Ahmadi, each under an al-Sabbah governor responsible to the minister of the interior. Sheikh Abdallah al-Mubarak al-Sabbah, who heads the army and the police, is the deputy ruler.

Finance.—In 1961, Kuwait issued her own currency, the dinar, equal in value to the British pound. The Kuwaiti dinar (KD) is completely covered by a reserve fund, 50% of which must be in gold, and is freely exchangeable for any other currency. For the fiscal year ending March 31, 1963, the Constituent Assembly approved a budget of KD173.1 million ($485 million), of which KD76.5 million was for development projects.

Education.—Education is free for all. There are 109 government schools (with 45,157 pupils), one secondary school (1,400 students), and a technical college. About 80% of the teachers are Egyptians. University buildings planned by a United Nations commission in 1960 have been completed and are occupied by the secondary school, but no opening date has been set for the university. Many students are granted government scholarships for further study abroad.

Economy.—The economy is based entirely on the petroleum industry, and in 1961 Kuwait produced a record 81.4 million tons of oil (80 million in 1960). The original concession was given in 1934 to Gulf Oil Corporation and

British Petroleum Company. Oil was discovered in 1938, but only insignificant amounts were produced until after World War II. Oil revenues increased from about $3 million in 1947 to $56 million in 1952, and to an estimated $475 million in 1962. Offshore concessions were granted to the Royal Dutch Shell Group of Companies in 1960, and the Japanese-owned Arabian Oil Company obtained Kuwait's share of the offshore concession for the Neutral Zone separating Saudi Arabia and Kuwait. The American Independent Oil Company operates Kuwait's share of the Neutral Zone proper, and in 1962 a new agreement was concluded to give Kuwait 57% of the company's profits in the Neutral Zone.

In 1960, the Kuwait National Petroleum Company (KNPO) was organized (60% government owned and 40% privately owned) to participate in all phases of the oil industry from prospecting to final sales. KNPO has the option of acquiring 20% of offshore concessions granted to Shell. Kuwait has an oil reserve estimated at 62 billion barrels; Burgan field alone has over 12 billion, and is the richest oilfield in the world. An average of eight tankers call each day at Mina al-Ahmadi to load petroleum products.

Over one third of Kuwait's total disposable income is in the hands of the government, and more than half of the labor force is in government service. Per capita national income is somewhat more than $3,500, which is above the level in the United States. Kuwait's total exports in 1960 were estimated at $1,000 million; imports, at $250 million.

Events, 1962.—In addition to the new developments in parliamentary government (see above, *Government*), a principal development in 1962 was Kuwait's broad entry into the arena of world finance. She joined the International Monetary Fund, the International Bank for Reconstruction and Development, the International Finance Corporation, and the International Development Association, to which she subscribed $50 million, $66.7 million, $369,000, and $3.36 million, respectively.

Having a gross national product of nearly $900 million, Kuwait has very large capital funds for foreign loans and investment. Excluding the immense wealth of the ruling family, the official state reserves amounted to more than $672 million. The government established in 1962 the Kuwait Fund for the Development of Arab Economy, with a capital of $140 million for long-term, low-interest loans. The first loans, announced in April, were to the Sudanese Railways ($19.6 million at 4% for 15 years) and for Jordan's five-year development plan ($21 million). Kuwait announced on July 23 that it would lend $8.4 million to newly independent Algeria.

It was announced on October 30 that the amir had named his brother, Sheikh Sabbah al-Salim al-Sabbah, as heir to the throne. At that time it was also reported that the cabinet had approved a new constitution, and had made plans to hold a general election.

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LABOR—New York Newspaper Guild members picket the *Daily News* on October 1, at beginning of an 8-day strike.

WIDE WORLD

LABOR

The continuing problem of unemployment in the economy generally and reduced employment in key industries such as basic steel combined to make income security a central concern of labor relations in 1962. This concern resulted in a number of contract innovations designed to spread available work or compensate workers for loss of employment opportunities. Federal government programs for retraining unemployed workers gathered momentum during the year and the labor movement reached a decision to promote a short workweek as a remedy for unemployment.

National Labor Policy.—As 1962 began, the President's Council of Economic Advisers presented "guideposts for non-inflationary wage and price behavior." The guideposts, contained in the Economic Report of the president, published in January, were intended as a contribution to a discussion of the question: "How is the public to judge whether a particular wage-price decision is in the national interest." The council suggested as a general guide that the national interest would be served if the rate of wage increases (including fringe benefits) in each industry were equal to the rate of increase in productivity in the economy as a whole. Numerous specific modifications were included so that they might be adapted to the circumstances of particular industries, but the council asserted that the observance of these guideposts would maintain stability of labor costs in the economy and contribute to the objective of price stability.

Secretary of Labor Arthur J. Goldberg, in a speech before the Executive Club in Chicago on February 23, said that the federal government's obligation in collective bargaining "is to unhesitatingly assert and define the national interest [when] it reaches important proportions in any area of our economy," and not merely to mediate immediate issues.

During 1962, as in all recent years, the heavy

pressure of problems arising from automation burdened collective bargaining. These problems became the subject of the first report of the President's Advisory Committee on Labor-Management Policy (established in 1961) which was submitted to President Kennedy on Jan. 11, 1962. The committee's basic propositions were that: (1) automation and technological progress are essential to the welfare of the nation; (2) this progress must be achieved without the sacrifice of human values; and (3) both private and governmental action are essential in dealing with the problem. The committee considered a faster rate of economic growth essential to reducing unemployment, and did not express interest in a shorter workweek as a method of dealing with the problem. In addition, it recommended cooperation between private groups and the government to achieve a higher growth rate in the economy and improve educational facilities. The same kind of cooperation, the committee said, was needed to establish various aids for displaced workers, such as retraining programs which provide for subsistence and transfer payments.

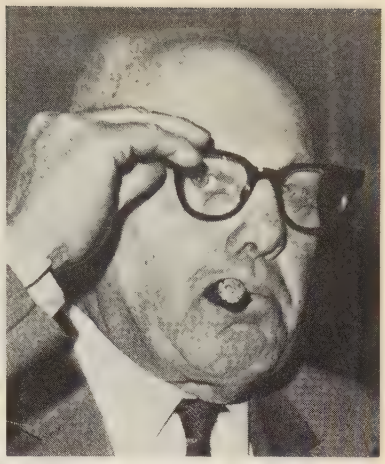
The committee's second report, entitled *Free and Responsible Collective Bargaining and Industrial Peace*, appeared on May 1. Rejecting compulsory arbitration as an unwarranted intrusion by government, the committee nevertheless suggested that collective bargaining would benefit from a greater awareness by labor and management of their joint responsibilities to society. Other proposed changes the report held to be beneficial were willingness to make wider use of various kinds of assistance by third parties and strengthening mediation services on the local, state, and national level.

Collective Bargaining.—Negotiations in the steel industry and their aftermath provided a dramatic illustration of the administration's policy of asserting the national interest. With the steel industry's 116-day strike of 1959 in mind, the administration, acting through Secretary Goldberg, sent telegrams to the parties in February 1962 to urge an "early and non-inflationary settlement." Negotiations began in mid-February, and tentative agreement was achieved on March 28, three months before the old contract expired. Chief negotiators of the agreement, ratified by the union on March 31, were David J. McDonald, president of the United Steelworkers, and R. Conrad Cooper, executive vice president of U.S. Steel and head of the negotiating team which represented 11 major steel producers.

On April 10, Leslie B. Worthington, president of U.S. Steel, announced increases in the price of steel averaging $6 a ton, effective immediately. Worthington justified the increase as necessary to provide funds for plant modernization needed to meet foreign competition. He pointed out that there had been no general increase in the price of steel since 1958. At his news conference the next day, President Kennedy denounced the industry's move as an "irresponsible defiance of the public interest" in view of the recent settlement acclaimed generally as noninflationary.

The day after the president's statement, Inland Steel Company and Kaiser Steel Corporation decided not to raise prices, and Bethlehem Steel Corporation decided to rescind its price increase. U.S. Steel restored prices to their previous level a few hours later, and the remaining steel firms followed suit.

The terms of the new contract evidenced the union's preoccupation with protecting its members' jobs. They suspended the "escalator" clause and left wages unchanged, although the companies agreed to reopen negotiations on wages, pensions, insurance, and certain other terms in 1963. Although the union did not secure its original demand for 13 weeks' sabbatical leave for employees with 20 years' service, a vacation savings plan which provided new retirement and vacation benefits was incorporated in the contract.



AFL-CIO President George Meany tells newsmen on November 12 that he agrees to work out a solution with Walter Reuther regarding their dispute over the selection of a new member of the Executive Council.

UPI

Innovations designed to spread available work also were negotiated by the steelworkers and two large companies in the can industry. The most important feature of the 2-year contracts signed with American Can Company and Continental Can Company on September 30 was the establishment of a sabbatical vacation plan which becomes effective on Jan. 1, 1964. The plan provides a 3-month vacation every 5 years for employees with 15 or more years of service.

In the railroad industry, where a Bureau of Labor Statistics report revealed that employment had declined by more than 40% between 1947 and 1960, the long-standing dispute over work rules continued during 1962. Hopes for a settlement dimmed in February after the five operating brotherhoods rejected recommendations of a 15-member commission appointed by President Dwight D. Eisenhower in 1960 to study the problem. The major recommendations, submitted after more than a year's study, were that: (1) firemen be gradually withdrawn from diesel engines in road freight and yard service (but not those in passenger service); (2) firemen with 10 or more years' service be retained at full job rights until retirement; and (3) firemen with less than 10 years' service who are separated be provided with severance pay and retraining programs.

The commission offered numerous other suggestions designed to give the railroads greater

W. Willard Wirtz (right) became secretary of labor on September 25, succeeding Arthur J. Goldberg (left), who was appointed an associate justice of the U.S. Supreme Court.

U.P.I.

flexibility in the use of their operating employees and expand management rights to introduce technological changes. It also called for a rationalization of the chaotic compensation structure in the railroad industry. Railroad management had reservations about the commission's recommendations, but agreed to accept them as a framework for negotiations. Subsequent failure to make any progress toward a settlement led the railroads to announce plans to put into effect, on August 16, work rule changes based on the commission's report, but this plan was postponed when it became entangled in litigation. Five operating unions asked a federal district court to prevent the railroads' unilateral action, calling it a violation of the Railway Labor Act. Although the court rejected the petition, it issued a temporary injunction against the railroads pending appeal of the case. The unions also spoke of the possibility of a nationwide rail strike if all other efforts failed to dissuade the railroads from instituting the proposed rule changes. The controversy had not been resolved by the end of the year.

In aerospace industry negotiations during 1962, the union security issue overshadowed all others. Although the union shop is common in other manufacturing industries, the United Auto Workers and the International Association of Machinists (which represent most aerospace workers) had not yet been able to obtain it in more than a few firms in the aerospace industry. A breakthrough of sorts was gained by these two unions negotiating jointly at Douglas Aircraft Co. when, on July 16, that company agreed to an agency shop clause in the contract. This clause required that any of the 22,000 union-represented employees who are not members of the union must pay an amount equal to union dues in lieu of membership.

The settlement at Douglas did not lead to agreements at other major aerospace companies, and on July 21, President Kennedy appealed to the parties to continue operating under existing contracts for 60 days. At the same time, the president appointed a three-member board headed by Dr. George W. Taylor to aid the Federal Mediation and Conciliation Service in bringing about a settlement.

"Misery's Got Company."

SANDESON IN THE FORT WAYNE NEWS-SENTINEL

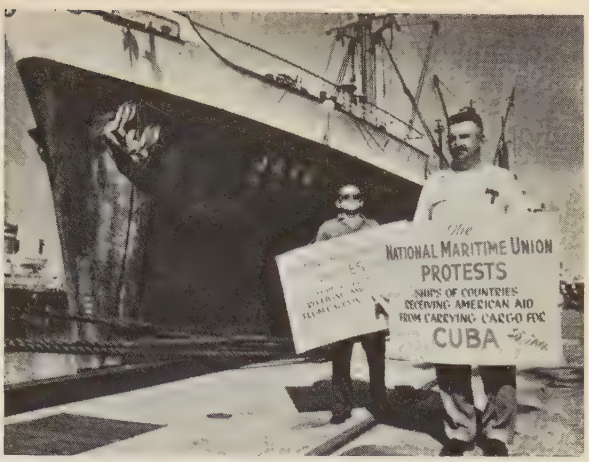
On September 4 the board recommended economic terms generally similar to those in the Douglas agreement, but it urged that the union security issue be resolved through an election among employees, a two thirds majority of those

EMPLOYEES IN NONAGRICULTURAL ESTABLISHMENTS, BY INDUSTRY[1]

(In thousands)

Industry group and industry	October 1962[2]	April 1962	Annual average 1961
Mining	646	647	666
Metal	79.1	86.9	87.1
Coal mining	144.5	146.5	155.5
Bituminous coal	135.9	137.6	145.1
Crude petroleum and natural gas	302.5	302.0	308.9
Crude petroleum and natural gas fields	172.7	173.8	176.8
Quarrying and nonmetallic mining	119.5	111.7	114.9
Contract construction	2,930	2,589	2,760
Heavy construction	647.5	506.6	565.6
General building contractors	888.1	808.5	860.8
Manufacturing (total)	17,024	16,636	16,267
Durable Goods			
Ordnance and accessories	220.8	211.0	200.6
Lumber and wood products (except furniture)	619.8	591.3	600.5
Furniture and fixtures	386.8	377.1	367.4
Stone, clay, and glass products	587.4	566.2	566.8
Primary metal industries	1,122.8	1,221.3	1,142.3
Fabricated metal products (except ordnance, machinery, and transportation equipment)	1,134.0	1,111.3	1,076.4
Machinery (except electrical)	1,461.4	1,466.4	1,401.1
Electrical equipment and supplies	1,560.6	1,505.2	1,436.0
Transportation equipment	1,684.6	1,632.2	1,522.5
Instruments and related products	361.1	355.2	346.4
Miscellaneous manufacturing industries	419.1	384.8	381.6
Nondurable Goods			
Food and kindred products	1,859.7	1,699.1	1,780.2
Tobacco manufactures	109.8	77.0	90.5
Textile mill products	881.4	883.2	879.8
Apparel and related products	1,257.0	1,232.4	1,199.5
Paper and allied products	609.6	598.4	589.5
Printing, publishing, and allied industries	944.3	930.8	926.3
Chemicals and allied products	854.5	854.9	830.2
Petroleum refining and related industries	190.9	198.3	203.0
Rubber and miscellaneous plastic products	400.3	380.4	365.1
Leather and leather products	358.4	359.5	360.0
Transportation and public utilities	3,957	3,904	3,923
Class I railroads[3]	692.9	706.8	717.4
Local and suburban transportation	87.7	88.4	91.5
Motor freight transportation and storage	945.8	887.1	875.2
Telephone	689.2	687.0	694.8
Telegraph	35.9	36.5	37.1
Electric, gas and sanitary services	604.8	600.9	610.7
Trade—wholesale and retail	11,691	11,470	11,368
Wholesale trade	3,115	3,028	3,008
Retail trade	8,576	8,442	8,361
General merchandise stores	1,593.4	1,534.6	1,554.8
Department stores	937.7	901.9	910.6
Food stores	1,381.5	1,373.8	1,358.3
Motor vehicle dealers	687.4	667.3	656.5
Apparel and accessories stores	675.7	707.2	645.7
Furniture and appliance stores	415.1	409.8	405.4
Finance, insurance, and real estate	2,805	2,770	2,748
Banking	719.1	704.2	695.1
Security dealers and exchanges	123.5	133.0	126.8
Insurance carriers	867.6	860.4	856.7
Service and miscellaneous	7,863	7,690	7,516
Hotels and lodging places	614.5	584.2	587.7
Laundries, cleaning and dyeing plants	504.2	507.1	510.5
Motion pictures	174.3	178.6	184.4
Government	9,390	9,143	8,828
Federal[4]	2,333	2,306	2,279
State	1,772.4	1,721.5	1,663.6
Local	5,284.9	5,115.6	4,884.5
Total	56,306	54,849	54,077

[1] Based on establishments' reports covering all full- and part-time employees who received pay for any part of the pay period ending nearest the 15th of the month. Industry definitions based on the revised 1957 Standard Industrial Classification. Employment data reflect adjustments to March 1958 and March 1959 benchmarks, various improved techniques and availability of more extensive basic data in some segments. [2] Preliminary. [3] Data prepared by the U.S. Interstate Commerce Commission. [4] Data prepared by the U.S. Civil Service Commission. (Source: U.S. Department of Labor, Bureau of Labor Statistics, except for Class I railroads and federal government classifications.)



WIDE WORLD

(*Left*) George Romney (second from left), president of American Motors Corp., announces on August 30 that his company agrees to a new profit-sharing contract with the United Auto Workers, whose president, Walter Reuther, sits at Romney's left. (*Right*) National Maritime Union members in Houston, Texas, on October 17 refuse to load a Dutch freighter which had carried a cargo to Cuba. Atlantic and Gulf coast longshoremen boycotted ships trading with the USSR and Cuba.

voting being required to adopt the union shop. The elections held at North American Aviation Co., the Convair Division of General Dynamics, and Ryan Aeronautical Company in October and early November failed to give the union shop majorities large enough for adoption, although about 55% of the workers at Convair and about 60% at the other two companies favored it.

One of the widely discussed agreements of 1962 was the establishment of a 25-hour basic workweek after negotiations in mid-January by Local 3 of the International Brotherhood of Electrical Workers and New York City electrical contractors. (The 9,000 electricians covered by this contract already had a 30-hour basic workweek.) The settlement had, in fact, come after a brief strike, mainly over union demands for a 20-hour week. Under the new contract, electricians were to work a sixth hour daily at time and one-half instead of the seventh hour called for in the old contract.

The longest and one of the most bitter strikes on record in the United States was settled on Sept. 29, 1962, when the Kohler Co. of Sheboygan, Wis., agreed to sign a contract with the United Auto Workers. The strike had begun on April 14, 1954, when Local 833 of the auto workers and the firm, which manufactures plumbingware, were unable to settle the union shop issue. In June 1962 the U.S. Supreme Court upheld a National Labor Relations Board (NLRB) decision which had found the Kohler Co. guilty of unfair labor practices in a case growing out of charges by the union. Shortly thereafter, negotiations were undertaken and terms were agreed upon in September. The new one-year contract, signed on October 8, did not contain a union shop clause, nor did it provide wage increases, but a number of fringe benefits were made more liberal.

Distribution of Nonagricultural Employment.—The accompanying table provides data on nonfarm employment by various industry groups for the year 1961 and for April and October 1962.

Labor Force, Employment, and Unemployment.—The civilian labor force increased by less than 1% from October 1961 to October 1962, but the total number of persons employed rose by approximately 1.5% during the same period, and in October 1962 was more than 1 million higher than a year earlier. The expansion in employment took place almost entirely in the first six months of the year and was consistent with the course of recovery from the nation's fourth postwar recession. Nonfarm payroll employment stood at 56.3 million in October 1962; seasonally adjusted, this was 1.2 million above the figure for January but virtually the same as in July. Important gains were made during the first six months of 1962 in durable goods manufacturing, state and local government, and service and finance industries; but there were slight declines in manufacturing employment after July.

The economic recovery which continued into 1962 was not sufficient to bring the seasonally adjusted rate of unemployment below 5% of the civilian labor force during the year. The rate was 5.8% in January and reached a low of 5.3% in July, but rose to 5.8% in August, September, and November. The October level of 5.5% was close to the average for the year and represented a substantial improvement over the rate of 6.7% for October 1961.

The number of long-term unemployed—those out of work 15 weeks or more—was 865,000 in October 1962, compared with 1,240,000 in October 1961.

Trade Union Developments.—The American Federation of Labor and Congress of Industrial Organizations (AFL-CIO) reported a membership of 12.5 million in the United States on June 30, 1962, substantially the same as a year earlier. The membership was distributed among 131 affiliated national and international unions and 361 directly chartered locals.

A resolution urging a 35-hour workweek as a remedy for unemployment was approved at the AFL-CIO's Executive Council meeting, Aug. 13–16, 1962. At the time, the council noted that unemployment had been over 5% of the civilian labor force for the previous 57 months, and complained that measures taken thus far to reduce it had proved inadequate. The council resolved that the shorter workweek should be pursued through collective bargaining and efforts to secure amendment of the overtime provisions of the Fair Labor Standards Act.

At its August meeting, the council also heard a report on the first seven months' operation of the internal disputes machinery which was established by the AFL-CIO convention in December 1961. The report listed 100 complaints and claims filed by 50 unions under the system during the period ending July 31, 1962. Of these, 54 were resolved by mutual agreement between the parties with the aid of mediation, 13 were undergoing mediation at the time of the report, another 18 had been processed by the system's impartial umpire, David L. Cole, and 15 cases awaited his consideration.

For the first time since its establishment, the AFL-CIO in 1962 approved plans for a major coordinated organizing drive by a number of affiliated unions. The federation will depend heavily on the voluntary understandings concerning jurisdiction between the unions involved in the drive. Los Angeles was chosen as a likely testing ground for the plan.

Federal Legislation.—The Manpower Development and Training Act of 1962 was signed by the president on March 15. This law directs the federal government to assess the manpower needs of the nation and to develop training programs to equip unemployed or underemployed workers to fill these needs. The Department of Labor was made responsible for determining occupational needs, selecting trainees, and placing them when their training is completed; and the Department of Health, Education, and Welfare was to make arrangements with states for the training. The program was designed to run for three years; it will cost $435 million in federal funds, with some matching funds to be provided by the states. The Department of Labor announced on November 8 that 10,000 workers were in training under the act; training projects had been approved for 34 states.

On March 20, 1962, the president approved Public Law 87–420, which amended the Welfare and Pensions Disclosure Act of 1958. Designed to make the act more effective, the amendments specify in greater detail the financial data fund that administrators must file with the secretary of labor, and empower the secretary to investigate these reports. When it appears that there are violations of the act's provisions, the new law authorizes the secretary to bring action in federal court to have the illegal acts or practices enjoined. Penalties for making false reports or embezzling funds, or accepting, offering, or soliciting bribes or kickbacks are punishable by imprisonment or fines, or both.

President Kennedy on August 13 signed Public Law 87–581 (the Work Hours Standards Act of 1962), which requires overtime payments to employees of contractors engaged in work done under contract for, or with financial aid from, the federal government. Projects using federal funds provided to the states or their subdivisions were affected by the new law, which requires that all employees be paid time and one-half for work exceeding 8 hours in one day and 40 hours in one week.

State Legislation.—A limited amount of labor legislation was produced in the legislatures of the 22 states that held regular sessions in 1962. Four states extended and three states restricted the coverage of their unemployment compensation laws, and the State of New York modified the basis on which employees of local governments may be covered. Kentucky and Virginia raised the maximum and minimum weekly benefits (maximums to $40 in Kentucky and $34 in Virginia, and minimums to $12 in both states). Michigan and Massachusetts liberalized dependents' allowance provisions. The laws of Alaska and Delaware were amended to enable otherwise eligible individuals to receive unemployment benefits while undergoing an approved training or retraining course, bringing to 20 the number of state unemployment compensation laws under which this is now permitted.

The minimum wage was raised in Alaska, Hawaii, Massachusetts, New York, and Rhode Island in 1962. Of these five states, four increased the statutory minimum from $1 to $1.25 in two steps (with $1.15 the intermediate step), the $1.25 minimum becoming effective in Massachusetts and Rhode Island in 1963, and in Hawaii and New York in 1964. Alaska raised its minimum from $1.50 to $1.75 in two steps by requiring it to be 50 cents higher than the prevailing federal minimum wage (which goes to $1.25 in September 1963).

Workmen's compensation laws in eight states were improved by increasing benefits or their duration. Increases in maximum weekly benefits ranging from $2 to $8 were established for all types of disability in Kentucky and New Jersey; for all types of disability and death in New York and Virginia; for total disability and death in Maryland; and for schedule injuries in Rhode Island. Massachusetts extended the duration of benefits for all schedule injuries except injuries to the eyes, and Alaska increased the burial allowance from $500 to $1,000. In addition, in the Mississippi law, which covers accidental death or injury only, injury was broadened in definition to include disability or death due to ionizing radiation.

Strikebreaking was regulated in laws passed in 1962 by Michigan, Louisiana, and Massachusetts. The laws prohibited anyone but those directly involved in a dispute from importing replacements for strikers. Michigan outlawed employment of professional strikebreakers altogether. Georgia, Kentucky, Mississippi, South Carolina, and Virginia outlawed the practice by shippers or carriers of paying unions a fee for railroad "piggyback" loads of truck trailers or motor vehicles capable of being moved on the highway.

Labor and the Law.—The U.S. Court of Appeals for the District of Columbia ruled that union funds may not be spent to defend union officers accused of wrongdoing that would be detrimental to their union and its members. The decision was handed down on July 19, 1962, in a case involving 13 rank-and-file members of the Teamsters Union whose suit against the union originally led to the appointment by Federal District Judge F. Dickinson Letts of a board of monitors to govern the union. On Jan. 28, 1961, Judge Letts had dissolved the board of monitors and had denied a motion made in behalf of the 13 members which asked that union funds not be used for the defense of union officers.

The appellate court held that "the treasury of a union is not at the disposal of its officers to bear the cost of their defense against fraudulently depriving the members of their rights as members," but noted that these principles may not apply fully in the case of the monitorship because of its unique character. The court did rule that the same lawyers may not represent both the union and the officers in situations such as this.

The U.S. Sixth Circuit Court of Appeals, in a decision handed down on June 8, 1962, ruled that agency shop clauses violate the Taft-Hartley Act. Specifically, the court said that the agency shop clause which requires nonunion employees to pay a fee to a union in lieu of membership, is contrary to the Taft-Hartley Act. The decision reversed an earlier decision of the NLRB which held that Taft-Hartley Act provisions authorizing the union shop are broad enough to include the agency shop. In November the Supreme Court agreed to review this case.

NLRB Decisions.—In a case involving the Darlington Manufacturing Co., a textile firm in South Carolina, the NLRB decided that closing a plant because its employees chose to be represented by a union is illegal. The case was initiated in 1956 when the Darlington Co. shut down its mill and dismissed 500 employees after the Textile Workers Union of America had won the right to represent them through an NLRB election. By a 3–2 majority, the NLRB held that the company had discriminated against employees for union activity, which is prohibited by the Taft-Hartley Act. When it closed the plant, the company explained that the action was taken because of economic factors, but contended that its right to close the plant, regardless of the reason, was absolute.

NLRB decisions in two cases handed down in August provided guidelines the board will use to determine whether a representation election should be set aside because of racial propaganda. In one of the cases a representation election was voided because the employer's propaganda, the board decided, was calculated to influence employees to reject the union on racial grounds alone. In the second case, the board found that propaganda used by the employer was not inflammatory and was related to issues in the representation election. It consisted of an accurate description of the union's policy on racial integration and a newspaper account of the union's activity in connection with school desegregation in a nearby city. The board ruled that it was therefore permissible to use an accurate statement of the other party's position on racial questions as long as racial prejudice is not inflamed.

A decision by the U.S. Court of Appeals for the Second Circuit in January 1962 denied the authority of the NLRB to hold representation elections on ships of foreign registry, even though they are owned and operated by foreign subsidiaries of a United States corporation. The court held that the Taft-Hartley Act was not applicable to foreign seamen hired on such vessels under foreign shipping articles, even though labor relations aboard these ships affected the commerce of the United States.

In a ruling on November 20, the NLRB lengthened from two to three years the period during which a labor contract may act as a barrier to holding a representation election. According to this new rule, a four-year contract would bar an election for three years, as would a three-year contract, but one of two years' duration would act as a bar only during its life. The board reasoned that this change would enhance the stability of labor relations in industry and would have only a slight effect on employees' freedom to be represented by a union of their choice.

(See also CHILDREN AND YOUTH; LAW; SOCIAL SECURITY; and the Index entry, *Labor.*)

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LABOR FORCE. See LABOR and the Index entry, *Labor Force, World.*
LABRADOR. See NEWFOUNDLAND.
LACROSSE. See SPORTS, GAMES, AND SHOWS.
LAND BANKS, Federal. See FARM SERVICES.
LANDAU, Lev Davidovich. See NOBEL PRIZES.

LAOS

The landlocked Kingdom of Laos is bounded by Communist China on the north, Burma on the northwest, Thailand on the west, Cambodia on the south, and North Vietnam and South Vietnam on the east. It has an area of about 91,000 square miles, and a population of 1,850,000 (mid-1961 est.). The administrative capital is Vientiane (est. 100,000); the residence of the king is Luang Prabang (15,000). French is the official language.

Government.—Laos is a constitutional monarchy having a hereditary ruler, King Savang Vatthana (acceded Nov. 4, 1959); and a National Assembly, premier, and cabinet. Following the Geneva agreement of 1954 and a three-year war between the government and the Communist-controlled Pathet Lao rebels, Laos was unified in November 1957 through the transformation of the Pathet Lao into a political party and the integration of Pathet Lao troops with the national army. After the party registered gains in elections of May 1958, non-Communist leaders united to form a government which excluded the Communists, and in 1959 the Pathet Lao again resorted to guerrilla warfare in an attempt to overthrow the government.

Following lengthy parleys between three main rival factions, an accord was signed on June 12, 1962, to establish a coalition government of royalist, pro-Communist, and neutralist leaders. Prince Souvanna Phouma, the neutralist leader, was installed as premier on June 23, 1962. One month later a 14-nation conference in Geneva was concluded with the signing of agreements to guarantee the independence and neutrality of Laos. (See below, *Events, 1962.*)

Laotian political parties are the royalist Paxa Sangkhom (Democratic Party of Social Progress), led by King Savang Vatthana; the neutralist Assemblage of the Laotian People, founded by Prince Souvanna Phouma; the moderately leftist Santiphab, which favors relations with the Communist bloc; Neo Lao Haksat (ex-Pathet Lao), the pro-Communist movement led by Prince Souphanouvong; and the Lao Penh Kang (Party of Neutral Laos), headed by Prince Souvanna Phouma and Gen. Kong Le.

Education and Religion.—The literacy rate is estimated at 15%. School enrollment (1960): 114,373. Number of schools (with enrollments): 1,426 primary (101,204); 6 secondary (2,157); 1 technical (126). There are also 11 Chinese schools (4,500 pupils) and 10 Vietnamese schools (3,000). Buddhism is the principal religion; many primitive tribes practice animism.

Finance.—The monetary unit is the kip (80 kips equal U.S.$1). Budget receipts, fiscal year 1961–62 est.: 1,080 million kips (548 million in 1960–61); expenditures, 1,475 million (1,792 million). Foreign aid, chiefly from the United States, totaled an estimated 744 million kips in 1961–62 (384 million in 1960–61). Capital investment for 1961–62 was estimated at 682 million kips.

Transportation and Communications.—Transport systems are generally inadequate to the country's needs. The only railway is provided by the State Railway of Thailand, which has extended its line from Bangkok to Nong Khai in Laos. Roads are generally undeveloped and badly maintained, although a road-building program financed by United States aid has added about 500 miles to the existing 1,200 miles of surfaced roads. The Mekong River and its tributaries provide the principal means of transporting cargo. Air Laos operates internal services and connections with nearby capitals; four foreign airlines also use the international airport at Vientiane. Other data: passenger cars, 5,000 (1960); telephones, 736 (1960); radio sets, 15,000 (1957).

Economy.—Laos has a preponderantly agrarian economy, little or no industry, and a very limited commercial sector. Per capita income is only about $50 per year, and the per capita level of food consumption (1,900 calories daily) is one of the lowest in Asia. Laotian agriculture is characterized by the extensive use of land and labor, and by low capital investment. About 95% of agricultural land is allocated to rice production (approximately 520,000 tons annually). Other crops are corn, coffee, tea, tobacco, cotton, peanuts, and vegetables. Livestock numbers have declined in recent years because of rinderpest and other diseases; in 1962 there were about 104,000 water buffaloes, 246,000 cattle, and 177,400 pigs. The only mineral mined is tin; output in 1959 was 555,300 tons, valued at 253 million kips.

Foreign Trade.—Total exports, 1960: 75 million kips (down 4% from 1959); imports, 946,800 million (down 7%). Principal exports (in million kips, 1960): tin, 33,300; cardamine, 5,800; green coffee, 6,600. Principal imports (in million kips): metallurgic and mineral products, 309,200; food products, 220,500; machinery, 85,300; textiles, 77,800. The annual trade deficit has been reduced by means of financial aid from the United States and other countries. Chief trading partners are the United States, France, and Thailand.

WIDE WORLD

Meeting in the Plaine des Jarres section of northeastern Laos on June 8 to try once again to form a coalition government acceptable to the three contending factions of Laos are (l. to r.): Prince Souphanouvong, Gen. Phoumi Nosavan, Prince Souvanna Phouma, and Premier Prince Boun Oum.

Events, 1962.—As a result of continuing political and economic instability, Laos in 1962 was again dependent on foreign aid for its very existence. United States aid in 1962 totaled $45 million, of which $31 million was for military purposes. French assistance, which amounted to 3,290 million old francs in the period 1955–60, was used chiefly for mining surveys, agricultural studies in the Vientiane region, and the construction of a steel bridge at Luang Prabang, radio towers, and hospitals. Aid received from Great Britain through the Colombo Plan and from Australia, Japan, and New Zealand has financed bridge construction, business operations, and technical programs. An important international project is the dam development of the Mekong River Basin, completion of which will extend electric power throughout the country.

Representatives of 14 countries signed agreements at Geneva on July 23 to guarantee the neutrality and independence of Laos, following a 15-month conference aimed at removing the kingdom from the cold war between the Communist camp of nations and the free world. Soviet Foreign

At Geneva on July 21, Prince Souvanna Phouma is flanked by Soviet Foreign Minister Andrei Gromyko (left) and British Foreign Secretary Lord Home, as a treaty that pledges the independence and neutrality of Laos is formally approved.

WIDE WORLD

Minister Andrei A. Gromyko presided over the signing ceremony. The United States was represented by its secretary of state, Dean Rusk, and by W. Averell Harriman, assistant secretary of state for Far Eastern affairs.

The delegates at the conference signed two documents. A protocol defined the procedure of the three-nation International Control Commission for supervising the withdrawal of foreign troops and taking other steps necessary for the establishment of neutrality. A declaration, signed by all conferees except Laos, pledged respect for the new status of the kingdom.

Soviet Premier Khrushchev noted that the agreements were "of signal international importance in removing a dangerous hotbed of war," and claimed that they represented a "major victory" for his policy of peaceful coexistence. President Kennedy hailed the agreements as a "significant milestone in our efforts to maintain and further world peace." The American government, however, was confronted with the fact that the Soviet Union apparently sought to use the neutral regime to increase its influence over Southeast Asia, while the United States was committed to the creation of a buffer zone between the Communist states and the pro-Western nations in the region. The Kennedy administration was particularly concerned to attain a neutral Laos before the country fell completely under Communist influence and further expose the pro-Western troops struggling against Communist guerrillas in South Vietnam. From a military viewpoint, the loss of Laos to the Communists would open the Mekong River Valley as a direct route from Communist China and North Vietnam into the heart of Southeast Asia.

The Geneva agreements were preceded by protracted negotiations between the royalist, pro-Communist, and neutralist leaders in Laos. Prince Boun Oum, premier of the royal government, at first opposed the United States-backed plan to form a coalition cabinet, and as a result the United States temporarily suspended financial aid to Laos early in the year. The royalist government was eventually persuaded to resume negotiations. On June 11, Prince Boun Oum, neutralist leader Prince Souvanna Phouma, and pro-Communist leader Prince Souphanouvong announced agreement on the composition of a coalition cabinet. Prince Souvanna Phouma and 10 other neutralists were included in the 19-member cabinet; the remaining ministers were equally divided between representatives of the royal government and of the pro-Communist Pathet Lao movement. Prince Boun Oum retired from governmental affairs, but Gen. Phoumi Nosavan, former minister of defense in the royalist government, was appointed minister of finance and a deputy premier in the new cabinet. Prince Souphanouvong became economics minister and also a deputy premier.

Prince Souvanna Phouma paid a four-day visit to the United States in late July. The new premier conferred in Washington with President Kennedy on July 27, and reportedly received assurances that the United States would cooperate with the new government in making viable a neutral and independent Laos. The United States on September 3 delivered its first payment of $2 million in aid to the coalition government, and on November 24 it reportedly offered to provide $10 million as part of a new economic aid program.

Although the new regime professed neutrality, one of its first actions was to announce, on September 7, that Laos would establish diplomatic relations with Communist China and North Vietnam.

Laotian Foreign Minister Quinim Pholsena, on September 29, presented to the United Nations a proposal to neutralize all Southeast Asia by means of an "immediate end to foreign intervention," which he said was "a grave menace for peace." The proposal was opposed by the pro-Western states of Thailand and South Vietnam.

Premier Souvanna Phouma, on October 8, was granted full powers for one year by the rightist-controlled National Assembly in order to achieve military and administrative integration. He evidently realized that this vote of confidence was essential since one half of Laos was in the hands of the Pathet Lao. Previously, in early May 1962, rebel forces completed their conquest of northwestern Laos, in violation of the cease-fire agreement of May 1961.

The new government was faced with three formidable tasks in rebuilding Laos: the removal of foreign troops; integration of the three separate military forces; and holding national elections. If any one of these difficult tasks was not achieved, many observers believed that civil war might again ravage the kingdom. Neither the neutralist premier nor Prince Souphanouvong admitted to the presence of Communist troops from North Vietnam in any area under his control, but some Western officials reported that at least 10,000 North Vietnamese soldiers and advisers have supported the Pathet Lao guerrillas and the neutralist forces. As the two princes declared that the only North Vietnamese serving in their armies were civilian workers and technicians, the International Control Commission could not verify with certainty either the presence or evacuation of foreign troops.

Military integration of the forces in Laos posed a most delicate problem because of the divergent views held by the military leaders. Prince Souvanna Phouma was certain that all royal army units pledged to him could be integrated without difficulty with the royal army units under Gen. Phoumi Nosavan, since all the units originally were part of the same army loyal to the king. On the other hand, Gen. Kong Le, commander of neutralist army forces, has professed unity with the Pathet Lao forces, and has accused the United States of attempting to turn Laos "into a military base for its aggression against the socialist camp." The government on November 27 approved the formation of a unified army of 30,000 men, to be drawn equally from the existing armed forces of the three factions.

Lastly, the problem of holding national elections threatened to bring the coalition government to an impasse. The Pathet Lao demanded that elections be held within six months after the government took office, but pro-Western factions attempted to postpone the elections as long as possible.

Premier Souvanna Phouma's coalition cabinet on August 23 agreed to designate three separate exit points where foreign troops could be evacuated from Laos. The International Control Commission stationed observers at the designated points and later verified that foreign troops had withdrawn by the deadline of October 6. By that date the last of 800 United States military men in the country had been evacuated from Vientiane, but there were conflicting reports as to whether all North Vietnamese troops had actually left Laos.

(See also FAR EAST.)

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LARD. See FATS AND OILS.

LATIN AMERICA. See INTER-AMERICAN AFFAIRS; articles on the Latin American countries; and the Index entry, *Latin America.*

LATIN AMERICAN LITERATURE

Despite its richness and variety, Latin American literature continues to be virtually unknown in the United States, although such figures as Octavio Paz and Jaime Torres Bodet are widely admired in Europe. Elena Garro has had work staged by Ingmar Bergman; Jorge Luis Borges has shared an international prize with Samuel Beckett; and he and Pablo Neruda were widely mentioned as candidates for the 1962 Nobel Prize in literature; yet, they are little known in the United States. There is hope that this situation may be remedied with the aid of a Rockefeller Foundation grant for the translation of literary and scholarly works, but all indications point to a slow and at best partial production.

Fiction.—Among the most important books of 1962 was *Confabulario total,* the collected work of the Mexican Juan José Arreola, whose short stories are characterized by enormous versatility within an essentially pessimistic and existential view of the universe. Another collection was *Antología personal,* the Argentinian Borges' own selection from one of the distinguished literary productions in Spanish. The Mexican novelist Carlos Fuentes published two novels in 1962, *Aura* and *La muerte de Artemio Cruz.* The former, in particular, represents a considerable shift from the technical virtuosity of his best-selling *La región más transparente.* Virtually a psychological fantasy, *Aura* is written in a much more direct style.

The Chilean generation of 1950 was represented by *El acantilado,* in which Jaime Laso employs the tale of an aging sea captain's last voyage to trace the story of man's frustration and irrevocable defeat. The oddly unreal atmosphere within a realistic framework is characteristic of much of Latin America's best fiction today. The winner of the international novel contest sponsored by the excellent Argentinian publishing house Losada, was an unknown Argentinian, Iverna Codina, whose *Detrás del grito* is a portrait of smuggling and exploitation of the miners in the province of Mendoza in the years 1918–32. This social preoccupation reflects another constant in Latin American literature.

Among established authors represented were the Venezuelan Arturo Uslar Pietri and the Chilean Marta Brunet. Pietri's *El laberinto de fortuna* is an analysis of the moment following the death of the dictator Juan Vicente Gómez (Dec. 17, 1935); in larger terms, it is an inquisition into the nature of Venezuelan society. Brunet received the Chilean National Prize for Literature in 1961 for her novels and short stories, which are characterized by sensitive portrayals of feminine characters and an authentic feeling for nature as a formative element in man's consciousness. *Antología de cuentos* was a selection of the best of her shorter works.

Poetry.—One of the most significant volumes in some time was *Material poético,* the complete work of the Mexican Carlos Pellicer, who is distinguished by his use of his native tropical landscape as a vehicle for spiritual themes. This volume is an imposing testimony to Pellicer's stature as one of the major living poets. Another of the giants is the Chilean Pablo Neruda, whose *Cantos ceremoniales* reflected his development in recent years toward a more sustained form and more controlled imagery within a fundamentally surrealistic esthetic. The Argentinian Eduardo González Lanuza received the National Poetry Prize for 1961 with his *Suma y sigue,* and the Colombian Jorge Gaitán Durán (d. 1962) emphasized the twin strains of eroticism and social preoccupation in *Si mañana despierto.*

Among younger poets, the Paraguayan Elvio Romero continued to pursue his personal blend of surrealist expression and themes from the regional tradition. One of the youngest of established poets is the Mexican Marco Antonio Montes de Oca, whose *Cantos al sol que no se alcanza* projected him into an important position.

Theater.—Drama in Latin America remained erratic, with explosions of activity followed by periods of somnolence. This trend is directly related to the amount and kind of official aid; there is no shortage of fine young playwrights. The most visible influence is that of Brecht, although the antirealistic movement of the last ten years shows the influence of Williams and Miller, among others. A new and very young movement closely related to the "theater of the absurd" has appeared, particularly in Mexico, where, in addition to foreign dramatists, Elena Garro has stimulated many of the younger group. Among better-known dramatists, the Puerto Rican René Marqués continued his highly personal blend of nationalism and preoccupation with the tragic absurdity of man's condition in *La casa sin reloj,* while the Mexicans Luisa Josefina Hernández (*Los duendes*) and Emilio Carballido (*Un pequeño día de ira*) continued their eclectic experimentation.

Nonfiction.—The most important, if not the most widely heralded works of nonfiction appeared to be in the area of scholarship. Reliable studies of most national literatures are now available, and in works such as Andrew Debicki's study of a major Mexican poet, *La poesía de José Gorostiza,* we are beginning to have serious interpretation and assessment of important living figures. Important bibliographies continued to be published, such as Alfredo Roggiano's bibliography of the Argentinian poet Leopoldo Lugones (1874–1938) and Ruth Lamb's of 20th century Mexican theater. Re-editions of important critical works included Olavarría and Ferrari's *Reseña histórica del teatro en México,* which was republished with a prologue by Salvador Novo and an added chapter by David Arce to cover the present century. One of the better collections of essays was *Carnet crítico,* by the Chilean Ricardo Latcham.

Translations.—Works published in English in 1962 (unless otherwise noted) included: Alegría, Ciro, *Broad and Alien Is the World,* tr. by Harriet de Onís; Borges, Jorge Luis, *Ficciones,* ed. by Anthony Kerrigan, and *Labyrinths,* ed. by D. A. Yates and J. E. Irby; Garcilaso de la Vega, el Inca, *The Royal Commentaries,* tr. by Maria Jolas from the French ed.; León-Portilla, Miguel, ed., *The Broken Spears: the Aztec Account of the Conquest of Mexico,* tr. by Lysander Kemp; Núñez Cabeza de Vaca, Alvar, *Adventures in the Unknown Interior of America,* tr. by Cyclone Covey; Orozco, José Clemente, *An Autobiography,* tr. by Robert Stephenson; Picón-Salas, Mariano, *A Cultural History of Spanish America, from Conquest to Independence,* tr. by Irving Leonard; Paz, Octavio, *The Labyrinth of Solitude,* tr. by Lysander Kemp; Ramos, Samuel, *Profile of Man and Culture in Mexico.* tr. by Peter Earle; Sarmiento, Domingo Faustino, *Life in the Argentine Republic in the Days of the Tyrants;* and *New Voices of Hispanic America,* ed. and tr. by Darwin Flakoll and Claribel Alegría.

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LATTER-DAY SAINTS. See CHURCH OF JESUS CHRIST OF LATTER-DAY SAINTS.

LATVIA

The Latvian Soviet Socialist Republic of the USSR is located on the east coast of the Baltic Sea. It has an area of about 25,000 square miles, and a population of 2,094,000 (1959), about 56% urban. In 1959, 62% of the population were Latvians, an Indo-European people; 27% Russians; and the remaining 11%, mostly Belorussians, Poles, Jews, Lithuanians, and Ukrainians. Principal cities and populations (1959): Riga, the capital, 605,000; Liepaja (Libau), 71,000; and Daugavpils (Dvinsk), 65,000.

Government.—Independent since 1918, Latvia was forcibly annexed to the USSR in 1940, and reoccupied near the end of World War II. The United States does not recognize the annexation. The Latvian legislature is a single-chamber Soviet elected for 4-year terms. It rarely meets,

and between sessions delegates its authority to a Presidium headed by Yan E. Kalnberzin, and a Council of Ministers (cabinet). On April 23, 1962, Vitaliy P. Ruben replaced Yanis V. Peyve as premier. The Latvian government has no political autonomy, but merely fulfills orders from Moscow. All important posts are held by members of the Latvian Communist Party, headed by Arvid Y. Pelshe, the first secretary. Of the party's 76,642 members, only about half are Latvians, and two fifths are in the army and police.

Education and Religion.—School enrollment, 1961: 143,000 in grade and high schools, 24,000 in technical high schools, and 19,000 in colleges. Principal religions: Lutheran (the majority), Roman Catholic, Russian Orthodox.

Finance.—Government expenditures, 1962 est.: 496,735,000 new rubles (476,006,000 in 1961). One new ruble equals U.S.$1.12.

Transportation and Communications.—Transport networks (miles, 1961): railroads, 1,940; roads, 15,500; paved roads, 1,400. Telephones number 60,400.

Manufactures and Minerals.— Major industrial products (metric tons, 1961): steel, 88,000; sugar, 102,200; chemical fertilizer, 315,000; cotton textiles, 46,700,000 square meters. Of total USSR output (1962), Latvia produced telephone switchboards, 44%; trolley cars, 20%; washing machines, 14%; and radio receivers, 13%.

Agriculture.—Sown area: about 3,660,000 acres, owned by 970 collective farms and 162 state farms, operating 14,000 tractors and 8,500 trucks. Main crops: grain, potatoes, hay, flax, and sugar beets. Livestock, 1961: 843,000 cattle; 555,000 sheep and goats.

Foreign Trade.—Latvian goods are exported to 60 foreign countries. Most trade however is with the remainder of the USSR. Chief exports, 1962: electrical machinery, radio receivers, trolley and railway cars, furniture, butter, bacon, and canned fish. Main imports: coal, petroleum, metals, timber, and grain.

Events, 1962.—During the year the Latvian trade unions grew to a membership of 750,000, and the Komsomol (Young Communist League) to 142,000. Latvian government and Communist Party officials continued to admit the existence of Latvian nationalist and anti-Communist attitudes among the population. An intensified Communist campaign against religion contributed to anti-Soviet sentiments. For this reason the USSR maintained an occupation army of 100,000 men in Latvia, most of whom are Russians and other non-Latvians. Generals of the Soviet Army played an important role in the Latvian government.

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LAUGHTON, Charles

English-American actor: b. Scarborough, Yorkshire, England, July 1, 1899; d. Los Angeles, Calif., Dec. 16, 1962.

Charles Laughton (1899–1962)

UPI

In his 33 years of motion picture acting, Charles Laughton played character roles as divergent as the grotesque Quasimodo in *The Hunchback of Notre Dame* (1939) and the butler who recited the *Gettysburg Address* in *Ruggles of Red Gap* (1935). His obese figure and the face that he claimed "would stop a sundial" were familiar in a multitude of other parts, ranging from the sadistic Captain Bligh of *Mutiny on the Bounty* (1935) to the appealing grandfather in *It Started with Eve* (1941); from the crafty, unscrupulous Southern senator in his last film, *Advise and Consent* (1962) to the gluttonous, henpecked king at the end of *The Private Life of Henry VIII* (1933). Although he portrayed many odious characters, he never became typed; and while the Laughton grunt, sneer, bellow, lip-smacking, and pained expression were screen trademarks, his acting transcended idiosyncracy.

Laughton's career began in the London theater. His parents were hotelkeepers, and he went to London at the age of 16 for hotel training at Claridge's. He served in the British Army in 1918, was gassed, and at the end of the war entered his father's business. In 1925, however, his parents agreed to send him to the Royal Academy of Dramatic Art in London, where he won a gold medal. He made his first stage appearance as Osip in Gogol's *The Government Inspector* on April 28, 1926. After numerous London successes, he opened in New York in Jeffrey Dell's *Payment Deferred* (1931) with Elsa Lanchester, to whom he was married in 1929 and who later appeared in many of his motion pictures. He played Chekhov and Shakespeare with the Old Vic–Sadler's Wells Company in 1933–34, and in 1936 was the first English actor to appear at the Comédie Française, Paris (as Sganarelle in Molière's *Le médecin malgré lui*). Returning to the stage in 1947, he was seen that year in Brecht's *Galileo* (Los Angeles and New York), and subsequently in Chekhov's *The Cherry Orchard* (New York 1950), Shaw's *Major Barbara* (New York 1956), Jane Arden's *The Party* (London 1958), and *King Lear* (Stratford-on-Avon 1959).

The English film *Piccadilly* (1929) marked Laughton's screen debut. In 1932 he went to Hollywood with a Paramount contract and appeared that year in several pictures, notably as Nero in *The Sign of the Cross*. During the 1930's he played his most memorable parts, among which were Barrett in *The Barretts of Wimpole Street* (1934), Javert in *Les Misérables* (1935), and the title role in *Rembrandt* (1936). His Henry VIII won him an Academy of Motion Picture Arts and Sciences "Oscar" award for best male actor, presented in 1934. Recent motion pictures included *O. Henry's Full House* (1952), *Hobson's Choice* (1954), and *Witness for the Prosecution* (1958). He co-produced several films in 1938–39 and later directed plays and a movie (*The Night of the Hunter*, 1955).

Laughton began dramatic readings from the Bible and the classics for veterans hospitals in World War II, and continued them for the general public after 1947. He frequently read on radio and television, as well as on the stage. With the First Drama Quartet, in 1951–52, he toured the United States in a reading of *Don Juan in Hell*, the third act of Shaw's *Man and Superman*. He adapted and staged a dramatized reading of the S. V. Benét poem *John Brown's Body* in 1953. His narration of Dickens' *Christmas Carol* was an annual television event.

Laughton became a United States citizen in 1950. *Charles Laughton and I*, by Elsa Lanchester, was published in 1938.

LAW

The following article summarizes some of the more significant opinions handed down during the 1961–62 term of the U.S. Supreme Court. For membership of that body and statistics on the

court's opinions during the year, see the article SUPREME COURT, U.S. A discussion of major federal laws passed in 1962 will be found under UNITED STATES—*The United States in 1962*, and of major state laws, in the articles on individual states. For international law, see the article under that heading; for laws or legal decisions relating to special fields, see such articles as CIVIL LIBERTIES, EDUCATION, HOUSING, LABOR, and TAXATION; and for further references see the Index entry, *Law*.

Business Regulation; Antitrust Laws.—*California* v. *Federal Power Commission* (369 U.S. 482) involved a conflict between the operation of the antitrust laws and the action of an administrative agency. After one natural gas company had acquired most of the stock of another such company, the federal government sued under the Clayton Act to require divestiture. Prior to the determination of the antitrust case, the company which had acquired the stock of the other company received permission of the Federal Power Commission to merge the assets of the two companies. The U.S. Supreme Court held that the commission should have awaited the outcome of the antitrust case before passing on the merger application.

In *Brown Shoe Co.* v. *United States* (370 U.S. 294), the court upheld a determination that a merger of two corporations violated the Clayton Act because the effect would be substantially to lessen competition or tend to create a monopoly in the production, distribution, and sale of shoes. The decision was based on a conclusion that the shoe industry was being subjected to a cumulative series of vertical mergers which, if left unchecked, might substantially lessen competition in the retail sale of men's, women's, and children's shoes.

In *Sunkist Growers, Inc.* v. *Winkler & Smith Co.* (370 U.S. 19), a judgment for treble damages under the Clayton Act had been granted by the trial court against an areawide citrus fruit marketing cooperative and a processing corporation, for conspiring to restrain and monopolize interstate trade in citrus fruit and byproducts. The Supreme Court reversed, because of the exemption from the antitrust laws accorded to agricultural cooperatives by the Clayton and Capper-Volstead acts.

In a Clayton Act suit for selling milk at prices which discriminated between independently owned groceries and chain stores, the trial court had accepted the justification that there was a difference in the cost of sales and deliveries. The Supreme Court decided that this decision was erroneous, because the lower court had relied on average costs of sales and deliveries to chain stores and independents, and there was not enough resemblance among individual members of each class to make acceptable cost justifications on the basis of class (*United States* v. *Borden Co.*, 370 U.S. 460).

In *Lou Poller* v. *Columbia Broadcasting System* (368 U.S. 464), the court held that a complaint by a television broadcasting station alleging the cancellation of a network affiliation and the purchase of a competing station by the defendant network could not be summarily dismissed, because the evidence might show a conspiracy to restrain and monopolize trade in violation of the Sherman Act. In a civil suit for treble damages for violation of the monopoly provisions of the Sherman Act, the court held that it was the function of the jury to decide whether the defendant's conduct had caused injury to the plaintiff's business (*Continental Ore Co.* v. *Union Carbide Corp.*, 370 U.S. 690). Finding error also in the refusal of the trial court to admit evidence that the plaintiff had been excluded from the Canadian market in vanadium by the actions of a wholly owned subsidiary of the defendant, the court remanded the case for a new trial.

In *United States* v. *Wise* (370 U.S. 405), it was held that a corporate officer was subject to criminal prosecution under the Sherman Act whenever he knowingly participated in effecting an illegal contract, combination, or conspiracy, regardless of whether he was acting in a representative capacity. Where there was a genuine factual issue as to whether an acquired corporation was a "failing company," so that the acquisition of its assets would not violate the Clayton Act, the court decided that it was error for a district court to dismiss the government's case on a motion for summary judgment (*United States* v. *Diebold, Inc.*, 369 U.S. 654).

In a suit under the Securities Exchange Act of 1934, the evidence did not show that a brokerage partnership bought stock of a corporation of which one of its partners was a director, acting on the advice of this partner (*Blau* v. *Lehman*, 368 U.S. 403). The court decided that the partner was liable only for his proportionate share of the "short-swing" profits, and that the partnership was not liable for the full amount of the profits.

Taxation.—In *Rudolph* v. *United States* (370 U.S. 269), the Supreme Court refused to review the findings of lower courts that the payment by an insurance company of the expenses of a group of agents and their wives to attend a convention was primarily for the purpose of providing a pleasure trip in the nature of a bonus or reward, and that the value of the trip was income to the agents.

Relying heavily on the legislative history of the Internal Revenue Code of 1954, the court disallowed the deduction, as an expense for "medical care," of the rent paid for an apartment in Florida, where the taxpayer had been ordered by his physician to spend the winter months (*Commissioner* v. *Bilder*, 369 U.S. 499). In *United States* v. *Davis* (370 U.S. 65), the plaintiff transferred to his former wife, in a property settlement, certain stocks which had appreciated in value since he had purchased them, and paid her attorney's fees for tax advice given to her. The court held that the plaintiff must pay an income tax on the accretion of value of the stocks, and that he could not deduct the legal fees paid to his wife's attorney.

In *Simonson* v. *Granquist* (369 U.S. 38), the court held that section 57(j) of the Bankruptcy Act, which bars penalties or forfeitures owing to the United States or to any state except for the amount of the pecuniary loss sustained, was broad enough to bar a federal tax penalty which had been secured by a lien prior to the filing of a petition in bankruptcy. In *Enochs* v. *Williams Packing Co.* (370 U.S. 1), the court interpreted a provision of the Internal Revenue Code which prohibits suits to restrain the assessment or collection of any tax as being a bar to such suits except in the rare instances where the government's claim of liability was entirely without foundation.

In *Central Railroad Co.* v. *Pennsylvania* (370 U.S. 607), the court held that the State of Pennsylvania could constitutionally tax a railroad on the full value of its freight cars, including those used by railroads in other states, because the railroad had failed to prove that such cars were taxable in any other state. The court decided, however, that other cars which were regularly run in New Jersey and were subject to a New Jersey tax could not be included in the computation of the Pennsylvania tax, without violating the commerce clause and the due process and equal protection clauses of the 14th Amendment.

In *State Board of Insurance* v. *Todd Shipyards* (370 U.S. 451), a Texas tax on premiums for in-

surance covering property in Texas was held to be invalid, under the McCarran-Ferguson Act, where the insurers were domiciled in London, England, were not licensed in Texas, and neither did business nor had offices or agents there, and where the insurance was bought and issued in New York, in which state premiums and claims were payable.

Criminal Law.—In *Beck* v. *Washington* (369 U.S. 541), the defendant (David Beck, former Teamsters Union head) had been convicted in a state court of grand larceny from the union of which he was president. The Supreme Court rejected the contention that his conviction violated the due process and equal protection clauses of the 14th Amendment primarily because of voluminous and intensive adverse publicity circulated by news media in the vicinity where he was indicted and tried.

In another case involving a high labor official Maurice A. Hutcheson, president of the United Carpenters, refused to answer questions of a Senate committee pertaining to the alleged improper use of union funds, claiming that the questions were not pertinent to any activity which the committee was authorized to investigate and were asked merely for purposes of "exposure" (*Hutcheson* v. *United States,* 369 U.S. 599). The court upheld his conviction under a statute making it a misdemeanor to refuse to answer questions pertinent to a congressional inquiry, rejecting his claim that his rights under the due process clause of the 5th Amendment were violated because his answers might have been used against him in a pending state criminal trial. In a case arising under the same law, however, the court reversed convictions where the indictments returned by the grand jury merely stated that the questions to which answers were refused "were pertinent to the question then under inquiry" by the congressional subcommittee (*Russell* v. *United States,* 369 U.S. 749). The court held that the indictment must state the question which was under inquiry at the time of the defendant's alleged default or refusal to answer.

In *Lynch* v. *Overholser* (369 U.S. 705), a defendant who had received treatment in a mental hospital was not permitted by the trial judge to withdraw an earlier plea of not guilty, and to plead guilty, to two charges of passing worthless checks. The trial court had then ordered him committed to a mental hospital under a provision of the District of Columbia Code which states that: "If any person . . . is acquitted solely on the ground that he was insane . . . the court shall order such person to be confined in a hospital for the mentally ill." The Supreme Court reversed, holding that this law applied only to a defendant who by his own act had relied on a defense that he was insane when the offense was committed and who had been acquitted on that ground.

In *Chewning* v. *Cunningham* (368 U.S. 443), the court held that in a trial under the Virginia recidivist (habitual criminal) statute, the absence of counsel violated the due process clause of the 14th Amendment because of the complexity of the issues and the potential prejudice to a defendant tried without counsel. In a case arising under the law of West Virginia, however, it was decided that due process did not require advance notice that trial on a substantive offense would be followed by a "habitual criminal" accusation, and that the failure to proceed against other offenders did not necessarily deny equal protection to persons who were prosecuted (*Oyler* v. *Boles,* 368 U.S. 448).

In *Gallegos* v. *Colorado* (370 U.S. 49), it was held that a formal confession signed by a 14-year-old boy, before being brought before a judge and after being held for five days without seeing a lawyer, parent, or other friendly adult, was obtained in violation of due process. His conviction for first-degree murder was reversed. The court also reversed the conviction of an illiterate charged with having committed serious noncapital offenses, where the record failed to show whether he had been offered and had waived counsel, but clearly showed that he was incapable of conducting his own defense (*Carnley* v. *Cochran,* 369 U.S. 506). In a case involving the right of appeal *in forma pauperis,* the court held that an indigent defendant was entitled in all respects to the same right of appeal as one who was able to pay his own expenses, and that the court of appeals erred in dismissing his appeal as not being "in good faith" without hearing oral arguments (*Coppedge* v. *United States,* 369 U.S. 438).

Robinson v. *California* (370 U.S. 600) involved a state law making it a crime punishable by imprisonment for any person to "be addicted to the use of narcotics," even though he had never used or possessed any narcotics within the state. The court held that, as so construed and applied, this law inflicted a cruel and unusual punishment, in violation of the 8th and 14th Amendments. In *Gilbert* v. *United States* (370 U.S. 650), it was held that the endorsement of checks without authority, by a defendant who signed the name of the payee and then his own, as agent, did not constitute "forgery" under the Federal Criminal Code.

Freedom of Religion, Speech, and Press.—In *Engel* v. *Vitale* (370 U.S. 471), the court held that state officials could not compose an official state prayer and require that it be recited in the public schools, even though the prayer was denominationally neutral and even though pupils were not required to recite it or to remain in the room while it was being recited. The decision was based on an interpretation of the 1st Amendment's prohibition against the enactment of any law "respecting an establishment of religion." (See also CIVIL LIBERTIES; EDUCATION.)

In *Wood* v. *Georgia* (370 U.S. 375), a sheriff who was a candidate for reelection issued statements criticizing the action of a county judge in giving a grand jury special instructions to investigate rumors of bloc voting by Negroes and the rumored use of money by political leaders to obtain their votes. The Supreme Court reversed the sheriff's conviction for contempt of court, holding that the record did not support a finding that his statements presented a clear and present danger to the administration of justice, and that his conviction violated his right to freedom of speech guaranteed by the 1st and 14th Amendments.

In *Manual Enterprises* v. *Day* (370 U.S. 478), the court reversed a Post Office ban, under the Comstock Act, against the mailing of magazines consisting largely of photographs of nude or nearly nude male models and containing advertising by photographers offering for sale similar photographs. Refusing to interpret the act as barring from the mails "all material, not patently offensive, which stimulates impure desires relating to sex," the court remarked that such a construction "would doubtless encounter constitutional barriers."

Torts; Workmen's Compensation.—In *Richards* v. *United States* (369 U.S. 1), a suit under the Federal Tort Claims Act for wrongful death as the result of a commercial airplane crash was disallowed, where the accident occurred in Missouri and the plaintiffs attempted to base their suit, under Oklahoma law, on the negligence of the government in enforcing its laws and regulations at the airline's overhaul depot in Oklahoma. The court decided

that Oklahoma law was inapplicable because the injury causing the death occurred in Missouri. In *Calbeck* v. *Travelers Insurance Co.* (370 U.S. 114), the court determined that injuries sustained by employees working on new vessels under construction and afloat on navigable waters were not excluded from the coverage of the Longshoremen's and Harbor Workers' Compensation Act by the fact that a recovery for such injuries could validly be had under a state workmen's compensation law.

In *Vaughan* v. *Atkinson* (369 U.S. 527), a seaman was forced to support himself by working as a taxi driver while an outpatient at a Public Health Service hospital, because of a shipowner's failure to pay "maintenance and cure" (food and lodging) while he was incapacitated. The court held that the seaman was entitled to be paid maintenance and cure without deduction of the amount of his earnings and was also entitled to counsel's fees. In *Morales* v. *City of Galveston* (370 U.S. 165), the court affirmed a judgment in favor of a shipowner against a claim for damages by longshoremen who were injured by fumes from a chemical insecticide, with which wheat being loaded into the ship had been treated. The finding of the trial court, that the absence of forced ventilation in the hold did not make the ship unseaworthy or unfit for service, was found to be reasonable.

Labor Law.—In *Sinclair Refining Co.* v. *Atkinson* (370 U.S. 195), the court held that a suit to enjoin work stoppages, strikes, and picketing, in violation of a collective bargaining agreement containing a no-strike clause and providing for the compulsory arbitration of differences, was barred by the Norris–La Guardia Act. In a related action (*Atkinson* v. *Sinclair Refining Co.*, 370 U.S. 238), the court ruled that Sinclair, in suing the union for damages, could not also collect damages from individual employees who had acted as agents for the union.

In *Marine Engineers* v. *Interlake S.S. Co.* (370 U.S. 173), it was held that a state court could not enjoin peaceful picketing and other activities by unions representing marine engineers on the ground that only "supervisory" personnel were involved, where it was arguable from the evidence that the dispute was within the exclusive jurisdiction of the National Labor Relations Board. In *Drake Bakeries* v. *Local 50 Bakery Workers* (370 U.S. 254), the court held that the issue of damages resulting from a one-day strike must be submitted to arbitration, because it was intertwined with the union's denial that there was any strike or breach of contract. The decision was based primarily on the ground that the contract did not specifically exclude from the arbitration procedures the company's claim for strike damages.

In *National Labor Relations Board* v. *Katz* (369 U.S. 736), the court decided that it was a violation of the duty imposed by the National Labor Relations Act "to bargain collectively," for an employer, unilaterally and without first consulting the union which had been elected as bargaining agent for the employees, to effect a system of automatic wage increases, changes in sick leave benefits, and merit increases, while contract negotiations with the union were being carried on. In *National Labor Relations Board* v. *Washington Aluminum Co.* (370 U.S. 9), seven employees walked out of a machine shop after complaining that it was too cold to work, and were discharged for violating a rule prohibiting any employee from leaving without obtaining the permission of the foreman. The court decided that their discharge violated their right to act in concert for mutual aid or protection, and ordered that they be reinstated.

Section 301(a) of the Labor-Management Relations Act, which permits suits for violations of contracts between employers and unions to be brought in federal district courts, does not divest state courts of jurisdiction over such suits, the court decided in *Dowd Box Co.* v. *Courtney* (368 U.S. 502).

In another case involving the interpretation of section 301(a) of this act, the court decided that the term "contracts" was not limited to collective bargaining agreements concerning hours, wages, and conditions of employment concluded in direct negotiations between employers and unions entitled to recognition as exclusive bargaining representatives of employees, but applied also to agreements (such as a "strike settlement agreement") between employers and unions which importantly and directly affected the employment relationship (*Retail Clerks* v. *Lion Dry Goods*, 369 U.S. 17). Under the same statutory provision, the court held that a strike to settle a dispute which a collective bargaining agreement provided should be settled exclusively and finally by compulsory arbitration, constituted a violation of the agreement, even though there was no explicit no-strike clause in the contract (*Local 174 Teamsters* v. *Lucas Flour Co.*, 369 U.S. 95).

In *In re Green* (369 U.S. 689), a lawyer had advised a union to continue peaceful picketing in disregard of a state court injunction, in order to test whether such injunction interfered with the exclusive jurisdiction of the National Labor Relations Board. The Supreme Court held that the lawyer's conviction for contempt by a state court without a hearing violated the due process clause of the 14th Amendment.

Miscellaneous.—The power of the courts to order reapportionment of seats in a state legislature was upheld in *Baker* v. *Carr* (369 U.S. 186). The plaintiffs sued to redress an alleged deprivation of their federal constitutional rights by a 1901 statute of Tennessee apportioning seats in the General Assembly among the state's 95 counties and the failure of the state legislature to reapportion them, notwithstanding substantial growth and redistribution of the population of the state. The Supreme Court decided that the plaintiff's claim of a denial of the equal protection of the laws, guaranteed by the 14th Amendment, presented a justiciable constitutional cause of action on which they were entitled to a trial and a decision. The case was remanded for further proceedings, with the court withholding an opinion on the substantive aspects of the questions presented.

In *Kesler* v. *Utah Department of Public Safety* (369 U.S. 153), the court upheld Utah's Motor Vehicle Safety Responsibility Act, which requires satisfaction of judgments due to automobile accidents as a condition of the restoration of a driver's license, in spite of the fact that, in the case before it, the appellant had been granted a discharge in bankruptcy under federal law. Pointing out that the state law was "directed towards promoting safety in automobile traffic," the court remarked that its purpose was "wholly unrelated to the purposes of the Bankruptcy Act," and rejected the claim that it was unconstitutional under the supremacy clause because of conflict with that act. In another case involving the supremacy clause, the court held that conflicting provisions of the Texas community property law were superseded by Treasury regulations providing that, when a United States savings bond was registered in co-ownership form (that is, payable to one person *or* another), a surviving co-owner would be recognized as the sole and absolute owner of the bond (*Free* v. *Bland*, 369 U.S. 663).

In *Griggs* v. *County of Allegheny* (369 U.S. 84), aircraft were required to fly regularly and frequently over the plaintiff's residence at very low altitudes in order to land at or depart from a county-owned airport. During these flights, it was often impossible for people in the house to converse or talk on the telephone, and the plaintiff and members of his household were frequently unable to sleep even with ear plugs and sleeping pills. Under these circumstances, the court decided that there was a "taking" of an air easement by the county, for which it must pay just compensation under the 14th Amendment. The court rejected the argument that the airlines or the Civil Aeronautics Administration, acting as an authorized representative of the United States, was the "taker," holding that the county, which was the promoter, owner, and lessor of the airport, was the one who took the air easement in the constitutional sense.

In *Goldblatt* v. *Hempstead* (369 U.S. 590), it was held that an ordinance prohibiting excavation below the water table was not necessarily unconstitutional, even though it prohibited the beneficial use to which property had previously been devoted (that is, mining sand and gravel), and that the depth limitation of the ordinance was not shown to be so onerous and unreasonable as to result in a "taking" of property without due process of law in violation of the 14th Amendment.

In *Glidden Company* v. *Zdanok* (370 U.S. 530), the Supreme Court held that judges of the U.S. Court of Claims and the U.S. Court of Customs and Patent Appeals (including retired judges) could validly serve on United States district courts and courts of appeals by designation and assignment of the chief justice of the United States. The petitioners claimed that they were denied the protection of judges with tenure and compensation guaranteed by Article 3 of the Constitution, which provides in part (Sect. 1):

> The judicial Power of the United States, shall be vested in one supreme Court, and in such inferior Courts as the Congress may from time to time ordain and establish. The Judges, both of the supreme and inferior Courts, shall hold their Offices during good Behaviour, and shall, at stated Times, receive for their Services, a Compensation, which shall not be diminished during their Continuance in Office.

The court rejected this contention, and held that both the Court of Claims and the Court of Customs and Patent Appeals were "constitutional," rather than "legislative," courts, overruling prior decisions to the contrary.

In *Dairy Queen* v. *Wood* (369 U.S. 469), the owners of the trademark "Dairy Queen" sued for injunctions to restrain the petitioner from using the trademark and for an accounting to determine the exact amount of money owing by the petitioner, claiming that the latter had breached its contract to pay $150,000 for the use of the trademark. The district court refused the petitioner's demand for a trial by jury. The Supreme Court reversed the judgment, holding that the case did not present purely "equitable" issues, and that therefore the petitioner was entitled to a jury trial on the "legal" issue of whether the claim for a money judgment should be granted.

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LEAD

World mine production of lead (content of ore and concentrate) rose from 2,610,000 short tons in 1960 to 2,660,000 short tons in 1961, an increase of 2%, according to U.S. Bureau of Mines data. World smelter production of lead rose from 2,550,000 short tons in 1960 to 2,660,000 short tons in 1961. According to the International Lead-Zinc Study Group, there was an increase of 67,300 tons in world consumption of refined lead.

In the United States, mine output of recoverable lead increased from 246,669 short tons in 1960 to 261,921 tons in 1961. The United States output was 9% of the world total in 1960 and 10% in 1961. Domestic output of smelter lead rose from 382,000 short tons in 1960 to 450,000 short tons in 1961. The United States output was 15% of the world total in 1960 and 17% in 1961. The four largest lead producing states—Missouri, Idaho, Utah, and Colorado—produced 87% of the national total of lead mined, and 16 other states produced the remainder. Of the 449,565 tons of refined lead produced in 1961, 288,078 tons came from primary sources in domestic ores and base bullion, and 161,487 tons from foreign ores and base bullion, compared with 228,899 tons and 153,537 tons in 1960.

In the first nine months of 1962, output of recoverable lead was 191,743 short tons, compared with 197,435 tons in the same period of 1961.

Consumption of lead in the United States in 1961 totaled 1,027,216 tons, a slight increase over the 1,021,172 tons consumed in 1960. Lead consumption in three of the largest uses increased as follows: batteries, 4%; tetraethyl lead, 4%; and caulking lead, 1%. Of the total lead consumed in 1961, 71% was used in metal products.

United States imports of lead in 1961 totaled 409,402 tons, 14% more than in 1960. Exports were 11,733 tons, more than double those of 1960.

(See also MINERAL PRODUCTION.)

LEATHER. See SHOE INDUSTRY.

LEBANON

The Arab republic of Lebanon is situated in southwestern Asia on the eastern coast of the Mediterranean Sea, bordered by Syria and Israel. It has an area of 4,015 square miles and a population of 1,646,000 (1960 est.), exclusive of 136,561 Palestine refugees. Principal cities and estimated populations: Beirut, the capital and chief port, 500,000; Tripoli, 100,000; Zahle, 40,000; and Saida (ancient Sidon), 25,000. Arabic is the official and principal language; French is widely spoken in the urban centers.

Government.—Lebanon is a unitary state with a centralized government. The executive branch consists of a president (Fouad Chehab, inaugurated on Sept. 23, 1958), elected by the legislature for a six-year term; and a premier and cabinet, appointed and removed by the president but responsible to the legislature. The unicameral legislative body (Chamber of Deputies) has 99 members chosen by universal suffrage for four-year terms. Seats are apportioned among the religious communities on a proportional basis: Maronite, 30; Sunni, 20; Shi'i, 19; Greek Orthodox, 11; Greek Catholic, 6; Druse, 6; Armenian Orthodox, 4; Armenian Catholic, 1; Protestant, 1; and others, 1. Custom requires that the president be a Maronite Christian, the premier, a Sunnite Muslim, and the speaker of the Chamber of Deputies, a Shi'ite Muslim. Political parties are numerous and unstable. Parliamentary elections were last held between June 12 and July 3, 1960.

Education and Religion.—Education is free and nominally compulsory; about 49% of the school-age population are in school. Number of schools (with enrollments), 1960: 2,277 primary (226,558), 246 secondary (39,364), 4 higher (about 4,500). Principal religions: Christian (estimated at slightly over 50%), including Maronite, Greek Orthodox, Greek Catholic, Armenian Orthodox, Armenian Catholic, and Protestant sects; Islam (over 40%), including Sunnite and Shi'ite sects; and Druse.

Finance.—Government revenue and expenditure were balanced in the 1962 budget at 415.8 million Lebanese pounds (£L375 million in the regular budget, compared with £L273.8 million in 1961; and £L40.8 million in the annexed budgets, compared with £L41.2 million in 1961). The Lebanese pound is officially valued at 45.63 U.S. cents; £L2.191 equal U.S.$1 at the official rate, but on July 31, 1962, £L3 equaled U.S.$1 on the free market. Gold and foreign exchange holdings of the Bank of Syria

and Lebanon for the Lebanese accounts: $138.8 million as of Dec. 31, 1961 (up $1.8 million from a year earlier).

Transportation and Communications.—Transport networks (miles, 1960): railways, 254; improved roads, 2,312. Merchant marine (June 30, 1961): 548,000 gross registered tons. Beirut port traffic (1961): passengers, 67,250; freight, 1,641,000 tons. National airlines: Air Liban, Lebanese International Airways, and Middle East Airlines. Beirut International Airport at Khalde is served by 25 foreign airlines. Other communications data, 1960: passenger cars, 46,100; commercial vehicles, 8,100; telephones, 76,670 (1962); radio receivers, 100,000; television sets, 80,000 (1962).

Economic Indicators.—National income (1961): £L1,700 million (£L1,325 million in 1958). Index of wholesale prices (1953 = 100): 102 on Dec. 31, 1959 (101 on Dec. 31, 1958). Cost-of-living index (1953 = 100): 122 on Sept. 30, 1961 (unchanged from Sept. 30, 1960).

Agriculture.—Agriculture engages over 55% of the labor force and produces about 16% of the national income. Some 30% of the land is cultivated. Chief crops (metric tons, 1960–61): oranges, 73,000; lemons, 19,000; apples, 40,000; wheat, 20,000; olives, 38,000; grapes, 30,000; potatoes, 30,000; sugar beets, 16,000; leaf tobacco, 3,500. Milk production (1960): 60,000 metric tons; meat production (1959), 23,000 metric tons.

Manufactures and Minerals.—Mining and manufacturing employ about 11% of the labor force and produce about 14% of the national income. There were 3,744 factories in 1961, representing a total investment of $170 million and employing 43,355 workers. Chief products (metric tons, 1960, unless otherwise noted): cement, 854,000; gasoline, 110,000; kerosene, 72,000; distillate fuel oils, 158,000; residual fuel oils, 343,000; liquified petroleum gas, 7,000; woven cotton fabrics, 5,000 (1957); salt, 13,000 (1959); iron ore, 10,000 (1959); cigarettes, 1,040,000 units (1958); beer, 33,000 hectoliters (1959); electrical energy, 350 million kw.-hr. (of which 150 million was hydroelectric power).

Foreign Trade.—Total exports, 1961: £L418 million (£L218 million in 1960); imports, £L1,050 million (£L854.5 million). Major exports are agricultural products and byproducts (fruits, vegetables, tobacco, hides, and skins), cement, petroleum products, and cut diamonds. Over half of Lebanon's exports are to Middle Eastern countries. Major imports are manufactured goods, fuels, cereal grains, animals for slaughter, and uncut diamonds. The United States is the leading supplier; other major importers include Great Britain, West Germany, France, Italy, and Middle Eastern countries. The heavy unfavorable trade balance is compensated for by remittances from emigrants (£L108 million in 1959), income from tourism (610,934 visitors in 1959), payments for services to the large transit trade through Beirut, and capital investment from the oil-rich neighboring countries.

Events, 1962.—The government of Prime Minister Rashid Karami, which took office in October 1961, moved ahead during 1962 with a program of economic development aimed at reducing Lebanon's excessive dependence on trade and commerce and at strengthening its industrial sector in partnership with a modernized and expanded agriculture. To combat high consumer prices, the government removed the punitive tariffs on Japanese goods, lowered the customs duties on rice, and acted to reduce the price of sugar and of locally produced cigarettes. Plans were pushed ahead for an $11 million expansion of port facilities at Beirut.

On May 20, 1962, the Iraq Petroleum Company announced that it would modernize and enlarge its oil refinery at Tripoli at a cost of about £2.5 million. The work, to be completed within two years, will enable the refinery to produce high-grade gasoline and aviation fuel, and will permit Lebanon to reduce its imports of refined petroleum products. Agreement after six years of discussion was reached on August 7 between the Lebanese government and the Trans-Arabian Pipeline Company, a subsidiary of the Arabian-American Oil Company, concerning royalties and fees in connection with the company's pipeline from Saudi Arabia to Saida. Annual payments to Lebanon for transit fees, loading charges, and protection for the installations was increased from $1.25 million annually to about $4.5 million. A lump-sum payment of $12.5 million was further agreed upon in settlement of prior claims.

Internal peace in Lebanon, which had prevailed since the civil strife of 1958, was broken on the night of Dec. 30–31, 1961, when members of the Nationalist Social Party (or Parti Populaire Syrien) and a small group of officers and soldiers attacked the Ministry of Defense and other key points in Beirut, seeking to effect a political coup. The leaders of the revolt favored a political union of Syria, Lebanon, Jordan, and Iraq and opposed the Arab socialism and pan-Arab nationalism of President Gamal Abdel Nasser of the United Arab Republic. The attempted coup failed and the revolutionists fled; on Jan. 1, 1962, order was restored in Beirut. The Nationalist Social Party was outlawed, and on January 2, loyal Lebanese troops took the rebel stronghold of Dik al-Mahdi in the mountains northeast of Beirut, virtually ending the rebellion. On February 3, with the apprehension of Assad al-Ashkar, former head of the Nationalist Social Party, the government announced that all of the major ringleaders were in prison.

The revolt, in which 27 persons were killed, never attracted mass support. Of the more than 1,500 persons arrested, 700 were resident aliens or visitors, many of them Syrians and Palestinians. On May 9, death sentences were asked for 313 persons (38 soldiers and 275 civilians) in an indictment presented to a military tribunal in Beirut. On September 18, the court sentenced 34 defendants to death (20 in absentia), including Assad al-Ashkar. Of the 309 persons who came to trial, only 16 were acquitted.

In foreign affairs the Lebanese government continued its policy of nonalignment (but of relatively pro-Western orientation) on the world scene, and of good neighborly relations toward all the Arab states. On August 22 the Council of the Arab League met at Shtoura, Lebanon, to consider Syrian charges of interference in Syria's internal affairs by the United Arab Republic (see MIDDLE EAST).

U.S. Attorney General Robert Kennedy paid an unofficial visit to Lebanon on February 20, during an extended world tour. On August 23, U.S. Vice President Lyndon B. Johnson was cordially received in Beirut, which he visited in the course of an official tour of six Mediterranean and Middle Eastern countries.

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LEEWARD ISLANDS. See HAWAII; WEST INDIES FEDERATION.

LEGISLATION. See UNITED STATES—*The United States in 1962;* articles on the states and countries; and the Index entry, *United States Congress.*

LEIGHTON, Margaret

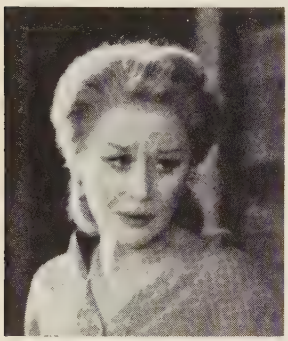
English actress: b. Barnt Green, Worcestershire, England, Feb. 26, 1922.

Twice winner of the American Theatre Wing Antoinette Perry Award, Margaret Leighton received her second "Tony" on April 29, 1962, for her portrayal of the shy spinster Hannah Jelkes in Tennessee Williams' *The Night of the Iguana.* She won her first award in 1957 for the brilliant acting of two contrasting roles in Terrence Rattigan's double bill, *Separate Tables.*

Miss Leighton made her stage debut at the age of 16 with Sir Barry Jackson's Repertory Theatre in Birmingham on Sept. 4, 1938. From this small part in Adelaide Phillpotts' *Laugh with Me,* she advanced to leading roles and, after further experience with Basil C. Langton's Travelling Repertory Company (1941–42), she rejoined the

Birmingham group in plays by Shakespeare, Shaw, and Chekhov. After a successful tryout for the Old Vic Company, she made her London debut as the Troll King's daughter in Ibsen's *Peer Gynt* on Aug. 31, 1944. For the next three years she played leading parts in that company's repertory, opposite such actors as Sir Laurence Olivier and Sir Ralph Richardson. She was first seen in New York on May 6, 1946, as Lady Percy in the Old Vic presentation of Shakespeare's *Henry IV*.

On the London stage she appeared in three roles in James Bridie's *A Sleeping Clergyman* (1947), as Tracy Lord in Philip Barry's *The Philadelphia Story* (1949), as Celia in T. S. Eliot's *The Cocktail Party* (1950), with Richardson and Celia Johnson in a revival of Chekhov's *The Three Sisters* (1951), and in Eliot's *The Confidential Clerk* (1953), before opening in *Separate Tables* (1954). The Rattigan play ran for two years in London and then moved to Broadway with Miss Leighton in 1956. Between her two "Tony" performances, she appeared in Rattigan's *Variation on a Theme* (London 1958), Shakespeare's *Much Ado About Nothing* (New York 1959), John



For her brilliant performance in *The Night of the Iguana*, Margaret Leighton on April 29 was honored with an Antoinette Perry Award.

FRIEDMAN-ABELES

Mortimer's *The Wrong Side of the Park* (London 1960), and Ibsen's *The Lady from the Sea* (London 1961). On Oct. 25, 1962, she opened with critical acclaim in a new Broadway production, Sidney Michaels' *Tchin-Tchin*, based on the play by François Billetdoux.

Miss Leighton has also made numerous motion pictures, beginning with *Bonnie Prince Charlie* in 1948.

LEMNITZER, Lyman Louis

U.S. military commander: b. Honesdale, Pa., Aug. 29, 1899.

Having served as chairman of the U.S. joint chiefs of staff since August 1960, General Lemnitzer succeeded retiring Gen. Lauris Norstad as supreme allied commander, Europe (SACEUR) on Jan. 1, 1963.

A graduate of the U.S. Military Academy (1920), and later of the Command and General Staff School and of the Army War College, Lemnitzer established himself as a skilled negotiator and a conscientious planner during and after World War II. Promoted to brigadier general in 1942, he was given command of the 34th Antiaircraft Brigade. Later that year, as assistant chief of staff (G-3) to Gen. Dwight D. Eisenhower, he planned the amphibious invasion of North Africa, and accompanied Gen. Mark Clark on a clandestine visit by submarine to North Africa before the invasion to persuade the French not to oppose the landings. He participated in the Tunisian and Sicilian campaigns in 1945, and was appointed deputy chief of staff to the supreme allied commander of the Mediterranean Theater. In the same year he took part in the discussion with the German high command in Switzerland that led to the German surrender in Italy and southern Austria.

In the Korean War, Lemnitzer commanded the 7th Infantry Division in 1951–52. Having served as deputy chief of staff for plans and research of the U.S. Army, he was promoted to the rank of general in March 1955 and was named to succeed Gen. Maxwell D. Taylor as commander in chief of the U.S. Far East Command and the United Nations Command in June. Recalled to serve as vice chief of staff of the U.S. Army in 1957, Lemnitzer was elevated to chief of staff in 1959.

General Lemnitzer was nominated on Aug. 15, 1960 to be chairman of the joint chiefs of staff to succeed Gen. Nathan F. Twining on the latter's retirement. Soon after he took office, Lemnitzer became known as an opponent of the single chief of staff proposal. When Gen. Lauris Norstad submitted his resignation as NATO commander in July 1962, President Kennedy named Lemnitzer to succeed him. After the appointment was approved by the North Atlantic Council, Lemnitzer replaced Norstad on November 1 as commander in chief of United States forces in Europe. Because of the impending Cuban crisis, however, Norstad was requested to retain his NATO command until the end of the year, and Lemnitzer assumed that post on Jan. 2, 1963.

LEMONS. See FRUITS.
LETTUCE. See VEGETABLES.

LIBERIA

Liberia is a small republic (about 43,000 square miles in area) on the west coast of Africa, bounded by Sierra Leone, Guinea, and Ivory Coast. The first census was conducted in April–May 1962; results when announced, will settle population estimates varying widely between 1 and 2 million or more, with about a third of the total living in a 50-mile radius of Monrovia (est. pop., 50,000), the capital. Founded by freed American Negro slaves in 1822, Liberia has maintained close ties with the United States. The descendants of the original American settlers constitute the most influential group and live mainly along the coast. The great bulk of the population are indigenous Africans; about 28 tribal dialects are spoken. Non-Africans (only Africans may acquire citizenship) number about 3,500, about one third Americans. English is the official language.

Government.—Authority is centralized in the national government, organized into three branches: executive, legislative, and judicial. The president and vice president serve 8-year terms and may be re-elected for 4-year terms. President William V. S. Tubman was re-elected in May 1959, and inaugurated Jan. 4, 1960, for his fourth consecutive term. The True Whig Party, led by President Tubman, controls all the seats of the elected bicameral legislature (a 39-member House of Representatives and a 10-member Senate, elected for 4- and 6-year terms, respectively). Opposition parties are not legally barred, but in practice there is no effective political opposition.

Education.—Illiteracy is high, and probably less than 15% of school-age children attend school. In 1961 there were 625 primary and 33 secondary schools attended by 55,157 (primary) and 3,000 (secondary) students. It is estimated that over 60% of the students attend government schools; the remainder, Christian mission or company-operated private schools. (A September–June school year was officially adopted in 1962.) A $6 million project to improve the Monrovia school system was initiated in 1962 with assistance from San Francisco State College. The project involves construction of 5 elementary schools for 2,500 students, a junior high school (1,000 students), and a senior high school (700 students). On Aug. 23, 1962, 90 Peace Corps volunteers flew to Liberia for work in Liberian schools. In May 1962, Cornell University undertook a program, financed by the United States government, to improve the University of Liberia (300 students). A new $20 million university is under study, and progress continues on the National Medical Center (a $5.5 million, 300-bed hospital and medical college).

Finance.—In contrast to the sharp rise in receipts in 1960, government revenue, as a result of lower rubber prices, showed no change in 1961 over 1960, standing at $32.4 million (the U.S. dollar is the principal medium of exchange and is legal tender). Major sources were company income taxes, $6.9 million ($8.9 million in 1960); iron ore royalties, $5.7 million ($6.4 million); and customs duty receipts, $9 million ($7.5 million). Budget figures for 1962 anticipated some improvement in revenue ($34 million), as a result of iron ore expansion, but a sharply expanded capital expenditure program (from $10.7 million in

1961 to $16.8 million in 1962) involved heavy reliance on foreign loans, mostly from the United States.

Transportation and Communications.—There are some 2,300 miles of roads, of which 1,200 miles are all-weather. Motor vehicles registered in 1961 totaled 9,450, an 18% rise over 1960. The only railroad is the 42-mile Liberia Mining Co. line (freight only) running from the Bomi Hills to Monrovia, but additional rail lines were nearing completion in connection with iron ore development projects (see below *Minerals*). Robertsfield, about 50 miles from Monrovia, is an international airport served by 9 international airlines. Internal service is provided by Liberian National Airways.

Partly because of its low registration fees, Liberia has achieved great popularity as a country of registration for foreign-owned merchant shipping. As of Jan. 1, 1962, Liberia was the leading flag of registry for the world's oil tanker fleet (7,015,000 gross registered tons in 1961), and ranked fourth (after the United States, Great Britain, and Norway) in total tonnage (10,929,551). The free port of Monrovia, which in 1961 handled 3,594,000 metric tons of cargo, was much less congested with the coming into operation of the port of Buchanan and completion of port improvements.

In 1962 a $4.4 million telecommunication development project was under way by a Swedish and an American firm. Liberia has 1 daily newspaper and 2 radio broadcasting stations. A powerful Voice of America relay station, situated near Monrovia, is expected to be completed by July 1963 at a cost of $13.8 million, and will be the most powerful transmitter complex in Africa.

Agriculture.—Rubber has now been displaced by iron ore as the major export, but remains very important. Other agricultural export crops are cocoa, coffee, and palm products. Rice and cassava are chief food crops. Forestry resources are huge and largely untapped. In 1961, rubber output was off slightly at 95.3 million pounds, dry rubber content (96.4 million pounds in 1960). The Firestone Plantations Co., with a tapping area of 68,900 acres (plus 18,200 acres in immature rubber), employs about 25,000 Liberians and accounted for 83.5% of the total production; the remaining 16.5% was produced by about 1,000 independent Liberian plantations. The B. F. Goodrich Rubber Plantations Co., which received a rubber concession in 1954, had at the end of 1962 about 12,000 acres cleared and planted, and about 300 acres ready for tapping.

Minerals.—Iron ore development by four companies, involving a capital investment of over $300 million, bids fair to make Liberia a major world producer with an estimated annual production of 20 million metric tons of ore. The Liberian Mining Co. deposits at Bomi Hills produced 3,054,000 metric tons in 1961 and was the sole producer, but the National Iron Ore Co. (Mano River deposits) reached production stage in October 1961. Liberian American Swedish Minerals Company's deposit in the Nimba Mountains, requiring the construction of a new 170-mile railway to and port facilities at Buchanan, progressed in 1962 and was expected to start production in 1963 and to yield 7.5 million tons annually by 1964. The $75 million iron ore project of the Liberian-German Mining Co. (Delimco), near the Bong Hills, made gains in 1962, with completion expected by the end of 1964. A 50-mile railroad from the Bong Hills to Monrovia is under construction.

Foreign Trade.—Largely as a consequence of lower rubber prices, official data for 1961 showed a $20.5 million decline in exports, with total exports valued at $62.1 million. Total imports in 1961 were valued at $90,667,766, an increase of 31% over the $69,190,435 total for 1960. The United States is Liberia's chief trading partner. Leading exports in 1961 were: iron ore, valued at $29.5 million; rubber, $25.5 million; diamonds, $2.2 million; palm kernels, $1.1 million; coffee, $354,613; and cocoa, $234,777.

Events, 1962.—The rising prominence of Liberia in international affairs was reflected in the number of state and official visits to and from the country. Visits by Britain's Queen Elizabeth II and West Germany's President Heinrich Luebke in late 1961 were followed in 1962 by those of Israel's President Izhak Ben-Zvi (August 9–16) and the heads of several African states. President Tubman likewise made several state goodwill visits abroad in 1962—to Israel (June 21–July 1), England (July 10–14), and several Scandinavian countries in September.

On March 28, Liberia became a full member of the International Monetary Fund, International Finance Corporation, International Development Association, and International Bank for Reconstruction and Development. Under auspices of the United Nations Economic Commission for Africa, representatives of 9 African nations met in Monrovia (June 18–22) to consider possibilities of establishment of an African Development Bank.

On June 20, Charles E. Rhetts was appointed United States ambassador to Liberia, as replacement for Elbert G. Mathews, who resigned on April 20.

Bernard Blankenheimer,
Director, Africa Division, Bureau of International Programs, U.S. Department of Commerce.

LIBRARIES

Elementary school libraries, their value and their inadequacy, are prominent in current library development. Foremost among recent contributions to the improvement of these facilities is the $1,130,000 Knapp Foundation grant to the American Association of School Librarians (AASL), a division of the American Library Association and a chapter of the National Education Association. The money will be used to demonstrate the educational value of programs, services, and resources that fully meet the national standards for school libraries.

The director of the Knapp Foundation became interested in this problem when he read a National Library Week article on the dearth of elementary school libraries. In response to his offer, the AASL proposed a five-year program, starting early in 1963 and followed by evaluations every two years, that would establish pilot school libraries and conduct planned programs of teacher training and citizen education through cooperative relationships with nearby teacher education institutions. In addition, the project would provide a national program of information and findings. A national director would be appointed to give leadership and coordination to all aspects of the project.

Intensive use of elementary school libraries is the heart of a three-year experimental project to develop independent study skills for elementary school children. An $88,000 grant from the Ford Foundation's Fund for the Advancement of Education will be used to carry on the project in two Shaker Heights, Ohio, elementary schools.

For the first time, Congress approved an appropriation for an elementary school library program in the District of Columbia schools. Six states established state school library consultant positions in 1962: Delaware, Iowa, Kansas, Oklahoma, Pennsylvania, and West Virginia. Thirty-five states now provide state school library consultant service.

Automation and Technology.—The American Library Association (ALA), with the support of interested companies and publishers, set up the Library 21 exhibit at the Century 21 Exposition (q.v.) in Seattle, Wash. The automated library of the future attempted to provide the public with a new educational experience. The exhibit demonstrated typical library resources that can be treated centrally, stressing the value of interlibrary communication and cooperation, and attempted to integrate machines into an environment of books. New media, such as films, microforms, television, and audio devices, as well as data processing and information retrieval machines, were introduced. The exhibit, located in the Coliseum, included children's and adults' reading areas, a ready reference center, and a learning resources center.

So many libraries have started to use computers that 1962 might be called the year of the computer. The University of Illinois in Chicago, through a grant from the Council on Library Resources, has begun using data-processing devices in library procedures. The University of California at San Diego has programed 700 periodicals in an

Gilbert Chapman (at right), president of New York Public Library, and David Shepard, chairman of the library's fund drive, examine four stacks containing 300 books, the number added to the research facilities every four hours of each working day.

WIDE WORLD

experimental project. The Library of Congress started a feasibility study to determine how a small-scale computer might be used in tabulating operations. The National Aeronautics and Space Administration Scientific and Technical Information Facility provided a completely integrated technical information source for space scientific data.

Four library associations devoted part of their conferences to the applications of automation to libraries. The University of Minnesota Library School invited representatives from industry, government, and libraries to discuss the theoretical and practical considerations of current devices, their relation to traditional library procedures, and the probable lines of future development.

The Library Technology Project, sponsored by the ALA and supported by grants from the Council on Library Resources, in its fourth year published a model insurance policy for libraries; published reports on the evaluation of photocopying equipment and of record players suitable for library use; investigated adhesives suitable for book labeling, protective coatings for microfilms, and equipment for producing full-size copies from microfilm copies; developed a better paperboard for the storage of archival materials and a means to test the strength of library chairs; and designed a new, improved pamphlet box.

Public Libraries.—A year-end nationwide reading survey made by the ALA showed that the mass communications media, especially television, greatly influenced the reading of public library patrons in 1962. The 216 libraries, serving cities of over 50,000 population, reported that the reading emphasis continued its shift from Westerns and light romances to art, travel, education, and national and international affairs.

The latest published statistics for public libraries (for the year 1960) show 8,190 public library systems in the United States. This is an increase of 36% over 1950. Too many libraries are too small, however, to render adequate service as described in the standards of the ALA. While the number of persons included in larger units of service has grown, the number of smaller libraries also has increased. Projections of the Census Bureau indicate that public libraries will have to serve a rapidly growing number of readers, particularly in the age groups 5 to 19 and over 65. This basic problem of providing adequate information service to a rapidly growing population whose intellectual level may depend on its ability to absorb an expanding body of knowledge is accentuated by increased costs and a shortage of trained staff. Expenditures devoted to all public libraries are declining in relation to the nation's total expenditure for social accounts. Total expenditures in the latter category of public funds (federal, state, and local) increased 38% from 1959 to 1960. In the same period, operating expenditures for all public libraries increased only 7.2%, and the ratio of such expenditures to the total cost of public social services declined from 0.7% in 1959 to 0.6% in 1960.

The 254 public library systems serving population areas of 100,000 or more constitute 3% of all public library systems, yet provide service to 44.8% of the total population. The 1960 averages for these systems, derived by dividing the basic data by the 1960 population served, show a decrease in the per capita figures for circulation, book collection, book expenditures, and other operating expenditures. In the library systems serving over 100,000 population, the average per capita circulation was 3.94; books added per capita, 0.09; total operating expenditure per capita, $1.85.

After five years under the Library Services Act, 36 million rural persons in 53 states and outlying areas now have new or improved public library services. There are still 16 million in rural areas, and many more in suburban areas, who are without public library services. State funds for the development of rural public library service have increased by 92% since 1956, while local appropriations have increased by 71%. Greater stress on public library standards has brought about improved quality of public library services and large increases in library usage. The act has been extended to include American Samoa.

Maryland passed a law providing aid to libraries which raised state support for current operating expenses from 10 to 25 cents per capita, with a maximum of 18 to 33 cents per capita in 1963–64.

The Small Libraries Project.—This ALA undertaking, financed by a grant from the Council on Library Resources, helps trustees and librarians of small communities to improve their library services.

In 1962 the project published 16 primary pamphlets and additional supplementary materials on organization of the library and book collection, government, book selection and reference, and services. The state library extension agencies distributed the materials without charge to all public libraries in communities under 10,000 population.

The fourth Dorothy Canfield Fisher Library Award, established by the Book-of-the-Month Club, went to the Jenkins (Ky.) Public Library in 1962. The original award of $5,000 to one library will be expanded in 1963 to a main award of $5,000, nine $1,500 honorable mention awards, and $1,000 to the winner in each of the other 40 states. The funds are given to each library for the purchase of books.

Reading for an Age of Change, a new series of five reading guides which consist of an analysis of a subject by an outstanding authority and an annotated list of books for further reading, was published by the ALA in cooperation with the Public Affairs Committee.

State Libraries.—The Survey of Library Functions of the States, completed in 1962, was supported by a grant from the Carnegie Corporation to the American Association of State Libraries (ASL), a division of the ALA. The most notable feature of the report was the great diversity among the states in organization and quality of service given. It was apparent to the director of the survey that no one form of state library organization would be satisfactory for all states. A committee of the ASL will develop standards based on the findings.

The Society of American Archivists announced an 18-month study of state archival agencies under a grant of $42,000 from the Council on Library Resources, Inc., also leading to standards.

The Nevada State Library received a grant from the Max C. Fleischmann Foundation of Nevada to develop the Nevada Heritage Program, which helps public libraries to develop book collections about Nevada and to increase their use through book lists.

College Libraries.—The Association of College and Research Libraries, a division of the ALA, made grants for books and research to 78 colleges and universities. The program, for improving the quality of library service to higher education through fundamental research in librarianship, was made possible by nine companies and corporation foundations.

The W. K. Kellogg Foundation, Battle Creek, Mich., distributed $360,000 to 36 colleges in 12 states. The money was part of a series of grants totaling $2,500,000 for the purchase of books to improve the quality of teacher education and to increase the effectiveness of college library services.

Librarianship.—The education of librarians continues to be a major concern. In April, the Western Reserve University School of Library Science and the Library Services Branch of the United States Office of Education sponsored an institute for the future of library education. One of the major recommendations was that the ALA develop a sound and imaginative national plan of education for librarianship. The Library Education Division of the ALA prepared a proposal to implement such a plan. Further evidence of the widespread professional concern over the status and future of library education was a conference in Washington in May on the educational needs of librarians and teachers in the administration and use of school libraries as materials centers.

The ALA Committee on Accreditation approved two library schools: the University of California at Los Angeles and Rosary College, River Forest, Ill. In addition, the committee began the first of continuing reviews of the accredited library schools.

The 1961 survey of library school placement revealed once again that there are more positions than graduates, and better salaries than ever before. There were 1,715 graduates from the fifth-year programs of the 32 accredited library schools in the United States and Canada in 1961. The average salary of the United States graduates was $5,365, or $1,282 higher than the 1960 average; however, the range for most of the salaries was $5,000–$5,300 ($200–$100 higher than 1959). Higher salaries and shortages were reported for all types of libraries. The schools reported that 1962 would probably continue this trend.

To help increase enrollment in the library schools, ALA divisions voted to apply the first of the $25,000 annual *World Book Encyclopedia*–ALA Goals Awards to a two-year recruiting project, which seeks to coordinate and stimulate recruiting activities. State libraries and state library associations increased the number and amounts of their scholarships. Pennsylvania hired two full-time recruiters, who work from the two library schools in the state.

Revision of the prevailing rules for author and title entries in cataloging books will be carried on with the aid of a $35,100 grant from the Council on Library Resources, which previously contributed $8,900. Since the revised rules will serve as a guide throughout the English-speaking world, liaison is being maintained with British authorities. The code is being prepared within the framework of the principles agreed upon at the Paris conference of 1961 under the auspices of the International Federation of Library Associations.

Legislation.—On March 20, 1962, five representatives of the ALA were given the opportunity to discuss the role of libraries in the development of the nation with two of President John F. Kennedy's chief advisers. The latter indicated that the administration would give enthusiastic backing to a national program of development for public, school, college, state, federal, and research libraries. As a result, a comprehensive program of federal legislation was proposed and later discussed in committee both by the House and Senate, but time did not permit consideration on the floor before adjournment.

Although Congress authorized the purchase of foreign materials by the Library of Congress in 1954, the first appropriation under this act (P.L. 480) was made in August 1961. Over 200,000 items were purchased in 1962 in India, Pakistan, and the United Arab Republic with American-owned foreign currency. Twenty-one college and university libraries and the New York Public Library received the publications and contributed $10,500 toward the program.

The 1962 Depository Library Act revised the 1895 law by authorizing a limited number of additional depository libraries and increasing the kinds of publications to be made available. A depository library will receive without charge all publications of the government except those required for official or strictly administrative use or classified for reasons of national security.

Library Associations.—The Medical Library Association established a central office in Chicago and appointed Mrs. Helen B. Schmidt as executive secretary.

The American Theological Library Association reviewed the progress of theological libraries under a grant from the Sealantic Fund. Under the program, each library received for books $3,000 from the fund for each $6,000 a year it spent over its norm book budget for the years 1958–61. The total increase in book expenditures in the year

UPI

(*Right*) Former Presidents Herbert Hoover (center) and Harry S Truman (second from left) enter the Hoover Library (*below*) in West Branch, Iowa, for dedication ceremony, August 10.

ending Sept. 30, 1962, was expected to be $432,000.

The Association of Research Libraries announced a grant of $58,350 from the National Science Foundation for partial support of a full-time secretariat to be located in Washington. Dr. James E. Skipper was appointed executive secretary.

Fifth National Library Week.—Held April 8–14, 1962, in some 5,000 communities, this event was both the climax and the starting point for many year-round activities planned to encourage lifetime reading habits, increase the use of libraries, and expand the nation's library resources. National Library Week is a voluntary citizens' movement sponsored by the National Book Committee, Inc., a nonprofit educational group, in cooperation with the ALA. Several hundred organizations and individuals contributed support and financial help.

Some communities reported that National Library Week was a timely reinforcing factor in the realization of long-sought objectives; others that it was the occasion to initiate farsighted programs to improve total library resources. Most rewarding of all, perhaps, was evidence of the cumulative results that this event has helped to achieve from year to year. Both sponsoring organizations decided to continue the program at least through 1967. The Sixth National Library Week will be April 21–27, 1963; its theme: "Reading, the Fifth Freedom—Enjoy It."

International Events.—The 28th session of the International Federation of Library Associations (IFLA) met Aug. 27–30, 1962, in Bern, Switzerland. The Committee on Uniform Cataloging Rules recommended the use of uniform titles for the important anonymous classics, and of official names for the catalog headings of countries. The Sub-Section on Library Work with Children reported that the articles for a book on library service to children in 15 countries had been received and that the section would proceed with the compilation of the international basic catalog of children's books. The Public Libraries Section established a set of principles which would apply equally to the emergent and the highly developed countries. The first of the three principles is: All libraries provided by public funds, irrespective of type, should be obliged to recognize a duty to all the peoples of a country. This means that any citizen of any country should have access to the library resources of his country, whether they are contained in public, research, university, or national libraries, so long as these libraries are maintained by the state or local authorities. Nine other sections and committees reported on progress in their phases of library work.

The Canadian Library Association (CLA), at its 17th Annual Conference in Ottawa, June 24–29, 1962, recommended the establishment of a National Office of Library Service and appointment of a professional coordinator attached to the CLA office. The Canadian government, in its program of austerity, has postponed the building of the National Library.

The West German public library statistics for 1948–59 indicated that the peak year of public library use was 1955. During the decade, the number of libraries grew from 5,252 to 10,500, the number of volumes from 4.7 million to 9.3 million, and circulation from 13 million volumes to 30 million. During the same period, the lending libraries circulated about 600 million volumes. The number of borrowers in the children's departments declined about 6.5%. The percentage of nonfiction borrowed increased in 1960.

The ALA and the U.S. Department of State cosponsored a program for multinational librarians whereby 13 librarians from 10 countries visited the United States for three months in the winter of 1961–62.

Professional librarians are serving with the Peace Corps in Jamaica, Pakistan, and the Philippines. Requests for librarians were received from Africa, Asia, and Latin America.

Buildings.—Again, the expansion of services has meant the construction of new buildings for college and public libraries. Foremost among the structures completed in 1962 are the Texas State Library (Austin) and the National Library of Medicine (Washington, D.C.). Cairo, UAR, reports a new national library, and Ibadan, Nigeria, plans for a new central library, each with expanded services to children and adults.

(See also AMERICAN LIBRARY ASSOCIATION and the following listings under SOCIETIES AND ORGANIZATIONS: American Association of Law Libraries; Canadian Library Association; Catholic Library Association; and Special Libraries Association.)

RUTH M. WHITE,
Headquarters Librarian,
American Library Association.

LIBRARY OF CONGRESS. See LIBRARIES.

LIBYA

A federated constitutional monarchy on the Mediterranean coast of Africa, the United Kingdom of Libya has an area of 679,358 square miles and a population of 1,216,000 (est. July 1, 1961). The people are predominantly Arab, of whom about one third are nomads; there are about 35,000 Italians, mostly in Tripolitania. Tripoli (1961 est. pop., 185,517) and Benghazi (Bengasi; 1954 pop., 70,532) are dual capitals; a permanent capital is being constructed at Beida, Cyrenaica. Arabic is the official language.

Government.—Independent since Dec. 24, 1951, Libya is a federation of three provinces—Tripolitania (1954 census pop., 746,064), Cyrenaica (291,328), and Fezzan (54,438)—which exercise considerable autonomy through their respective governors, legislative assemblies, and executive councils. The hereditary monarch is King Idris I (b. 1890; acceded 1951), who appoints the premier and other cabinet ministers; he may introduce or veto legislation and dissolve the lower house of Parliament at his discretion. The Senate consists of 24 members (8 from each province) who serve 8-year terms; the king appoints half the members of the Senate and the provincial assemblies elect the other half. The House of Representatives has 55 members (35 from Tripolitania, 15 from Cyrenaica, and 5 from Fezzan) elected by male suffrage for 4-year terms. The last election took place in January 1960. Premier Mohammed ben Othman Al-Said took office on Oct. 17, 1960. There are no political parties.

Education and Religion.—School enrollment, 1959: 152,061 (35% of the school-age population). Number of schools (with enrollments), 1959: primary, 495 (139,569); secondary, 13 (9,163); teacher-training, 8 (1,902); technical, 8 (856); university, 1 (571). The Libyan College of Advanced Technology, financed by the UN Special Fund, was founded in 1961 to provide 4-year courses in engineering and food processing. Islam is the state religion.

Finance.—Government revenue, fiscal 1962: L£18 million (the Libyan pound equals U.S.$2.80), including L£3.25 million from Great Britain for its leased military bases at Tobruk and Benghazi, and L£3.57 million from the United States for rental of the airbase at Wheelus Field, near Tripoli. Expenditure, fiscal 1962: L£18 million, including L£8.1 million to the provinces, and L£2.17 million to the Libyan Development Council.

Transportation and Communications.—Transport networks (miles, 1962): coastal road from east to west borders, 1,140; other paved roads, 2,400; railroads, 269 (from Tripoli, 168; from Benghazi, 101). Main airports: Idris, near Tripoli, and Benina, near Benghazi, served by 10 foreign airlines. Libyan Airways provides internal air service. Automotive vehicles: 26,900 (1960); telephones, 14,600 (1960); radio receiver licenses, 25,000 (1957).

Agriculture.—Animal husbandry and agriculture engage about 80% of the population, although only 8% of the land is cultivatable. Principal subsistance crops: barley, wheat, dates, and olives (20,000 metric tons in 1961). Principal cash crops: esparto grass, peanuts, citrus fruits, grapes, and almonds.

Industry.—Gross national product, 1960 est.: $172 million (up 61% from 1957). Per capita income, 1961: $150 (or more than double that in 1956). Petroleum production, 1962: 164 wells; 247,160 barrels of oil per day. Coastal fisheries yield sponges, tuna, and sardines. Traditional handicrafts, chiefly rugs and carpets, are produced.

Foreign Trade.—Total exports, 1961: L£7.86 million (up 95% from 1960); imports, L£53.21 million (down 11%). Chief exports were peanuts, esparto grass, goats and sheep, and sponges; principal imports were equipment for oil companies, textile machinery, fuel, timber, chemicals, and foodstuffs. Chief suppliers: Italy, Great Britain, and the United States. Chief customers: Italy, Egypt, and Great Britain. Chief sources of invisible income were expenditures by foreign armed forces and by foreign companies prospecting for oil.

Events, 1962.—On January 29 the cabinet was reorganized, with Wanis Kaddafi becoming foreign minister and Nuri ben Gharsa becoming minister of petroleum affairs. In June, Hamid Ebaidi became minister of development affairs as a result of another cabinet reorganization.

On February 3, 87 persons were sentenced to prison terms ranging from 6 to 32 months for subversive activities against the Libyan government.

The development of petroleum resources continued through the year. It was estimated that about $218 million was invested by foreign companies during 1962 in the petroleum industry. Oil strikes were reported by the Italian company, Ente Nazionale Idrocarburi, in eastern Cyrenaica, and by British Petroleum Ltd. and Nelson Bunker Hunt in southern Cyrenaica. The contract for the first oil refinery to be constructed at Marsa el Brega was awarded to the Chemical Construction Company of New York. On June 4, Libya was admitted to membership in the Organization of Petroleum Exporting Countries (OPEC).

A $38 million port facility and pipeline system was opened in November at Essider, 425 miles east of Tripoli. Its capacity is 313,000 barrels a day from the Dahra oilfields in Tripolitania.

During the year the Libyan Development Council worked on the details of a five-year development plan which was to cost about L£130 million. The emphasis of the plan was on the development of agriculture, the creation of new industries, and the establishment of a fishing fleet. In June an Industrial Development Association was organized to assist private capital investment. The development of cement, sugar, and gas industries was given high priority by the association. Agricultural development was aided by the increase in the capital of the National Agricultural Bank to L£2 million.

J. L. L.

LIECHTENSTEIN

Situated between Austria and Switzerland, the independent Principality of Liechtenstein has an area of 61 square miles and a population (1961 est.) of 17,000. The capital is Vaduz (1959 pop., 3,280). The ruler is Prince Francis Joseph II (b. 1906; acceded 1938), who is assisted by a 15-member elected Landtag. The government is headed by a prime minister (Gerald Batliner, who succeeded Alexander Frick on July 16, 1962). Over 90% of the population is Roman Catholic; German is the official language. In 1960 there were 14 elementary schools with 2,744 pupils. In 1961, estimated government revenue was 13,185,670 Swiss francs; expenditure, 13,221,891. Liechtenstein has a customs union with Switzerland and uses Swiss currency, but issues its own postage stamps. Agriculture, stock raising, and light industry are the major components of the economy.

LIFE EXPECTANCY. See POPULATION TRENDS.
LIFE INSURANCE. See INSURANCE.
LIGHTING. See ELECTRICAL INDUSTRIES.

LIME

Production of lime in the United States in 1961 was 15,193,129 short tons, an increase of 17% over the 12,935,198 tons produced in 1960. Details of the sales and uses of lime are shown in short tons in the following table.

	1959	1960	1961
Sales, total	8,405,509	8,189,336	8,313,424
Quicklime	6,373,027	6,251,373	6,140,827
Hydrated	2,032,482	1,937,963	2,172,597
Uses:			
Agricultural	195,554	186,769	198,357
Building	1,315,346	1,208,630	1,223,709
Industrial	9,010,766	9,590,539	11,788,304
Refractory	1,986,561	1,949,260	1,982,759

(Source: U.S. Bureau of Mines.)

In the first eight months of 1962, the total lime sold was 9,831,251 tons, compared with 8,173,132 tons in the same period of 1961. For the same periods of 1962 and 1961, total sales of agricultural lime were 110,251 tons and 155,603 tons, respectively; building lime, 849,042 tons and 752,854 tons; industrial lime, 7,581,239 tons and 6,072,065 tons; and refractory lime, 1,290,578 tons and 1,192,610 tons.

LIMES. See FRUITS.
LINEN. See TEXTILE INDUSTRY.
LIQUOR INDUSTRY. See DISTILLING INDUSTRY.
LITERARY AWARDS. See PRIZES AND AWARDS.
LITERATURE. See Index entry.

LITHUANIA

The Lithuanian Soviet Socialist Republic of the USSR is located on the southeast coast of the Baltic Sea. It has an area of about 25,000 square miles, and a population of 2,711,000 (1959), about 61% rural. In 1959, 79% of the population were Lithuanians, an Indo-European people; 8%, Russians; 8%, Poles; and the remaining 5%, mainly Belorussians, Jews, and Ukrainians. Principal cities and populations (1959): Vilnyus (Vilna, Wilno), the capital, 235,000; Kaunas (Kovno), 214,000; Klaipeda (Memel), 89,000; and Siauliai (Shavli), 60,000.

Government.—An independent republic since 1918, Lithuania was forcibly annexed by the USSR in 1940, and reoccupied near the end of World War II. The United States government does not recognize the annexation. Lithuania's legislature is a unicameral Soviet elected for 4-year terms. It rarely meets, and between sessions delegates its authority to a Presidium headed by Yustas I. Paletskis (the nominal chief of state), and to a Council of Ministers (cabinet) headed by Premier Moteyus Y. Shumaukas. The Lithuanian government has no political autonomy, and merely fulfills orders from Moscow. All key government posts are held by members of the Lithuanian Communist Party, headed by First Secretary Antanas J. Snechkus. A large percentage of this party consists of Russians.

Education and Religion.—School enrollment, 1961: 425,000. Number of schools: 1,000 primary; 600 secondary; 72 technical high schools; and 12 colleges. College enrollment, 1961: about 25,000. Principal religion: Roman Catholic. In January 1962, the dean of Klaipeda's Catholic cathedral was sentenced to 8 years' imprisonment, and his vicar to 4 years, for allegedly embezzling church funds.

Finance.—Government expenditure, 1962 est.: 580,431,000 new rubles (545,750,000 in 1961). One new ruble equals U.S.$1.12.

Transportation and Communications.—Transport networks (miles, 1961): railroads, 1,290; roads, 22,200; paved roads, 2,200. Telephones number 30,300.

Manufactures and Minerals.—Major industrial products (metric tons, 1961): peat, 2,082,000; paper, 49,900; cement, 544,000; lumber, 510,000 cubic meters; plywood, 28,800 cubic meters; textiles, 53,500,000 square meters; shoes, 7,800,000 pairs; machine tools, 9,639 units; electricity, 1,296 million kw.-hr. Other manufactures include packaged meat, dairy products, sugar, candy, liquor, machine tools, electrical equipment, port machinery, ships, and farm machines.

Agriculture.—Major crops (metric tons, 1961): milk, 715,800; meat, 191,300; sugar, 151,600; butter, 23,900; fish, 106,900. Sown area: 5,550,000 acres, mostly under rye, oats, wheat, potatoes, flax, sugar beets, and hay. Livestock: cattle, 1,046,000; sheep and goats, 444,000.

Foreign Trade.—Most Lithuanian trade is with the remainder of the USSR. Chief exports: bacon, meat, linen, wood products, machines. Main imports: coal, petroleum, ferrous metals, timber, grain.

Events, 1962.—The living standard remained low, and the Communist press admitted widespread shortages of clothing, furniture, and shoes. The acute scarcity of urban housing continued. The press continued to complain about such attitudes among the Lithuanian population as desire for national independence, respect for Western art, fondness for private farming, belief in religion, and anti-Sovietism. In June, Juozas Streikus, leader of an anti-Soviet guerrilla band operating in rural areas, was sentenced to death. Because of the anti-Communist attitude of much of the Lithuanian

Sophia Loren (l.) won 1962 Academy Award for her role in *Two Women;* she is seen here with Eleanora Brown in a scene from film.

EMBASSY PICTURES

population, the USSR maintained a large army of occupation in the country, the soldiers mainly Russian or of other non-Lithuanian nationality. Lithuanian youths drafted into the USSR armed forces were usually sent to other Soviet areas to serve their conscription periods.

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LIVESTOCK. See AGRICULTURAL RESEARCH SERVICE and the Index entry, *Livestock.*
LIVING STANDARDS. See STANDARDS OF LIVING.
LOANS. See Index entry.

LOREN, Sophia

Italian motion picture actress (original name: Sophia Scicolone): b. Rome, Italy, Sept. 20, 1934.

The only performer in a foreign-language film ever so honored, Sophia Loren was named the best actress of 1961 on April 9, 1962, by the Motion Picture Academy of Arts and Sciences for her portrayal of the indomitable Italian mother in *Two Women* (1961). On Dec. 28, 1961, she had been honored by the New York Film Critics Circle as the top film actress of the year for the same role.

Sophia Loren's childhood was passed in the midst of poverty and war in Pozzuoli, an industrial suburb of Naples, Italy. After attending a Catholic parochial school, she studied in the local teachers' institute for three years. In 1949 she won second place in a Naples "Queen of the Sea" beauty contest. She then went with her mother to Rome, where she worked first as an extra in *Quo Vadis* (1951) and subsequently as a model and an actress in minor film roles. When she became the female lead in a semi-documentary Italian film, *Africa Under the Sea,* she adopted the name of Loren. In 1951 she starred in *Aida,* and her reputation grew with her appearances in more than 20 Italian films which followed, in the last of which, *The Luck of Being a Woman* (1955), she played opposite Charles Boyer.

Miss Loren played her first American motion picture role with Cary Grant and Frank Sinatra in *The Pride and the Passion* (1957), filmed in Spain. She made three other American films in Europe before she arrived in Hollywood in 1957. In the same year she was married (in a proxy ceremony in Mexico) to Carlo Ponti, an Italian film producer.

Among the films in which she has since starred are *The Gold of Naples* (1957), *Desire Under the Elms* (1958), *Houseboat* (1958), *The Black Orchid* (1959), *That Kind of Woman* (1959), and *Breath of Scandal* (1960), which cast her in a series of rather unimpressive roles, though she won an acting trophy from the Venice International Film Festival for her performance in *The Black Orchid.*

LOS ANGELES

The nation's second largest metropolis in area (458 square miles), Los Angeles, Calif., is the third most populous city in the United States, with an estimated 2,537,000 inhabitants as of July 1, 1961. The total population of Los Angeles County (Oct. 1, 1962) is 6,453,174. The Los Angeles metropolitan area (4,842 square miles), comprising Los Angeles and Orange counties, reached a population of 7,275,824 in July 1962.

The City of Los Angeles is governed by a mayor (in 1962, Samuel W. Yorty) and an elective 15-member City Council. Budgetary appropriations for the 1962–63 fiscal year totaled $255,604,272, distributed by function as follows: protection to persons and property, $121,715,941; highways, bridges, and structures, $53,182,431; health and sanitation, $33,531,033; culture and recreation, $19,750,293; general government, $21,487,420; and miscellaneous, $5,937,094.

Major sources of city revenue included property taxes, $107,063,654; sales taxes, $45,800,000; and licenses, permits, and fees, $21,259,000. Three proprietary departments have separate budgets: Water and Power, $297,990,518; Harbor, $24,600,100; and Airport, $19,616,440. The city tax rate for 1962–63 was $1.99 per $100 assessed valuation.

The County of Los Angeles, which includes the City of Los Angeles as well as a score of other cities, is governed by a Board of Supervisors. The Los Angeles County budget for 1962–63 totaled $668,892,522, distributed by function as follows: public assistance, $354,574,625; protection to persons and property, $99,279,471; roads, $55,069,351; general government, $118,024,159; health and sanitation, $13,047,784; and culture and recreation, $11,472,201. Major sources of revenue included: property tax, $270,709,987; sales taxes, $6,350,000; charges for current services, $48,496,562; and aid from other government agencies, $256,541,322.

The county tax rate for 1962–63 was $2.20 per $100 assessed valuation. The assessed valuation for Los Angeles County's tangible property was $13,021,969,265.

In January 1962, two major Los Angeles newspapers went out of existence. The Los Angeles *Mirror* ceased publishing and the *Examiner* was absorbed by the *Herald Express,* leaving Los Angeles with only one major morning and evening newspaper. On October 1 the New York *Times* began publishing a west coast edition, which proved to be an immediate success. (See also NEWSPAPERS.)

Among other major Los Angeles developments in 1962 was the development of an urban renewal program in the area known as Bunker Hill, adjoining the Civic Center. The land is to be sold to developers to construct a high-rise building complex. The city also has been considering a multimillion-dollar Community Renewal Program. A three-year federally sponsored study was under way to catalogue the physical conditions of every sector of the city as the basis for a citywide master plan for land use and slum prevention.

Planning was also under way for development of a rapid transit network to serve the heavily congested downtown area of Los Angeles. The system will take the form of a subway linking the freeways at the outer circumference with the heavily congested downtown area and Wiltshire Boulevard. Freeway construction continued in all areas of the city. The building fund for construction of a Music Center for the Performing Arts neared its goal, and construction was imminent.

With passage of the $270 million college and university building bond in November, construction was begun of a new branch of the University of California to serve the greater Los Angeles metropolitan area. Located on a portion of the famed Irvine Ranch in Orange County, the new campus will match the University of California at Los Angeles, and serve approximately 25,000

students. Expansion of the state colleges in the Los Angeles area also was provided for in the bond issue.

The Los Angeles Dodgers opened the baseball season in the 56,000-seat Dodger Stadium, at Chavez Ravine. However, the handsome new ball park failed to bring any good fortune to the Dodgers, who lost to the San Francisco Giants in a postseason playoff for the National League pennant.

DAVID S. MCLELLAN,
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LOUISIANA

A South Central state of the United States, Louisiana ranks 31st among the states in area (land, 45,106 square miles; inland water, 3,417) and 20th in population (3,330,000 on July 1, 1962, a 2.2% increase from the 1960 census figure of 3,257,022). Urban places with populations above 15,000 in 1960:

Alexandria	40,279	Kenner	17,037
Bastrop	15,193	Lafayette	40,400
Baton Rouge (*capital*)	152,419	Lake Charles	63,392
Bogalusa	21,423	Monroe	52,219
Bossier City	32,776	New Iberia	29,062
Crowley	15,617	New Orleans	627,525
Goosport[1]	16,778	Opelousas	17,417
Gretna	21,967	Shreveport	164,372
Houma	22,561	West Monroe	15,215
Jefferson Heights[1]	19,353		

[1] Unincorporated.

Government.—Chief executive and judicial officers in 1962 included James H. Davis (Democrat), governor, serving a four-year term; C. C. Aycock, lieutenant governor; Wade O. Martin, Jr., secretary of state; A. P. Tugwell, treasurer; Roy R. Theriot, comptroller; Jack P. F. Gremillion, attorney general; Shelby M. Jackson, superintendent of public education; and John B. Fournet, chief justice of the 7-member Supreme Court.

The Louisiana Legislature, which convenes annually, comprised 39 Democrats in the Senate in 1962 and 105 Democrats in the House of Representatives.

Legislation, 1962.—The regular 60-day session convened on May 14 and adjourned on July 12. The commission created in 1960 to study the entire state government reported to the Legislature and sponsored 45 bills, 12 of which dealt with reorganization of administration. The creation of a new auditing agency in the legislative branch, the abolition of four agencies in the executive branch, and authorization for the governor to succeed himself were recommended.

The most pressing problem before the Legislature was financial. The $80 million operating deficit for the fiscal year ending June 30, 1962, was provided for in part by a $60 million bond issue and by transferring $10.5 million of accumulated surpluses to the general fund (see below, *Events, 1962*). For the state's grants-in-aid to segregated schools, a $20 million bond issue was approved. Responsibility for distributing allocated funds to local school systems was transferred from the state Board of Education to the Legislature.

Bills to establish a code of ethics for public officials and to make the state payroll available to the members of the Legislature failed to pass. The $60 million highway bond issue proposed by the 1961 Legislature was submitted to the electorate on Nov. 6, 1962, and was approved.

Finance.—In the 1961 fiscal year, revenue of $765,241,725 included $478,756,978 from state taxes and $200,866,606 in federal funds. Chief tax yields were the 2% general sales tax ($85,356,510), a severance tax ($147,064,958), and taxes on gasoline ($61,314,005) and income ($34,218,477). Spending of $752,471,743 included $262,992,182 for education, $167,177,501 for public welfare, and $151,139,169 for highways. (See above, *Legislation, 1962*, and below, *Events, 1962*.)

Education.—In the 1960–61 school year, public elementary schools staffed by 15,806 teachers enrolled 542,400 pupils; secondary schools with 10,233 teachers enrolled 158,323; and private and parochial schools with 3,621 teachers enrolled 138,369. Enrollment in colleges and universities totaled 62,312.

Estimated public school spending in the 1961–62 school year totaled $322.8 million, including current expenditures of $260 million ($398 per pupil) and capital outlays of $50 million. Revenue of $352,883,000 was drawn chiefly from state funds ($209,383,000) and local districts ($76,500,000). Teachers' salaries averaged $5,075 (high school, $5,350; elementary, $4,910). Actual spending for higher education (1961 fiscal year) totaled $72,349,000.

Public Assistance.—In the 1961 fiscal year, public assistance to a monthly average of 180,000 persons totaled $146,006,534. This amount included $103,809,140 for the aged and $24,117,124 for dependent children.

Transportation and Communications.—A total of 701 miles of highway construction and reconstruction was completed in the 1962 fiscal year. *Highways and roads* on Dec. 31, 1961, totaled 49,307 miles (41,200 surfaced). These served 1,243,500 *motor vehicles* (as registered on July 31, 1962), including 944,355 automobiles. Operating in the state in 1962 were 30 *railroads* (using, in 1960, 3,937 line miles of track); 12 regularly scheduled *airlines;* and 60 commercial and municipal *airports and airfields.*

Communications media included (1961) 79 AM and 8 FM *radio stations;* 12 *television stations;* 19 *newspapers* (circulation, 731,820); and (Jan. 1, 1962) 286,000 business and 822,000 residential *telephones.*

Labor Force.—The state's labor force on July 15, 1962, included 108,200 agricultural workers. Nonagricultural employment totaled 778,100, compared with 778,500 a year earlier and an average of 779,900 for the full year 1961. Of nonfarm employees, 22.8% were in trade, 19.1% in government services, and 17.7% in manufacturing. Unemployment on July 15, 1962, was down to 69,700 from the 93,300 reported for the previous July 15.

Manufacturing.—Covered employment in Louisiana manufacturing establishments averaged 133,712 on Dec. 31, 1961, and provided a payroll of $678,101,936.

MAJOR LOUISIANA MANUFACTURES, 1960

Industry group	Total employees	Total payroll	Adjusted value added by mfr.[1]
		(in thousands)	
Total	133,274	$651,185	$1,563,297
Chemicals and products	15,636	105,539	377,807
Food and kindred products	30,697	118,311	294,433
Petroleum and coal products	12,629	91,893	232,274
Paper and allied products	16,926	90,343	189,315
Primary metals	3,613	22,515	94,547
Stone, clay, glass products	6,562	30,471	74,650
Lumber and wood products	16,010	44,451	67,143

[1] For definition, see footnote 1 in the article *Industrial Production.* (Source: *1960 Annual Survey of Manufactures.*)

Mining.—In 1961, Louisiana ranked second among the states in the value of its mineral output for the fourth successive year, with 11.99% of the national total. It was first in output of salt; second in natural gas, petroleum, and sulfur (Frasch). Sulfur output increased 4.5%, due chiefly to the working of a big offshore mine for the first full year.

LOUISIANA MINERAL PRODUCTION, 1961

(In short tons, except as noted)

Mineral	Quantity	Value
Clays	645,000	$ 645,000
Lime	927,000	11,893,000
Natural gas (million cu. ft.)	3,271,857	611,837,000
Natural gasoline (1,000 gal.)	931,176	61,714,000
Petroleum (1,000 bbl.)	424,962[1]	1,339,905,000[1]
Petroleum gases (1,000 gal.)	806,559	33,214,000
Salt, common	4,722,000	23,357,000
Sand and gravel	12,402,000	14,833,000
Stone[2]	4,641,000	7,656,000
Sulfur, Frasch (long tons)	2,352,000	55,164,000
Other minerals	...	15,807,000
Total	...	$2,173,442,000[3]

[1] Preliminary. [2] Excludes certain stone, value for which is included under "Other minerals." [3] Total adjusted to avoid duplication in the value of raw materials used in manufacturing cement and lime. (Source: U.S. Bureau of Mines.)

Fisheries.—The state's commercial fish and shellfish catch in 1961 totaled 643,113,480 pounds, up 14% from the 1960 total. Leading species were shrimp (30,998,441 pounds), menhaden (581,682,610), and oysters (9,891,337).

Agriculture.—Cash farm income for the first nine months of 1962 (excluding government payments) totaled $259,707,000, compared with $207,588,000 for the corresponding period of

1961. For the full year 1961, income comprised $154,013,000 from livestock, $249,424,000 from crops, and $16,490,000 in government payments. Principal income sources in 1961 were cattle, $75,889,000; cotton lint, $75,493,000; rice, $67,437,000; sugarcane for sugar, $45,992,000; and wholesale milk, $41,911,000.

The state's 74,000 farms in 1959 had an acreage of 10,347,000 (2,426,000 in harvested cropland). Livestock on farms on Jan. 1, 1962, included 1,818,000 cattle, 3,701,000 chickens, and 24,935,000 commercial broilers. An average of 92,000 family and 64,000 hired workers were engaged in farming during 1961.

LOUISIANA CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Corn for grain (1,000 bu.)	12,107	9,879	6,216
Cotton lint (1,000 bales)	570	479	545
Cottonseed (1,000 tons)	234	200	230
Pecans (1,000 lb.)	16,830	36,000	6,000
Rice (1,000 bags)	12,723	13,396	15,494
Soybeans (1,000 bu.)	2,426	4,728	4,818
Strawberries (1,000 lb.)	18,551	14,960	17,160
Sugarcane for sugar (1,000 tons)	5,250	7,118	5,350
Sugarcane sirup (1,000 gal.)	2,508	2,135	1,632
Sweet potatoes (1,000 cwt.)	4,473	3,604	3,410

(Source: U.S. Department of Agriculture.)

Events, 1962.—Deficit spending by the state government continued to be a major concern, but an austerity program was not followed. A $60 million bond issue to liquidate part of the $73 million deficit for the fiscal year ending June 30 was a temporary palliative. The budget adopted for the next fiscal year was expected to run a deficit of $15 million. In November the Legislature approved an expenditure of $1 million for a recreation area at Cyremort Point, 35 miles south of New Iberia. The new $1.5 million governor's mansion was ready for occupancy at the end of the year; the old one had been built in 1930. Criticism was leveled at 18 legislators who were to receive $87,000 annually in commissions on insurance policies purchased by the state.

Louisiana and the federal government continued to disagree about the ownership of the tidelands, the zone from 3 to 10 miles offshore. In November, 14 tracts in the zone were offered for lease, attracting $44.4 million in bids. In escrow, awaiting judicial disposition, was a total of $450 million. The state expected all or part of these funds to solve its financial difficulties.

A New Orleans woman, one of three persons excommunicated for continued resistance to school integration, kneels in front of Archbishop Joseph Rummel, April 17, and asks God to forgive him for his order desegregating parish schools.

WIDE WORLD

In the Democratic primary on July 28, Rep. Hale Boggs, the House majority whip, won easily over three other candidates; his victory was interpreted as a significant endorsement of the Kennedy administration. Sen. Russell Long was renominated by a 4 to 1 margin, and his cousin, Gillis Long, defeated Rep. Harold McSween in the closest race of the primary. No September runoff primaries were necessary for Democratic congressional candidates, all of whom won in the November election.

A federal judge certified 26 Negroes of East Carroll Parish as qualified to vote in the state Democratic primary. They were the first of their race in the parish in 40 years to be enfranchised.

Southern University, the nation's largest Negro university, continued to feel reverberations from the antisegregation demonstrations conducted by its students at nearby Baton Rouge in December 1961. Rioting took place at the university on Jan. 16, 1962, after seven students who had been arrested for participating in the Baton Rouge demonstration were expelled. The university was closed down two days later, the last day of the term, and all of the nearly 5,000 students were required to apply for admission for the term beginning January 29. The applications of the expelled students, and some 40 others, were rejected. The Congress of Racial Equality (CORE), the sponsor of the Baton Rouge demonstration, initiated a boycott of the university, which failed, and CORE was prohibited by a U.S. District Court injunction from staging further demonstrations in the Baton Rouge area.

On March 27 it was announced that the archbishop of New Orleans had ordered the desegregation of more than 150 Roman Catholic schools in southeastern Louisiana. Three weeks later he excommunicated three of the most vociferous opponents of the ruling. Segregationist sentiment focused on the first parochial school to integrate, at Buras, on August 29, as 5 Negro and 44 white students appeared for the first classes. Under mounting pressure, all of the students eventually dropped out. On September 4 there were also disturbances at Westwego, a suburb of New Orleans, but elsewhere Negroes attended 30 previously all-white parochial schools without major incident.

(See also NEW ORLEANS.)

"Legislation" and "Events" by: G. W. McGINTY, *Professor of History; Head, Department of Social Sciences, Louisiana Polytechnic Institute.*

LUMBER

The lumber industry in the United States continued in a depressed condition in 1962, after its total production in the preceding year had reached the lowest point since World War II. A number of the smaller Pacific coast mills closed down, and unemployment in the industry in the Western states was estimated at more than 2,500. The industry's difficulties were attributed in part to reduced demand due to a high price level in competition with other building materials, although the price level failed to yield returns adequate to offset a persistent rise in production costs. Another factor was increasing competition from imports, especially softwood lumber from British Columbia. A law restricting coast-to-coast shipments to American vessels gave Canadian producers an advantage in lower shipping costs. A request by lumber industry spokesmen that the United States government impose a temporary quota on Canadian imports was not granted, but United States officials began a series of talks with Canadian officials on lumber industry problems.

Lumber production in the United States in 1961 decreased 8% from the preceding year's figure. The National Lumber Manufacturers Association's preliminary estimate for 1961 was 31,694 million board feet; the revised estimate for 1960 was 34,494 million board feet, and for 1959, 37,373 million. Production in the first half of 1962 was estimated at 16,308 million board feet, 4% higher than the 15,678 million during the first six months of 1961. United States production of lumber in 1961 (with 1960 figures in parentheses) included 27,079 million board feet of softwoods (28,334), consisting principally of Southern pine, 6,461 million board feet (6,572); Douglas fir, 7,754 (8,347); Western pine, 8,687 (8,967); and California redwood, 2,254 (2,750). Production of hardwoods amounted to 4,615 million board feet (6,160).

United States imports of lumber in 1961, according to the U.S. Department of Commerce, totaled 4,248 million board feet—4,004 million feet of softwood lumber, 242 million feet of hardwood, and about 2 million feet of sawed railroad ties. Spruce, Douglas fir, fir, and hemlock lumber from Canada accounted for most of the imports. During 1961, imported lumber represented 12% of total United States consumption, compared with 10% in 1960. United States exports totaled approximately 755 million board feet—596 million feet of softwood and 119 million feet of hardwood lumber, 40 million feet of ties, and less than 1 million feet of box shooks.

The wholesale price index for lumber, according to the Bureau of Labor Statistics, dropped from an average of 99.8 for 1960 to 94.7 for 1961 (1957–59 = 100). By June 1962 the index figure was 97.6. The highest year on record was 1956, with an average index of 104.6.

The most recent Census of Manufactures (1958) showed 5,884 plants with 20 or more employees in lumber and related products manufacture (excluding furniture) in the United States. Capital expenditures for new plant and equipment in 1960 were $317 million. Employees in 1960 numbered 596,000, including 526,000 classed as production workers. Man-hours worked by production workers totaled 1,020 million; wages, $1,765 million.

World Production.—Estimated world production of sawed wood reached a new record level in 1960 of more than 330 million cubic meters, according to the Food and Agriculture Organization of the United Nations. Of the total production, 263 million cubic meters was of coniferous or softwood species, and 67 million of broadleaved or hardwood species (1 cubic meter = 424 board feet).

The Soviet Union, which became the world's leading producer of sawed wood in 1957, continued in first place in 1960 with 106 million cubic meters, or 32% of the world output. Other most important producers were the United States with 81.9 million, Japan (26.7 million), Canada (18.3 million), and Sweden (8.6 million).

(See also FORESTRY.)

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LUNAR RESEARCH. See ASTRONOMY; SPACE FLIGHT.

LUTHERAN CHURCHES

Four Lutheran churches in the United States merged in 1962 to form the 3,200,000-member Lutheran Church in America. The new church is composed of the former United Lutheran Church in America (2,509,000 members), the Augustana Lutheran Church (630,000 members), the American Evangelical Lutheran Church (25,000 members), and the Finnish Evangelical Lutheran Church (Suomi Synod, 36,000 members). Dr. Franklin Clark Fry, president of the United Lutheran Church in America and of the Lutheran World Federation, was elected president of the new body at a constituting convention in Detroit, Mich., June 28–July 1, 1962. Dr. Malvin H. Lundeen, president of the Augustana Church, was named secretary.

Another merger was assured as the 90,000-member Lutheran Free Church voted to join the American Lutheran Church (2,400,000 members), which was formed in 1960 by the union of three Lutheran groups. The issue had twice previously been considered by the Lutheran Free Church, each time without sufficient support from the membership.

The American Lutheran Church, headed by Dr. Fredrik A. Schiotz, held its biennial convention in Milwaukee, Wis., October 18–24, 1962, and voted overwhelmingly to continue its membership in the World Council of Churches. An ultraconservative group within the church had attacked continued membership in the world body.

The 2,600,000-member Lutheran Church-Missouri Synod at its triennial convention in Cleveland, Ohio, June 20–29, 1962, elected a new president for the first time since 1935. Dr. John W. Behnken, 78, who had served 9 three-year terms as president, declined re-election and was named honorary president. Dr. Oliver R. Harms, one of the synod's four vice presidents, succeeded him.

The three major Lutheran churches, comprising 95% of the Lutherans in the United States and Canada, declared that sufficient doctrinal consensus existed among them to justify consideration of the formation of a new cooperative agency for theological study and Christian service. This agency would replace the 44-year-old National Lutheran Council, the service arm of the eight church groups that merged into the Lutheran Church in America and the American Lutheran Church. The Missouri Synod has not been a member of the council, although there have been cooperative relationships.

Total Lutheran baptized membership in 1962 was reported as 8,333,797 in the United States and 277,271 in Canada. Of the increase of 154,205 members since 1961, half was in the Missouri Synod.

PHILIP A. JOHNSON,
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LUXEMBOURG

Situated in western Europe between Belgium, France, and West Germany, the Grand Duchy of Luxembourg has an area of 998 square miles and a population (1961 est.) of 319,000. The capital and chief city is Luxembourg (1959 pop., 71,612). French is the official language; Luxembourgian (a German-French-Dutch admixture) is the principal spoken language.

Government.—Luxembourg is a constitutional monarchy headed by Grand Duchess Charlotte (b. 1896; sovereign since 1919), who on May 2, 1961, delegated to her son, Prince Jean, all political and juridical prerogatives of the sovereign. Legislative power is vested in a 52-member Chamber of Deputies, elected by universal suffrage for a 5-year term. Following the elections of Feb. 1, 1959, party seating in the legislature was as follows: Christian Social, 21 seats; Socialist, 17; Democratic (Liberals), 11; and Communist, 3. Executive power is vested in a cabinet, headed by a prime minister (Pierre Werner, since Feb. 26, 1959).

Education and Religion.—Education is compulsory for all children between the ages of 6 and 13 years. Number of schools (with enrollments), 1960: 433 primary (29,903); 7 secondary (4,510); 4 technical (3,621); and 2 teacher-training (105). More than 90% of the population is Roman Catholic.

Finance.—Estimated government revenue, 1962: 6.1 million Luxembourg francs; expenditure, 6.2 million (49.86 Luxembourg francs equal U.S.$1).

Transportation and Communications.—Transport networks (miles, 1961): state roads, 1,743; local roads, 1,475; railroads, 244. Other communications data: passenger cars, 41,581 (1961); trucks, 9,029 (1961); telephones, 51,364 (1960); licensed radio receivers, 98,000 (1960); television sets, 10,500 (1962). Findel is the country's airport.

Manufactures and Minerals.—The iron and steel industry accounts for over half of Luxembourg's industrial employment, provides about two thirds of total industrial output, and contributes the greater part of annual exports. Chief products (metric tons, 1961): iron ore, 7,457,941; pig iron and ferroalloys, 3,828,000; crude steel, 4,112,783; chemical fertilizers, 732,324 (in 1960); electricity, 1,507 million kw.-hr. The index of industrial production (1953 = 100) rose from 139 in 1960 to 141 in 1961.

Agriculture.—Agriculture occupied 17% of the active population in 1960. Chief crops (metric tons, 1960): wheat, 44,633; oats, 38,789; barley, 17,731; potatoes, 102,989; and fodder beets, 193,648. Wine production in 1961 totaled 108,500 hectoliters. The consumer price index (1953 = 100) was 108 in 1961, the same as in 1960.

Events, 1962.—The economic downturn begun in late 1961 continued into 1962, but a general upturn was registered in midyear. Industrial production in the first six months of 1962 declined slightly below comparable levels in the same period of the previous year. Production decreases were most marked in the chemical, textile, lumber, tobacco, and beverage industries; gains were registered in food products, certain minerals and metals, and furniture. Employment increased moderately as the result of an influx of foreign workers.

A treaty of friendship between Luxembourg and the United States was signed on February 23. William R. Rivkin succeeded James Wine as United States ambassador to Luxembourg on November 19.

M

MIDDLE EAST—Yemeni soldier stands guard in San'a in October during revolt after deposition of imam.

WIDE WORLD

MACAO. See PORTUGUESE TERRITORIES.
MACHINERY. See Index entry.

MACMILLAN, (Maurice) Harold

Prime minister of Great Britain: b. London, England, Feb. 10, 1894.

Prime Minister Macmillan's principal policy objective—full British membership in the European Economic Community (Common Market), with safeguards for the special interests of the Commonwealth—was beset with difficulties in 1962.

Educated at Eton and at Balliol College, Oxford (B.A., 1919), he was a director of Macmillan and Company, Ltd. (1920–40). A Conservative member of Parliament (1924–29; 1931–45), he served as resident minister in North Africa (1942–45) and secretary of state for air (1945). Reelected to Parliament in 1945, he served as minister of housing and local government (1951–54), minister of defense (1954–55), secretary of state for foreign affairs (1955), and chancellor of the exchequer (1955–57), before succeeding Sir Anthony Eden as prime minister on Jan. 10, 1957.

From West German leaders in Bonn on Jan. 9, 1962, and from Italian leaders in London on January 17, Macmillan received assurances of continued support for Britain's entry into the Common Market and sympathetic understanding of the problem of the Commonwealth countries. In Britain, however, opposition to membership increased, threatening to cause a split in the Conservative Party. The need for party solidarity became apparent when the Conservatives suffered reverses in by-elections in March and April, largely because of dissatisfaction among Conservative voters with government economic policies.

Arriving in New York on April 27 en route to conferences with President Kennedy and Canadian Prime Minister Diefenbaker, Macmillan delivered a major address in which he expressed the objectives and hopes underlying his Common Market policy: "Our present negotiations in Brussels are directed towards a plan by which Britain may be able to do her double duty, as both a Commonwealth and a European country. If this problem can be solved—and I believe it can—then indeed the forces of civilization and order will be strengthened and encouraged."

Time became an increasingly important element in Macmillan's plans. A swift and successful conclusion to the negotiations would enable him to silence his critics in Parliament, the Conservative Party, and the country at large. Delay only added to his difficulties. Rumors persisted that French President de Gaulle was continuing to place obstacles in the way of British membership. A Macmillan-de Gaulle meeting on June 3 apparently showed an identity of purpose between the two leaders, but two days later in the House of Commons the British leader found it necessary to reassure the chamber that de Gaulle's subsequent statements were not really expressions of hostility.

A by-election held on July 12 showed another loss of Conservative strength. On the following day, Macmillan announced cabinet changes described as the "most sweeping Government reconstruction in modern times." Seven cabinet ministers were replaced, including Chancellor of the Exchequer Selwyn Lloyd, along with more than 24 ministerial officials. Soon after, Macmillan demonstrated continued control over his party when a

Labour censure motion against the reorganization was defeated in the House of Commons. Significantly, every Conservative MP voted in support of the prime minister.

Macmillan had hoped to present to the conference of Commonwealth prime ministers in September arrangements for Britain's entry into the Common Market, but no agreement had been reached. Both at the conference and in a radio-television report to the British people a week later, the prime minister spoke out bluntly, citing the growing strain on Britain's trade and stating that the Commonwealth could not provide an economic alternative to the Common Market. (See also COMMONWEALTH OF NATIONS.)

Macmillan's difficulties continued throughout the year. Conservative losses in the fall by-elections indicated continued dissatisfaction among the British people. Further delays in the Common Market negotiations led Macmillan to meet again with de Gaulle (December 15–17) in an apparently unsuccessful effort to eliminate the obstacles. New difficulties emerged when, late in the year, the United States announced the impending cancellation of the Skybolt missile program (see also MISSILES). The Macmillan government had halted work on Bluestreak, Britain's own air-to-ground missile, with assurances that the Skybolt would provide a more effective weapon at much less cost. The Skybolt issue dominated the meeting between Macmillan and President Kennedy at Nassau on December 18–21, when the prime minister agreed to accept the already operational Polaris instead of the Skybolt, possibly as part of a future integrated NATO nuclear force. The agreement virtually spelled the end of Britain's hopes for an independent nuclear deterrent, however, and Macmillan faced severe criticism on his return home. (See also GREAT BRITAIN.)

R. J. Q.

McNAMARA, Robert Strange

U.S. secretary of defense: b. San Francisco, Calif., June 9, 1916.

McNamara was educated at the University of California (B.A., 1937) and the Harvard School of Business Administration (M.B.A., 1939). After working for an accounting firm in California, he returned to Harvard in 1940 as an assistant professor of business administration. In 1943 he joined the Army Air Forces as a civilian consultant and helped to set up a statistical control system of supply. He soon was commissioned captain (later lieutenant colonel) and served in the European and Pacific theaters.

In 1946, McNamara and nine other discharged Army Air Forces statistical experts were hired as a unit by the Ford Motor Company. Beginning as a financial analyst, McNamara advanced rapidly to important company posts, including controller (1949) and group vice president of car divisions (1957). On Nov. 9, 1960, he became company president—the first person outside the Ford family to hold that position. He was sworn in as secretary of defense on Jan. 21, 1961.

McNamara, who had made several changes for greater efficiency in the defense structure in 1961, was principally concerned during 1962 with the balancing of the nuclear and conventional armaments of the United States and its allies, with such continuing international trouble spots as Berlin and Vietnam, and with the emergency created by the discovery in October of Soviet missile bases in Cuba.

At the NATO meetings in Athens (May 4–6), McNamara exhorted the European member nations to increase their contributions to NATO's conventional armament strength. As part of the Kennedy administration's opposition to separate national nuclear forces in Europe, he announced the offer to NATO of five Polaris nuclear submarines, although American command would be retained. In a statement of administration policy at the University of Michigan on June 16, he argued that "relatively weak national nuclear forces" would not be "sufficient to perform even the function of deterrence."

WIDE WORLD

Prime Minister Harold Macmillan of Great Britain relaxes after a day of hunting grouse in Yorkshire on August 13.

In December, McNamara was involved in heated discussions with the British over the experimental air-to-surface Skybolt missile, which had proved very expensive and failure-prone in development. These talks culminated on December 21 in Prime Minister Macmillan's acceptance, in his Nassau talks with President Kennedy, of submarine-launched Polaris missiles as Great Britain's nuclear deterrent in place of Skybolt. (See also MACMILLAN; MISSILES.)

As insurgent guerrilla hostilities continued in South Vietnam, McNamara visited Saigon (May 9–11) for inspection of the U.S. Military Assistance Command and talks with the Ngo Dinh Diem regime. On his return from inspection of United States forces in West Germany on September 28, he announced the government's readiness to use nuclear arms in Germany if necessary to protect such vital interests as access to West Berlin. The secretary was responsible for the military implementation of President Kennedy's quarantine of Cuba (October 23–November 21).

On December 4, McNamara announced a reorganization of the Army National Guard and Reserve. The new regulations maintained the total strength of 700,000 men but raised personnel standards, eliminated 1,861 outmoded units, and created 1,017 modern units in realigning four National Guard and four Reserve divisions into brigades. High-priority forces capable of being combat ready in eight weeks were set up by the shift of two thirds of the Reserves into six National Guard divisions and support units. (See also ARMY OF THE UNITED STATES; NATIONAL SECURITY; NORTH ATLANTIC TREATY ORGANIZATION.)

MADAGASCAR. See MALAGASY (MALGACHE) REPUBLIC.

MADEIRA. See PORTUGAL.

MAGAZINES

The year 1963 loomed as a most difficult one in magazine publishing, as far as profits were concerned, for there were many indications that the industry would have a hard time equaling the 1.4% net profit on sales recorded in 1962, with no hope of meeting the 1.7% profit made in 1960. This view prevailed in spite of possible all-time high records in advertising revenue and a continuing strong position in the number of advertising pages sold.

In addition to constantly rising labor and material costs, a prime factor in the gloomy profit picture was postal legislation enacted by the 87th Congress. Under the bill, rates on second-class mail—consisting mainly of newspapers and magazines—will go up by some $26 million by 1965. Earlier the House of Representatives had approved a bill which would have raised costs by about $54 million. Although the bill as finally passed was one "the industry can live with," there was great concern for some of the smaller, marginally profitable magazines.

In 1962 the women's magazines became more ladylike in their competition for advertising revenue and circulation. Considerably less time and money were devoted to claims and counterclaims as they joined the industry as a whole to fight the postal legislation. In attempts to meet stiffer competition for the advertising dollar, especially from television, the industry continued its efforts to provide advertising flexibility through regional editions, or split runs, which were becoming an accepted practice.

Meanwhile in the first half of 1962, advertising revenue rose 6% to an all-time high of $439,327,756, compared with $419,031,468 in the same 1961 period. There were strong hopes that the full year's revenue would approach $880 million, compared with the 1961 total of $836,983,480. Advertising pages sold in the first half of 1962 totaled 35,888, against 35,423 in the first half of 1961, indicating the 1962 total would be slightly higher than 1961's total of 70,497.

Business Publications.—In most important categories, 1962 was a better year for the business press than 1961. Advertising revenue, for example, was estimated at $544,500,000, compared with $518,600,000 in 1961, but still not quite as high as the $546,000,000 recorded in 1960. The number of advertising pages carried in 1962 was estimated at 1,125,000, compared with 1,108,000 in 1961 and 1,194,000 in 1960. Circulation continued a consistent upward trend, the 1962 estimate being some 53,000,000 copies, against 50,300,000 in 1961 and 47,600,000 in 1960. Despite the uncertainties of business and increasing costs, the number of publications continued upward to 2,370 in 1962, against 2,356 in 1961 and 2,310 in 1960.

Canadian Developments.—A big surprise to most observers was the fact that the Canadian Parliament did not enact legislation recommended by a Royal Commission on Publications. These recommendations would have crippled the Canadian editions of United States magazines, particularly *Time* and *Reader's Digest,* and seriously hampered the import of some other publications. United States magazines circulating in Canada continued, as did most Canadian publications, to show modest increases in both advertising and circulation.

New Publications.—Apparently reflecting the continuing profit squeeze and business uncertainties, there were only some 35 new publications scheduled to appear in the United States in 1962 or early 1963, compared with about 80 in 1961 and 54 in 1960. Among them were: *Baseball Monthly; Bay Play; Collector's Quarterly Report; Columbia Journalism Review* (a quarterly); *Eros; Fair Sex; FM Listeners Guide; Leisure* (circulated exclusively to barbers); *Master Drawings,* an art quarterly devoted to the 14th–19th centuries; *One-Design Yachtsman; Shopping Center Age; This Month,* which discontinued after six months; *University Woman;* and *Upper Class.*

New appearances scheduled in the business field included: *Area Digest; Auto Body News and Good Car Care; Best Western; The Candy Marketer; Chemical Equipment News; C/M,* for concrete block producers; *Discount Store News; Engineering Digest,* for engineering students; *Evaluation Engineering; Folio,* a graphic arts communication publication; *International Commerce,* succeeding *Foreign Commerce Weekly; Lawn/Garden/Outdoor Living; Metal-Center News; National Surveyor; New Plant Planning; Rental Housing; School Product News; Server Quarterly* (in alcoholic products marketing); and *Textiles, Notions and Trimmings.*

Sales and Mergers.—*American Mercury,* founded by the late H. L. Mencken and George Jean Nathan, was sold by the Defenders of the Christian Faith to a Texas group called the Legion for the Survival of Freedom; Cowles Magazines & Broadcasting bought *Family Circle* for an estimated $3,500,000 in stock; and in August, *Show* bought and discontinued *USA*1,* which had been started in April.

Disappearing from the scene were *American Salesman; Boating Year Round/Outboard;* and *Musical Courier,* America's oldest musical magazine, which had been founded in 1880.

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MAGNESIUM. See MINERAL PRODUCTION.

MAGNETISM, Terrestrial. See the Index entry, *Terrestrial Magnetism and Electricity.*

MAIL SERVICE. See POST OFFICE DEPARTMENT.

MAINE

A New England state of the United States, Maine ranks 39th among the states in area (land, 31,012 square miles; inland water, 2,203) and 37th in population (999,000 on July 1, 1962, a 3.0% increase from the 1960 census figure of 969,265). Urban places, including towns (T) and unincorporated places (U) with populations above 10,000 in 1960:

Auburn	24,449	Portland	72,566
Augusta (*capital*)	21,680	Presque Isle	12,886
Bangor	38,912	Rumford T.	10,005
Bath	10,717	Saco	10,515
Biddeford	19,255	Sanford T.	14,962
Brunswick T.	15,797	Sanford (U)	10,936
Caribou T.	12,464	South Portland	22,788
Kittery T.	10,689	Waterville	18,695
Lewiston	40,804	Westbrook	13,820
Limestone T.	13,102		

Government.—Chief executive and judicial officers in 1962 included John H. Reed (Republican), governor, serving a four-year term; Paul A. MacDonald, secretary of state; Frank S. Carpenter, treasurer; Michael A. Napolitano, auditor; Frank E. Hancock, attorney general; Warren G. Hill, commissioner of education; and Robert B. Williamson, chief justice of the 6-member Supreme Judicial Court.

The Maine Legislature, which convenes in odd-numbered years, comprised 30 Republicans and 3 Democrats in the Senate in 1962 and 111 Republicans and 40 Democrats in the House of Representatives.

Finance.—In the 1962 fiscal year, revenue of $147,179,888 included $89,223,494 from state taxes and $37,823,763 in federal funds. Chief tax yields were the 3% general sales tax ($29,529,156), a motor fuel tax ($24,366,629), and licensing ($11,784,875). Spending of $147,607,926 included $26,099,410 for education, $43,605,773 for health, welfare, and safety, and $50,677,213 for highways.

Education.—In the 1960–61 school year, public elementary schools staffed by 5,763 teachers enrolled 156,914 pupils; secondary schools with 2,697 teachers enrolled 44,534; and private and parochial schools with 1,279 teachers enrolled 33,701. College enrollment (fall 1961) totaled 13,687.

Estimated public school spending in the 1961–62 school year totaled $71.36 million, including current expenditures of $61.7 million ($330 per pupil) and capital outlays of $8 million. Revenue of $79 million was drawn chiefly from state funds ($15 million) and local districts ($50 million). The state reported teachers' salaries as averaging $4,619 (high school, $5,027; elementary, $4,378). Actual spending for higher education comprised $5,885,479 for operations and $2,768,750 for construction and improvements.

Public Assistance.—In the 1962 fiscal year, public assistance payments to a monthly average of 44,659 persons totaled $21,158,420. This amount included $9,279,011 for the aged and $7,172,651 for dependent children.

Transportation and Communications.—With 259 miles of highway construction and reconstruction completed in 1961, *roads and highways* on March 1, 1962, totaled 20,888 miles (17,500 surfaced). These served 384,064 *motor vehicles* (as registered on Dec. 31, 1961), including 309,439 automobiles. Operating in the state in 1961 were 7 *railroads* (using 1,874 line miles of track); (1962) 1 regularly scheduled *airline;* 30 commercial and municipal *airports;* and 66 commercial and private seaplane bases.

Communications media included (1961) 24 AM and 2 FM *radio stations;* 7 VHF *television stations;* 9 daily *newspapers* (circulation, 251,346) and 53 other newspapers (283,187); and (Jan. 1, 1962) 86,700 business and 248,200 residential *telephones.*

Labor Force.—The state's labor force on Aug. 15, 1962, included 26,900 agricultural workers. Nonagricultural employment totaled 332,300, compared with 336,100 a year earlier and an average of 319,800 for the 12 intervening months. Of nonfarm employees, 33% were in manufacturing, 16.5% in trade, and 14.6% in government services. Unemployment on Aug. 15, 1962, was down to 16,600 from the 21,200 reported a year earlier.

Manufacturing.—The state Census of Manufactures reported a total of 106,215 manufacturing workers in the state in 1961 who received $440,681,988 in wages. Value of product amounted to $1,491,732,923.

LEADING MAINE MANUFACTURES, 1961

Industry group	Employees	Gross wages	Value of product
Paper and allied products	17,446	$96,182,669	$434,394,041
Food and kindred products	11,938	39,897,316	274,250,354
Leather and leather products	23,615	75,679,611	236,489,347
Textile mill products	12,330	43,107,667	160,446,199
Lumber and wood products (except furniture)	11,375	38,735,124	118,655,337
Transportation equipment[1]	15,316	92,545,928	82,772,077
Fabricated metals	1,636	7,396,649	28,785,802
Printing and publishing	2,198	9,459,165	25,580,845

[1] Includes data for Kittery Naval Shipyard, except for "value of product." (Source: Maine Department of Labor and Industry.)

Mining.—In 1961, Maine ranked 46th among the states in value of mineral output, with 0.08% of the national total. The record value represented a 9% increase over 1960. More than half of the total value of $14,969,000 was represented by stone ($4,694,000) and sand and gravel ($3,796,000).

Fisheries.—The commercial fish and shellfish catch in 1961 totaled 197,969,532 pounds valued at $19,029,469. Leading species were lobster (20,917,920 pounds valued at $11,119,803) and ocean perch (77,350,099; $2,942,313).

Agriculture.—Cash farm income for the first nine months of 1962 (excluding government payments) totaled $140,768,000, compared with $141,773,000 for the corresponding period of 1961. For the full year 1961, income comprised $116,978,000 from livestock, $63,191,000 from crops, and $2,622,000 in government payments. Principal income sources in 1961 were potatoes, $38,063,000; broilers, $36,263,000; wholesale milk, $32,534,000; and eggs, $32,298,000.

The state's 17,000 farms in 1959 had an acreage of 3,082,000 (698,000 in harvested cropland). Livestock on farms on Jan. 1, 1962, included 200,000 cattle and 4,627,000 chickens, and (1961) 58,480,000 commercial broilers.

MAINE CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Apples (1,000 bu.)	1,220	2,000	1,750
Hay (1,000 tons)	666	578	537
Oats (1,000 bu.)	3,054	2,115	2,303
Potatoes (1,000 cwt.)	34,195	37,000	38,955

(Source: U.S. Department of Agriculture.)

Events, 1962.—The Republican Party claimed a sweeping victory in Maine after the election of November 6, but Democrat Maynard C. Dolloff of Augusta, candidate for the governorship against incumbent John H. Reed, demanded a recount. The apparent margin of Governor Reed was 621 votes (146,742 to 146,121). The result of the November–December recount was to confirm the reelection of Governor Reed by the scant margin of 519 votes.

Although recounts were demanded also in a number of state legislative districts, it was clear that the Republican hold on both houses was firmly retained. The official tabulation, completed on November 22, showed that there were 110 Republicans and 41 Democrats in the House, and 29 Republicans and 5 Democrats in the Senate (a gain for the Democrats of 1 seat in each house plus a new seat in the Senate). In the reconstituted 1st Congressional District, Republican Stanley R. Tupper, former 2d District congressman, was reelected by a wide margin, while veteran legislator Clifford G. McIntire was returned to the House from the new 2d District by 3,190 votes.

Voters were asked to decide three referendum questions during the year. In June they approved a bond issue to provide educational television for eastern Maine, and in November they accepted two amendments to the state constitution—one designed to prevent diversion of state retirement funds, the other allowing local voters to pledge community credit for construction of industrial buildings.

The first of a series of reports on a study of the Passamaquoddy Bay tidal project and related power developments on the St. John River was issued on March 5 by the Department of the Interior. In July, Secretary of the Interior Stewart L. Udall visited eastern Maine to study the multi-use development possibilities of the area. The Allagash region through which the St. John flows is renowned as a sportsmen's and canoeist's paradise. Privately owned, it supplies large amounts of timber, much of which would be flooded by hydroelectric development. No decisions have yet been reached as to reconciling the diverse interests in the Allagash, including industrial and power development, timberland use, and possible creation of a national park.

In the western hills of Maine is the small town of Andover, chosen as the site for the Andover Earth Station because of its freedom from radio waves. On July 10, the communications satellite Telstar was fired into orbit from Cape Canaveral, Fla., and the Andover station became operative as the United States counterpart of similar tracking and relay stations in England and France. On the day of launching, history was made when the first telephone messages were sent from Andover and received in Washington, D.C. Later the same day television pictures were transmitted to Europe, and

A year-end snowstorm crippled much of New England. Here, Bangor, Me., digs out from a 37-inch snowfall, December 31.

on July 11 a television broadcast was received from Europe. (See also RADIO AND TELEVISION; SPACE FLIGHT.)

"Events" by: EDWARD F. DOW,
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MALAGASY (MALGACHE) REPUBLIC

The Malagasy Republic consists chiefly of the island of Madagascar, lying in the Indian Ocean, 240 miles off the southeast coast of Africa. It is 980 miles long and 360 miles at its widest point, and has an area of 228,000 square miles. The population is 5,650,000 (1961 est.), consisting of 5.5 million Malagasy and 150,000 French. The principal cities and their populations (1961 est.) are the capital, Tananarive (240,000) and the provincial capitals of Majunga (55,000), Tamatave (50,000), Fianarantsoa (35,000), Diégo-Suarez (39,000), and Tuléar (30,000). The principal languages are Malagasy (Malgache) and French.

Government.—The former French overseas territory of Madagascar became autonomous on Oct. 14, 1958, an independent member of the French Community (q.v.) on June 26, 1960, and a member of the United Nations on Sept. 20, 1960. The constitution of April 28, 1959 (amended in June 1960) provides for a bicameral legislature. The Senate consists of 54 members (18 appointed, 36 elected), serving six-year terms; the National Assembly has 107 members, all elected by universal suffrage to five-year terms. Philibert Tsiranana was elected in 1959 by the electoral college to serve a seven-year term as president; he is the leader of the Social Democratic Party, which holds most Senate and Assembly seats.

Education and Religion.—In 1961 there were 458,447 primary school pupils (in 2,394 schools); 6,000 secondary school pupils; and 2,460 technical school pupils. A university was opened on Dec. 4, 1961. There are 5,200 Roman Catholic, 5,755 Protestant, and 75 Muslim houses of worship; most of the rural population is animist.

Finance.—General budget, 1961: 18,935 million francs CFA (16,488 million in 1960; 246.85 francs CFA equal U.S.$1); grants from France, 2,044 million francs CFA (7,680 million); public debt, 860 million francs CFA.

Transportation and Communications.—Transport networks (miles, 1961): railways, 532; all-weather roads, 5,000; navigable waterways, 1,550. The two main ports handled 615 ships and 179,653 metric tons of cargo in 1960; the four main airfields and the international airport at Tananarive are served by five foreign airlines, which carried 18,784 passengers in 1960. Other data for 1960: passenger cars, 21,800; commercial vehicles, 20,000; telephones, 13,757; radio receivers, 55,000 (1959).

Economic Indicators.—National income: about $500 million per year, or $80–90 per person, in 1961. The economic trend, which has been downward since 1960, rose slightly in early 1962.

Manufactures and Minerals.—Chief industrial products (metric tons, 1960): mica, 1,010; graphite, 14,400; phosphate, 4,630; ilmenite, 2,729; zircon, 340; beryl, 636; cement, 18,450; gold, 8.5 kilograms; electric power, 72.5 million kw.-hr. Other industries include silk and cotton weaving, the making of panama and straw hats, and meat canning; almost all other manufactured goods are imported.

Agriculture.—Supporting 90% of the population, agriculture is carried on mostly at the subsistence level. Rice is the principal food crop, and coffee is the chief export crop, accounting for about one third of the nation's export earnings. Chief crops (thousand metric tons, 1961): rice, 1,300 (estimate); manioc, 900; maize, 79. Export crops: coffee, 50; sugarcane, 85; peanuts, 25; vanilla, 0.4; batata, 139; coconuts, 2,460; bananas, 71.6.

Foreign Trade.—Total exports, 1961: 247.2 million metric tons (19,137.7 million francs CFA); imports, 383.9 million metric tons (25,532.3 million francs CFA). Principal exports (in million francs CFA, 1961): coffee, 5,547; cloves, 303.3; tobacco, 673; rice, 1,187; vanilla, 1,885; sugar, 1,036. Principal imports (in million francs CFA, 1960): metalware, 2,906; vehicles, 3,123; chemicals, 2,548; machinery, 1,887; textiles, 2,939; apparel, 881.3; cement and liquid fuel, 2,209.2; electrical appliances, 1,324; foodstuffs, 4,233. Principal suppliers (with percentage of total imports provided, 1960): France, 70.2%; Iran, 3.3%; United States, 2.9%; West Germany, 2.5%; United Kingdom, 1.7%. Chief customers (with percentage of total Malagasy exports received, 1960): France, 55%; zones: franc, 73%; dollar, 13%; sterling, 4.5%.

Events, 1962.—President Tsiranana attended the important Lagos (Nigeria) Conference, January 25–31, during which 20 African nations formed an affiliation comparable to that of the Organization of American States. (See also AFRICA.) A one-week economic development conference in April brought together over 700 Malagasy leaders and foreign specialists. Plans were laid for an international fair to be held in Tamatave in September 1963 to help attract investment capital. The United Nations Educational, Scientific and Cultural Organization held its first conference on higher education in Africa at Tananarive in September.

FRANKLIN PARKER,
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MALAYA

This independent federated territory in Southeast Asia occupies 50,680 square miles of the Malay Peninsula south of Thailand; it is separated from Singapore (q.v.) by the Straits of Johore. Comprising nine Malay states and the former British settlements of Penang and Malacca, Malaya became fully self-governing on Aug. 31, 1957, as the 11th sovereign member of the Commonwealth of Nations. The federal capital is Kuala Lumpur (pop., 316,230, 1957 census).

The population (7,136,804 on June 30, 1961) is increasing by 3.3% annually (one of the highest rates of growth in the world); it comprised (mid-1961) 3,576,889 Malaysians, 2,633,516 Chinese, 796,880 Indians and Pakistanis, and 129,519 others. The component states, with their areas, populations, and capital cities, are as follows:

FEDERATION OF MALAYA

State	Area (sq. mi.)	Pop. (1961 est.)	Capital
Johore	7,330	1,064,814	Johore Bahru
Kedah[1]	3,660	783,993	Alor Star
Kelantan	5,750	570,998	Kota Bahru
Malacca	640	335,127	Malacca
Negri Sembilan	2,580	422,694	Seremban
Pahang[2]	13,820	354,316	Kuantan
Penang[3]	400	642,221	George Town
Perak	7,980	1,384,321	Ipoh
Perlis	310	101,357	Kangar
Selangor	3,160	1,159,914	Kuala Lumpur
Trengganu	5,050	317,049	Kuala Trengganu
Total	50,680	7,136,804	

[1] Includes Langkawi and adjoining islands. [2] Includes Tioman Island in South China Sea. [3] Penang State comprises Penang Island (110 square miles) and Province Wellesley (290 square miles).

Government.—A head of state or paramount ruler (called the Yang di-Pertuan Agong) is elected by the rulers of the nine states from among their number; he serves a 5-year term. The Raja of Perlis, Sir Putra Ibni al-Marhum Syed Hassan Jamalullail, formerly the deputy head of state, was elected on Sept. 21, 1960, and installed on Jan. 4, 1961, as the third paramount ruler since i dependence.

The federal Parliament, modeled on that of the United Kingdom, comprises a Senate (Dewan Negara) of 22 elected members (2 from each state) and 16 appointed members, and a House of Representatives (Dewan Ra'ayat) of 104 elected members. The paramount ruler is advised by a cabinet headed by a prime minister; Tunku (Prince) Abdul Rahman has served in this post since independence except for a brief period in 1959. The individual states have executive councils, state legislative assemblies, and numerous local authorities, including 297 local councils in 1962.

Education and Religion.—Schools, 1962: 5,538; pupils, 1,391,848; teachers, 49,887 (primary schools, 4,871; pupils, 1,170,374; teachers, 41,965); university students, 1962: 2,062, including 695 federation students attending the University of Singapore. In 1962 the Kuala Lumpur Division of the University of Malaya became a separate and autonomous national university. About 50% of the people are Muslims.

Defense.—Principal components of Malayan defens are the Royal Malay Regiment (7 battalions in 1962); the Federation Reconnaissance Corps (2 regiments); a field regiment of artillery; 6 field squadrons of engineers and signal men; and a maintenance corps. The Royal Malayan Air Force was formed in 1958, largely with personnel from the British Royal Air Force. The Royal Malayan Navy, based at Singapore, is used mainly for coastal defense.

Finance and Development, 1961.—Current account expenditures (est., in millions): M$899 (administration,

M$186; education, M$189; defense, M$179; social welfare, M$91); revenue: M$1,070 (export duties, M$192; import duties, M$356); capital expenditures, est., M$288. (The Malayan dollar equals 32.667 U.S. cents.)

The federation's second five-year plan, introduced on Feb. 3, 1961, calls for an overall investment of M$5,050 million, with proposed expenditure of M$2,150 million in the public sector. About half this sum is allocated to rural development, and M$451 million to social services.

Transportation and Communications.—Federal highways, 1961: 2,507 miles; state roads, 4,489 miles; registered motor vehicles, 219,410 (private cars, 103,149; omnibuses, 2,908; trucks and vans, 31,083). The government-owned railway (route mileage, 1,028, including 488 miles of main line) connects principal centers with Singapore; branch lines serve the chief ports. Internal services of Malayan Airways (MAL) carried 78,762 passengers in 1961, using 9 airports and 36 additional landing fields. A number of foreign airlines maintain service to Kuala Lumpur. Telephone stations, 1961: 80,597; radio licensees, 1960: 226,828.

Economic Indicators.—Per capita income (1957, est.): M$825 (one of the highest in Asia); gross national product (at market prices, 1957): M$5,180 million; Malaysian laborers' cost-of-living index, 1959 (1949 = 100): 123 (in 1958: 127); bank note circulation, 1961: M$1,131 million; post office savings bank deposits, 1961: M$153 million, due to 756,494 depositors; public debt, 1960: M$1,106.9 million; foreign assets (net, 1959): M$1,749 million.

Manufactures and Mining.—Industrial output (1960) included rubber shoes and slippers (1,329,028 dozen pairs); cement (281,864 tons); bricks (75,368,000); and floor tiles (209,265). Malaya is the world's leading tin producer; 56,028 tons of tin concentrates were exported in 1961. Other mineral production, 1961: iron ore, 6,733,520 tons; bauxite, 409,881 tons; ilmenite, 106,975 tons; and gold, 12,486 troy ounces. Electric power production, 1961: 1,344.4 million kw.-hr.

Agriculture.—Rubber (734,619 long tons produced in 1961) is Malaya's most important crop, accounting for 60% of the value of total exports; some 300,000 workers are employed on rubber estates totaling 2.3 million acres; another 2 million acres are worked by smallholders. Other agricultural yields (1961) included (in thousands of long tons); rice, 605.0; copra, 162.3; palm oil, 93.3; and tea (from 8,700 acres), 5,808,615 pounds.

Foreign Trade.—Total exports, 1961 (in millions): M$2,626 including rubber (790,562 tons), M$1,442; tin, M$553 (up M$46 over 1960); and iron ore (6.4 million tons), M$164 (up M$24). Imports: M$2,150.6, including foodstuffs, M$561.8; manufactured goods, M$408.5; machinery, M$388.9; and mineral fuels, M$142.7. The favorable trade balance of M$475.4 million was less than in either 1960 or 1959.

Events, 1962.—Following the work of a commission of inquiry headed by Lord Cobbold, an agreement was signed on July 31 in London by British Prime Minister Macmillan and Tunku Abdul Rahman, prime minister of Malaya, for the establishment by Aug. 31, 1963, of the Federation of Malaysia. Bringing together in a single organization varied racial groups with an aggregate population (1961) of 10,083,726 and a combined area of 130,017.5 square miles, Malaysia will consist of Malaya, Singapore, the British colonies of Sarawak and North Borneo, and the protected sultanate of Brunei (the last three on the island of Borneo). Provision was made for the continuance of British defense facilities at Singapore.

On January 30 the London proposals were approved by the Singapore Legislative Assembly, 19 of whose members, however, subsequently petitioned the United Nations to prevent the merger. A claim to North Borneo by the Philippines government, and a proposal by President Macapagal to enlarge Malaysia to include his country, were both rejected. (See also PHILIPPINES.)

In a referendum held in Singapore on September 1, 90 per cent of the electorate (totaling 624,000) chose among three alternatives a form of Malaysian membership restricting parliamentary representation to 15 seats (one eighth of the whole) while retaining autonomy for Singapore in respect to education and labor.

State visits were paid in 1962 by the paramount ruler of Malaya to India and Pakistan.

(See also FAR EAST.)

DONOVAN ROWSE,
Author and Publicist.

LONDON DAILY EXPRESS

Malayan Prime Minister Tunku Abdul Rahman (right), shown with Ambassador Tunku Halim Shah, arrives in London on July 17 for talks on the proposed Federation of Malaysia.

MALDIVE ISLANDS

A chain of 19 groups of coral islands in the Indian Ocean extending some 400 miles southwest of Ceylon, the Maldive Islands have a total area of 115 square miles, and a population (1960 est.) of 92,301, mainly Sunni Muslims. Male (pop., 12,000), on Male atoll, is the capital. The Maldive archipelago is a self-governing sultanate (Sultan Mohamed Farid Didi), under the protection of Great Britain. Fishing and the cultivation of coconut palms, millet, fruit, and edible nuts are the chief occupations. The main export is dried bonito, which accounts for 95% of the islands' exports. Gan Island in Addu atoll has been leased to Great Britain for 30 years (effective from December 1956), and is used as a naval anchorage and airbase. In 1960 an airstrip was built at Hulele, about 300 miles north of Gan.

MALGACHE REPUBLIC. See MALAGASY.

MALI

The Republic of Mali (formerly the Soudanese Republic) is situated in inland northwestern Africa, and has an estimated area of 464,873 square miles, mostly desert. The population of 4,100,000 (est. 1961) comprises Hamitic and Negro peoples, as well as about 7,000 nonindigenous persons, mainly French. The official language is French. The capital and principal city is Bamako (1961 est. pop., 120,000).

Government.—This former territory (French Sudan or Soudan) within French West Africa attained independence as a component (with Senegal) of the Mali Federation on June 20, 1960. The Soudanese Republic changed its name to the Republic of Mali on Sept. 22, 1960, after Senegal withdrew from the federation. Mali joined Ghana and Guinea in a loose political association called the Union of African States, effective as of July 1, 1961. The republic has a National Assembly of 80 members elected for a five-year term by universal suffrage. Modibo Keita, leader of the ruling Soudanese Union, has been president of the republic since September 1960; he is also minister of foreign affairs and of defense and security.

Education and Religion.—Mali had 298 schools with an aggregate enrollment of 44,801 pupils (8.2% of the school-age population) in 1958. Muslims comprise about 63% of the population; animists, 36%; and Christians, less than 1%.

Finance.—Ordinary budget expenditure, 1961 est.: 11.7 billion francs CFA; capital equipment expenditure: 11.1 billion. The CFA franc was replaced as legal tender by the new Mali franc as of July 1, 1962; the Mali franc, issued by the new Bank of the Republic of Mali, is equivalent in value to the CFA franc, and 246.85 new francs equal the U.S. dollar. French assistance to Mali in 1961 amounted to 1.5 billion francs CFA in loans, and another 1.5 billion in economic grants.

Transportation.—Mali's main link with the Atlantic coast is the railway from Koulikoro to the Senegal border, via Bamako and Kayes, but the line has not been used since September 1960 because of the disruption in rela-

tions between Mali and Senegal. Since then the principal traffic outlet has been by road to Ivory Coast and thence by rail to the port of Abidjan, Ivory Coast, although the proposed extension of the Guinea railway to Bamako would give Mali an alternate route to the sea. Main roads (miles, 1961), 6,800; secondary roads, 4,700. The national airline, Air Mali, which began operations in 1961, provides both internal service and flights to Paris and to points in West Africa.

Production.—Basically an agricultural country, Mali is self-sufficient in food staples, livestock, and fish. Chief crops (metric tons, 1961 est.): millet and sorghum, 785,000; cassava, 200,000; rice, 190,000; unshelled peanuts, 83,000; corn, 62,000; sweet potatoes, 60,000; seed cotton, 11,000. Manufacturing is confined to the processing of agricultural products, principally peanut oil, polished rice, cotton goods, and beverages. Traditional handicrafts include leather goods, carpets, and rugs.

Foreign Trade.—Declared exports, 1961 est.: 9.3 billion francs CFA; imports, 11.8 billion. Chief exports: shelled peanuts (48,709 metric tons exported in 1961), cattle, fish, rice, cotton, and gum arabic. Mali's chief trading partners are France and neighboring nations within the franc zone.

Events, 1962.—President Keita's leftist government, which in the past has pursued militantly neutralist policies, took steps to normalize relations with France. Early in the year the two nations signed five agreements for cooperation in technical and cultural affairs, and for reciprocal preferential treatment in economic, monetary, and financial matters. The agreements, similar to those concluded between France and other former French African territories, were reached after lengthy negotiations. France agreed to contribute financial aid to Mali's four-year economic and social development plan (1961–65), which aims to increase the national product by 8% annually and is to cost an estimated 64 billion francs CFA.

The normalization of Mali-French relations, however, did not deter the Keita government from following a radically leftist course both at home and abroad. President Keita in late May paid an official ten-day visit to the Soviet Union, where he praised the accomplishments of the Soviet people and declared that Mali had "most firmly embarked on the road to socialism." After conferring in Moscow with Premier Khrushchev and other Soviet leaders, he signed a joint communiqué (published May 31) which declared that the views of the Mali and Soviet governments were "identical" on important world problems. The communiqué also promised Mali further Soviet economic and technical aid.

Following his departure from Moscow on May 31, Keita visited Czechoslovakia and West Germany. Mali's relations with West Germany have been very close despite the former's cooperation with the Communist bloc. West Germany, which has supplied trucks to transport Mali's important peanut crop, agreed in February 1962 to construct two peanut-processing mills in Mali at a cost equivalent to $3.25 million.

Demonstrations led by Malian merchants to protest the introduction of the Mali franc and new currency regulations occurred in Bamako on July 20. Ninety-one persons arrested at that time were tried in late September on charges that they had attempted to overthrow the government. Two leaders of the demonstrations were sentenced to death on October 1, but their sentences were later commuted to life imprisonment.

W. R. F.

MALTA

Lying in the Mediterranean Sea about halfway between Gibraltar and Suez, the State of Malta has a total area of 122 square miles, and a population (1961 est.) of 329,000. The state comprises the islands of Malta (95 square miles), Gozo, and Comino. Valetta (pop., 18,287) is the capital and chief port. Maltese and English are the official languages.

Under the constitution promulgated on Oct. 24, 1961, Malta became a self-governing state on March 3, 1962. Concurrent authority over defense and foreign affairs is exercised by Great Britain, acting through its high commissioner (Edward Wakefield, appointed March 6, 1962). The head of state is a British-appointed governor (Sir Maurice Dorman, appointed to succeed Admiral Sir Guy Grantham on April 7, 1962). Executive power is vested in a cabinet, headed by a prime minister (Georgio Borg Olivier), and is responsible to a 50-member Legislative Assembly elected by universal suffrage.

Government revenue for 1962–63 was estimated at £13,198,107; expenditure, £13,018,718. The capital budget was set at £6,881,010. School enrollment, 1961: primary, 61,700; secondary, 9,350; teacher-training, 234; vocational, 1,040; and higher, 320 (1960). Television broadcasting was inaugurated in September 1962.

Malta's economy is dependent to a large measure on British military installations and commercial drydocks. In 1961, exports were valued at £4.64 million; imports, £29.3 million. The principal exports were scrap metal, vegetables and vegetable oil, hides and skins, and flowers and seeds.

After a bitter electoral campaign in which strong pressure was brought against the Labour Party by the Roman Catholic hierarchy, the Nationalist Party, led by Georgio Borg Olivier, emerged in 1962 as Malta's leading party. In the elections of February 17–19, the Nationalist Party won 25 seats; Labour Party, 16; Democratic Nationalist Party, 4; Christian Worker's Party, 4; and the Progressive Constitutional Party, 1.

Following the proclamation of the State of Malta on March 3, 1962, Prime Minister Olivier requested that Britain relinquish control over the police and civil service. The request was granted on April 16, but further negotiations for the amelioration of Malta's economic difficulties resulted in stalemate. On August 20, Olivier announced that the Maltese government would seek complete independence for Malta within the Commonwealth of Nations.

MANCHURIA. A region of northeastern China. See China, People's Republic of.

MANGANESE

World production of manganese ore was estimated at 14,933,000 short tons in 1961, compared with 15,006,000 short tons in 1960. The accompanying table shows data on the United States manganese industry, based on compilations of the U.S. Bureau of Mines.

MANGANESE IN THE UNITED STATES
(Thousands of short tons)

	1958	1959	1960	1961
Mine shipments	327.3	229.2	80.0	46.0
Metallurgical ore	327.3	223.2	70.9	39.2
Battery ore	...[1]	6.0	9.1	6.8
Imports, general	2,452.6	2,397.8	2,543.8[3]	2,098.4
For consumption	1,798.6	1,878.1	2,277.0[3]	2,147.2
Available supply[2]	2,125.9	2,107.3	2,357.0[3]	2,193.2
Consumption	1,497.6	1,605.5	1,946.4	1,717.8
Ferromanganese-made	636.7	629.3	842.8	732.8

[1] Battery and metallurgical ore lumped. [2] Mine shipments plus imports for consumption. [3] Revised.

United States domestic production (shipments) in 1961 totaled 46,088 short tons (ore, concentrate, and nodules containing 35% or more of manganese), more than 42% less than in 1960 and less than 1% of the world output of manganese. The 1961 decrease reflected the expiration in July 1961 of the last government contract for purchase of domestic manganese ore. Consumption of manganese ore in the United States decreased 12% from 1960; domestic sources supplied only 1% of the total. The average grade of imported manganese ore was 47% manganese, compared with 47.7% for 1959 and 1960. Brazil supplied 35% of the total ore received in 1961; Republic of South Af-

rica, 12%; Ghana, 11%; Mexico, 9%; India and Republic of the Congo, 8% each; British Guiana and Morocco, 6% each.

In the first eight months of 1962, general imports of manganese ore totaled 1,515,185 short tons, and of ferromanganese (in terms of ore), 170,510 short tons; exports were 5,912 short tons of ore and 11,374 short tons of ferromanganese (in terms of ore).

(See also MINERAL PRODUCTION.)

MANITOBA

Manitoba, the central province of Canada, is bounded on the east by Ontario, on the west by Saskatchewan, on the south by the states of North Dakota and Minnesota, and on the north by the Northwest Territories and the 440-mile shoreline of Hudson Bay. Its area is 251,000 square miles, including 39,255 square miles of water. The population (1961 census) is 921,686, about 60% of which is urban. (The estimated population on June 1, 1962, was 935,000.) The capital of the province is Winnipeg, with a population of 265,429 (Greater Winnipeg, 474,374). Other cities and their 1961 populations include St. Boniface, 37,600; St. James, 33,977; Brandon, 28,166; East Kildonan, 27,305; St. Vital, 27,000; West Kildonan, 20,077; Transcona, 14,248; Portage la Prairie, 12,388; and Flin Flon, 11,104.

Government.—The British crown is represented by a lieutenant-governor, Errick F. Willis, who took office on Jan. 20, 1960. The provincial government was headed in 1962 by Premier Dufferin Roblin. Parties represented in the provincial Legislative Assembly (following the elections of Dec. 14, 1962) are Roblin's Progressive Conservative, 35 seats; Liberal, 13; New Democratic (the former Co-operative Commonwealth Federation), 8; and Social Credit, 1. Manitoba has 14 members in the federal House of Commons and 6 representatives in the Senate in Ottawa.

Finance.—As of March 31, 1961, surplus over expenditure was $9,388,112.30, from revenue of $103,038,602.24.

Education.—In the 1960–1961 school year there were in the province 1,361 school districts with operating classrooms having 192,747 pupils and 7,622 teachers. Construction of the Manitoba Institute of Technology, to accommodate 2,000 students, was expected to be completed in the spring of 1963. Six colleges are affiliated with the University of Manitoba. There is a teacher-training college, a technical vocational school, a medical college, and a dental college.

Public Health and Welfare.—Under the Manitoba Health Services Act, 14 local health units in 1961 served a total population of 442,216. Laboratory and X-ray units operate with headquarters at Selkirk, Virden, Dauphin, Neepawa, and Portage la Prairie. There are hospitals for mental diseases at Brandon, Selkirk, and Portage la Prairie, and a psychopathic hospital in Winnipeg. The compulsory provincial health insurance covers standard (public) ward care and includes X-rays, operating and laboratory facilities, and nursing services.

A hospital commission was established in 1962 to operate the hospital services plan. The Department of Health outlined a $58,596,000, eight-year hospital construction program with emphasis on chronic care institutions and diversified mental treatment centers.

Transportation and Communications.—The government-owned telephone system had 285,327 subscribers as of March 31, 1962. The province's railroads, exclusive of yard tracks and sidings, comprise 5,005 miles of tracks. Canadian National Railways' new $23 million Symington freight classification yard opened in September 1962 in St. Boniface. It automatically services, sorts, and sends up to 6,000 freight cars a day. Roads include 5,425 miles of all-weather roads (2,927 graveled, 2,289 bituminous, and 209 concrete), 3,848 miles of provincial trunk highways, 252 miles of secondary roads, and 1,990 miles of other roads, not including municipal roads.

Production.—Shipments of grain through the port of Churchill in 1961 totaled 19,400,000 bushels. The value of the province's dairy products amounted to $33,936,000; garden products, $9,090,000; poultry products, $23,093,000; fur farming, $3,000,000; honey, $881,000; field crops, which include only initial payments for wheat, oats, and barley, $108,724,000; and livestock, $82,855,000.

The fish catch amounted to 30,661,550 pounds, with a value to fishermen of $3,173,981 and a marketed value of $5,663,025.

The estimated value of mineral production in 1961 was $99,156,908, $71,928,597 of which was in metals. This total includes about 4,485,000 barrels of crude oil, valued at $10,200,000, and clay products, structural materials, peat moss, and salt.

The estimated value of raw furs exported in 1961 was $7,660,549, and the estimated value of processed furs, $4,357,636.

Events, 1962.—In the provincial elections of December 14, Premier Dufferin Roblin's ruling Progressive Conservative government won 35 seats and increased its majority in the Legislative Assembly by one seat. The Liberal Party gained three seats by electing 13 legislators. The New Democratic Party won 8 seats, a loss of one.

In Manitoba, the 150th anniversary of the arrival of the first agricultural settlers (Selkirk Settlement) was celebrated in 1962. Northern Manitoba centers in August celebrated the 50th anniversary of the extension of the provincial boundaries north to the 60th parallel.

Provincial royal commissions were appointed to study provincial-municipal relations and to review the operations of the metropolitan government of Greater Winnipeg. The Manitoba Labor Relations Act was amended to make labor unions legal entities and to include provision for government-supervised strike votes.

Construction of the 30-mile, $63 million floodway channel of the Greater Winnipeg Floodway began in October. A highway bridge across the Saskatchewan River at Grand Rapids, site of a $140 million hydroelectric power development under construction, was completed in September.

(See also WINNIPEG.)

CLEMENTINE COMBAZ,
Reference Librarian, Manitoba Provincial Library.

MANUFACTURING. See BUSINESS DATA, U.S.; INDUSTRIAL PRODUCTION.

MAO TSE-TUNG. See biographical sketch under CHINA.

MAPS AND MAPPING. See Index entry, *Cartography.*

MARCUS ISLAND. See PACIFIC ISLANDS.

MARGARINE. See DAIRY PRODUCTS.

MARIANA ISLANDS. See PACIFIC ISLANDS.

MARINE BIOLOGY

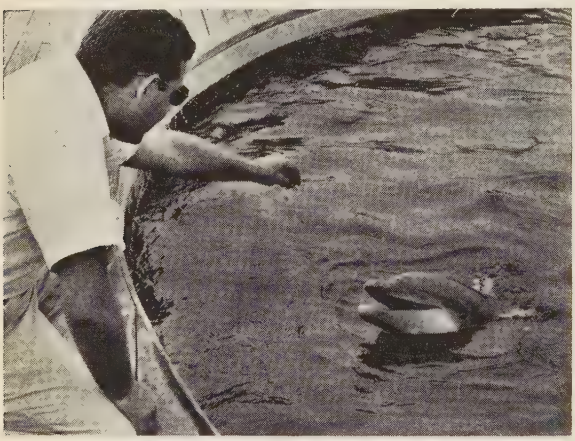
Among the subjects covered by research and publications in marine biology in 1962 were lobsters, dolphins, sharks, and Antarctic biology.

Lobster Development.—Valuable information on the biology and life history of the American lobster, *Homarus americanus*, which ranges along the 1,300 miles of coastline from Delaware to Labrador, was published in 1962, a result of ten years of hatching and rearing lobsters at the Massachusetts State Hatchery on Martha's Vineyard. Over 1.5 million lobsters have been reared to the fourth larval stage—at which they leave the hazards of planktonic life and settle to the bottom—and released along the coast.

From mating until the eggs hatch requires two years. The young molt about ten times during their first year; from two to five times, with decreasing frequency, during the next four years; and once a year thereafter. Hatching of eggs begins in May, when the water temperature rises to about 15°C., and is at its peak during June and July, when the water temperature is about 20°C. Development to the fourth larval stage takes 10 to 30 days, depending on the temperature (it is faster if the temperature is above 18°C.). A lobster must be about five years old before it reaches minimum legal marketable size (in Massachusetts). On the basis of observations at the hatchery, a one-pound lobster has consumed about 15 pounds of food. The lobster catch along the New England coast has been stable for ten years, indicating that the fishery is not depleting the present inshore population.

Dolphins.—The controversy concerning the technique used by dolphins to ride the bow waves of ships has been settled by motion pictures taken through underwater viewing ports installed in the bow of the U.S. Fish and Wildlife vessel *Charles H. Gilbert*. It seems clear in the film that dolphins use the entire body to take advantage of the forward component of bow wave forces, rather than being pushed by their flukes, as had been postulated. In a preliminary report of research in progress on these fascinating animals, Dr. J. C. Lilly expressed the opinion that the cacophony of sounds dolphins make may represent signals to each other. He also said that they can be taught to utter human words and to understand meanings. Dr. W. N. Kellogg of Florida State University discovered in the 1950's their ability to use echo location for catching food and avoiding objects in the dark. He wrote that some of the sounds were used to convey messages to each other. Kellogg summarized his research early in 1962.

Shark Problem.—There were 31 known shark attacks (six in the United States) during 1961, six of which were fatal, according to the Shark Research Panel of the American Institute of Biological Sciences. The sharks involved ranged from a two-foot banjo to a 2,500-pound white pointer and represented 17 different species. Of the six that occurred in the United States, three were in Florida and one each in South Carolina, California, and Hawaii.



LOCKHEED AIRCRAFT CORP.

Tank above was designed to study the sounds emitted by porpoises. Scientists have identified 18 sounds made by the mammals which presumably form a system of communication.

Dr. P. W. Gilbert has been studying shark behavior in special enclosures at the Lerner Marine Laboratory, Bimini, Bahamas. He believes that their highly developed eyes are important in food-seeking at distances of 50 feet or less in clear water, but that their sense of smell is also very important. Dr. R. E. Sheldon, working at Woods Hole, Mass., has shown that they may detect some substances in a concentration of less than one part per million of water by this keen sense, which may function a quarter mile or more from the source. Sharks are attracted by sounds and vibrations at much greater distances by their lateral line sense organ. Despite concerted efforts there is as yet no known practical shark repellant.

Antarctic Biology.—As a result of the work of scientists of several nations, but especially those associated with the U.S. Antarctic Research Program, much has been learned of the unique marine populations around Antarctica. Plant plankton, the basic producers in these fertile waters, support a teeming population of a red shrimplike crustacean (krill) which serves as food for many other animals, including whales, seals, penguins and other sea birds, and fish. Dr. R. C. Murphy warned that a catastrophic destruction of many of the animals of this biologically distinctive area could occur in a short time if predators were accidentally introduced—even escaped sled dogs.

Luminescent Organisms.—Two biologists of the Haskins Laboratory in New York succeeded in culturing the one-celled plankton dinoflagellate, responsible for the famous bioluminescence of Phosphorescent Bay, Puerto Rico. By growing these organisms in the laboratory, much will be learned of their physiology and ecology and why they make the waters of this bay glow so brilliantly. The organisms are close relatives of those causing the destructive red tides that have occurred along the Florida coast and elsewhere.

Octopus That Drills.—Biologists at the Scripps Institution of Oceanography in California have reported that at least two species of octopus are able to drill a hole through the shell of a mollusk, inject a venom, and then eat the mollusk when the muscles relax and the shell gapes.

Indian Ocean Expedition.—Former President Harry S Truman's yacht *Williamsburg* will become the United States biological vessel of the International Indian Ocean Expedition. It will undertake a series of cruises in 1963 and 1964 with scientists representing virtually every aspect of marine biology. Following its conversion for oceanographic research, the vessel was renamed *Anton Bruun* in honor of a noted Danish biological oceanographer.

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MARINE CORPS, U.S.

Three major events in 1962 highlighted the activities of the U.S. Marine Corps, which, under Gen. David M. Shoup, the corps' 22d commandant, continued to serve as the nation's amphibious force-in-readiness. These were the orbital flight of Marine Lt. Col. John H. Glenn, Jr.; the landing of Marines in Thailand; and the Marines' participation in the Cuban crisis alert.

On February 20, Colonel Glenn completed a three-orbit flight aboard his space capsule, *Friendship 7*. A 20-year veteran of Marine aviation, he became the first American to orbit the earth. (See also SPACE FLIGHT.)

In May, 3,000 combat-ready Marines landed in Thailand after President Kennedy announced the United States decision to assist the Thai in protecting their territorial integrity. The force, composed of the 3d Marine Division and the 1st Marine Aircraft Wing, was withdrawn in July when the crisis abated. Similarly, a Marine helicopter squadron moved into South Vietnam in early 1962 to help meet Communist aggression.

In late October, Marine Corps units were alerted for a possible move into the Caribbean area in connection with the quarantine of Cuba. At the same time, the secretary of the Navy ordered extensions in service of Marines whose tours would have expired before Feb. 28, 1963.

In a reorganization of Marine Corps reserve forces on July 1, a fourth division and air wing were formed within the Organized Reserve structure. The move affected nearly one half of the 45,000 Reservists who stand ready to augment the three Regular divisions and air wings.

Throughout 1962 the Marine Corps maintained its authorized active duty strength of 190,000 of-

ficers and men. Nearly two thirds of this number served in the corps' Atlantic and Pacific Marine Fleet Forces. Principal combat units with the Pacific component included: Force Troops Pacific, based at Twentynine Palms, Calif.; three integrated air-ground teams composed of the 1st Marine Division, Camp Pendleton, Calif., and the 3d Marine Aircraft Wing, El Toro, Calif.; the 3d Marine Division minus one reinforced infantry regiment, Okinawa; the 1st Marine Aircraft Wing minus one air group, Japan; and the 1st Marine Brigade, Kaneohe Bay, Hawaii.

The Fleet Marine Force, Atlantic, based on the east coast of the United States, included Force Troops Atlantic and the 2d Marine Division at Camp Lejeune, N.C., and the 2d Marine Aircraft Wing at Cherry Point, N.C.

In addition, battalion landing teams operated with the Seventh Fleet in the Far East and the Sixth Fleet in the Mediterranean. A battalion landing team and an aircraft squadron were stationed in the Caribbean.

(Information for the foregoing article was furnished by Headquarters, U.S. Marine Corps.)

MARINER SPACE PROBE. See SPACE FLIGHT.

MARITIME ADMINISTRATION. See MERCHANT MARINE.

MARRIAGE AND DIVORCE

In 1962, for the first time in several years, there was a substantial increase in marriages relative to the increase in population in the United States, according to figures for the first five months. During the previous five years, marriages either declined in proportion to the increase in population or remained static.

Marriage Data.—The marriage rate in the United States in 1962 was little more than half that of the immediate postwar years. In 1946 there were 16.4 marriages per thousand population, compared with 8.6 in 1962. During 18 of the preceding 23 years, the marriage rate was higher than in 1962.

It was expected that during the next few years, barring a severe economic setback, new family formation would increase at a rapid rate. With the new supply of manpower in the productive ages and new family formation, an unprecedented demand for housing and land was expected. Business in the area of household furnishings, appliances, children's clothes, toys, etc., was expected to expand greatly, along with demand for professional services and school and church facilities.

U.S. MARRIAGE AND DIVORCE DATA, 1958–62

	Marriages			Divorces		
Year	Number of marriage licenses[1]	Rate per 1,000 pop.	Percentage change	Number of divorces[1]	Rate per 1,000 pop.	Percentage change
1962	1,603,000[2]	8.6	1.2	401,000[3]	2.2	−4.3
1961	1,547,000	8.5	0.0	420,000	2.3	0.0
1960	1,528,000	8.5	0.0	409,000	2.3	3.3
1959	1,506,000	8.5	1.2	396,000	2.2	4.8
1958	1,451,000	8.4	−5.6	368,000	2.1	−4.5

[1] Based on population excluding armed forces overseas. [2] Estimates based on licenses issued during the first five months. [3] Estimate based on divorces in 34 states for the first five months; divorce figures include annulments.

Divorce.—The divorce rate in the United States fell during the first five months of 1962 by 4.3%. It was only about half as high, in ratio to population, as in 1946, the peak year, when there were 610,000 divorces. It appeared on the basis of available figures that divorces during 1962 would be the lowest in number since 1959.

Canada.—The marriage rate in Canada declined in 1962. Although Canada had a large youth group, many marriages apparently were deferred because of depressed economic conditions. The number of marriages fell from 132,474 in 1959 to 130,338 in 1960 and 128,475 in 1961.

The Canadian divorce rate is only a fraction of that of the United States, and the trend is downward. In 1960 there were 6,870 divorces in Canada, a rate of 0.39 per thousand. In 1961 there were 6,486 divorces, a rate of 0.36 per thousand. The postwar peak in Canada was 0.66, in 1946. Rates in Canada in 1962 ranged from 0.13 in Newfoundland to 1.64 in the Yukon.

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MARS. See Index entry.

MARSHALL ISLANDS. See PACIFIC ISLANDS.

MARTINIQUE

A French overseas department, Martinique is an island in the Caribbean Sea, southeast of Puerto Rico. It has an area of 425 square miles and a population (1961 est.) of 276,000, mainly of Negro-Carib-European descent. Fort-de-France (pop. est., 70,000) is the capital and chief city.

The department is administered by a French-appointed prefect (Michel Grollemund) and a 36-member General Council which is elected by universal suffrage. The 1960 budget was balanced at 6,400 million francs (493.7 francs equal the U.S. dollar). In 1961 there were 215 elementary schools (with 63,470 pupils), 2 secondary schools (3,043 pupils), and a technical college (854 students). The Institute of Juridical Studies had 246 students.

Chief cash crops and 1961 exports (in metric tons): bananas, 137,755; sugar, 74,344; and rum, 11,931. Total exports, 1961: 16,584 million francs; imports, 25,086 million. About 75% of the imports came from France, which bought nearly all of Martinique's exports. There are about 700 miles of roads on the island. Lamentin Airport handles jet aircraft.

MARYLAND

A Middle Atlantic state of the United States, Maryland ranks 42d among the states in area (land, 9,874 square miles; inland water, 703) and 21st in population (3,191,000 on July 1, 1962, a 2.9% increase from the 1960 census figure of 3,100,689). Urban places with populations above 15,000 in 1960:

Annapolis (*capital*)	23,385	Loch Raven[1]	23,278
Arbutus-Halethorpe-Relay[1]	22,402	Parkville-Carney[1]	27,236
Baltimore	939,024	Pikesville[1]	18,737
Bethesda[1]	56,527	Rockville	26,090
Catonsville[1]	37,372	Salisbury	16,302
College Park	18,482	Silver Spring[1]	66,348
Cumberland	33,415	Stoneleigh-Rodgers Forge[1]	15,645
Dundalk[1]	82,428	Takoma Park	16,799
Essex[1]	35,205	Towson[1]	19,090
Frederick	21,744	Wheaton[1]	54,635
Hagerstown	36,660	Woodlawn-Rockdale-Milford Mills[1]	19,254
Hillcrest Heights[1]	15,295		
Hyattsville	15,168		

[1] Unincorporated place.

Government.—Chief executive and judicial officers in 1962 included J. Millard Tawes (Democrat), governor, serving a four-year term; Lloyd L. Simpkins, secretary of state; Hooper S. Miles, treasurer; Leo J. Parr, auditor; Thomas B. Finan, attorney general; Thomas G. Pullen, superintendent of education; and Frederick W. Brune, chief justice of the 7-member Court of Appeals.

The Maryland General Assembly, which convenes annually, comprised 26 Democrats and 3 Republicans in the Senate in 1962 and 116 Democrats and 7 Republicans in the House of Delegates.

Legislation, 1962.—Major bills enacted by the General Assembly in a 30-day session included: a plan to set up a program for insuring accounts in savings and loan associa-

tions; a bill to regulate the home improvement industry; an act providing for more stringent regulations for the sale of stocks and bonds; a tightening of referendum procedures by requiring an increase in the number of signatures; and a $556 million budget, carrying no tax increase.

The legislators voted a pay increase for themselves (a measure rejected at the polls in November), and provided salary increases for circuit judges, teachers, and state classified workers. The legislature voted $5 million in state matching funds to help localities build junior colleges.

Governor Tawes called the General Assembly into special session in late May as a result of a decision of the Court of Appeals on reapportionment in the state. The Assembly enacted a stopgap measure which provided for four additional delegates each for Montgomery and Prince Georges counties, seven for Baltimore County, three for Baltimore City, and one for Anne Arundel County. Unless the General Assembly authorizes and the voters approve a permanent constitutional change by 1966, the House of Delegates will return to its present membership of 123 members in 1970. No provision was made to change the composition of the Senate. (See also below, *Events, 1962.*)

Finance.—In the 1962 fiscal year, revenue of $566,599,000 included $430,643,000 from state taxes and $84,228,000 in federal funds. Chief tax yields were the 3% general sales tax ($90,965,000) and taxes on individual incomes ($99,423,000) and motor fuels ($58,316,000). Spending of $552,135,000 included $156,215,000 for education, $112,351,000 for health, welfare, and safety, and $131,612,000 for highways.

Education.—In the 1960–61 school year, public elementary schools staffed by 12,977 teachers enrolled 357,708 pupils; junior and senior high schools with 11,655 teachers enrolled 249,101; and private and parochial schools with 4,643 teachers enrolled 132,067. College enrollment totaled 54,686 in 44 institutions, including 15 junior colleges and 29 senior colleges and universities.

Estimated public school spending in the 1961–62 school year totaled $346.2 million, including current expenditures of $258.4 million ($443 per pupil) and capital outlays of $70 million. Revenue of $346,150,000 was drawn chiefly from state funds ($105,370,000) and local districts ($162,180,000). Teachers' salaries averaged $5,940 (high school, $6,000; elementary, $5,900). Actual spending for higher education (1961 fiscal year) totaled $45,820,000.

Public Assistance.—In the 1962 fiscal year, public assistance payments to a monthly average of 71,163 persons totaled $28,625,693. This amount included $16,065,787 for dependent children (exclusive of foster care payments) and $5,760,075 for the aged.

Transportation and Communications.—With 106 miles of highway construction and reconstruction completed during 1961, *highways and roads* on Dec. 31, 1961, totaled 18,973 miles (14,957 surfaced). These served 1,413,400 *motor vehicles* (as registered on Aug. 31, 1962), including 1,016,587 automobiles. Operating in the state in 1962 were 13 *railroads* (using 1,320 line miles of track); 13 regularly scheduled *airlines* and 46 commercial and municipal *airports*.

Communications media included (1962) 40 AM and 23 FM *radio stations;* 1 UHF and 3 VHF *television stations;* (1961) 12 daily *newspapers* (circulation, 749,299); and (Jan. 1, 1962) 362,500 business and 1,029,700 residential *telephones*.

Labor Force.—The state's labor force in June 1962 included 52,300 agricultural workers. Nonagricultural employment totaled 1,057,200, compared with 1,032,500 a year earlier and an average of 1,030,100 for the 12 intervening months. Of nonfarm employees, 24.5% were in manufacturing, 19.2% in trade, and 14.9% in government services. Unemployment in June 1962 stood at 60,700, compared with 71,500 a year earlier.

Manufacturing.—Manufacturing engaged an average of 255,881 persons in 1961 and provided a payroll of $1,387,541,425, according to the Maryland Department of Employment Security.

LEADING MARYLAND MANUFACTURES, 1960

Industry group	Total employees	Total payroll	Adjusted value added by mfr.[1]
		(in thousands)	
Totals	*255,224*	*$1,338,814*	*$2,680,887*
Primary metals	37,006	232,748	475,729
Food and kindred products	34,192	139,108	352,906
Transportation equipment	32,473	213,021	346,009
Chemicals and products	14,559	73,232	222,143
Electrical machinery	19,584	120,793	189,378
Fabricated metals	13,751	75,217	145,379
Apparel and related products	21,502	73,503	132,478
Nonelectrical machinery	11,219	65,620	130,579
Printing and publishing	13,169	72,456	121,456

[1] For definition, see footnote 1 in the article *Industrial Production.* (Source: *1960 Annual Survey of Manufactures.*)

Fisheries.—The commercial fish and shellfish catch in 1961 totaled 66,478,773 pounds, valued at $12,778,189. Leading species were oysters (10,332,040 pounds valued at $7,802,392), crabs (29,350,590; $2,081,013), and clams (5,219,532; $1,453,942).

Mining.—In 1961, Maryland ranked 36th among the states in the value of its mineral output, with 0.34% of the national total. The total value, $62,264,000, was 12% higher than in 1960. Maryland was second in output of marl, and fifth in potassium salts. Leading minerals were stone (valued at $21,153,000) and sand and gravel ($16,894,000).

Agriculture.—Cash farm income for the first nine months of 1962 (excluding government payments) totaled $204,155,000, compared with $200,177,000 for the corresponding period of 1961. For the full year 1961, income comprised $180,013,000 from livestock, $96,367,000 from crops, and $5,873,000 in government payments. Principal income sources in 1961 were wholesale milk, $70,568,000; broilers, $58,947,000; cattle, $28,955,000; and tobacco, $22,092,000.

The state's 25,000 farms in 1959 had an acreage of 3,457,000 (1,456,000 in harvested cropland). Livestock on farms included (Jan. 1, 1962) 498,000 cattle, 194,000 hogs, 1,770,000 chickens, and (1961) 107,953,000 broilers. An average of 38,000 family and 18,000 hired workers engaged in farming during 1961.

MARYLAND CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Apples (1,000 bu.)	1,270	1,600	1,350
Beans, snap (1,000 cwt.)	96	116	101
Corn for grain (1,000 bu.)	20,892	22,140	21,240
Peaches (1,000 bu.)	469	420	450
Soybeans (1,000 bu.)	3,413	6,168	5,740
Tomatoes (1,000 cwt.)	280	260	270
Tobacco (1,000 lb.)	36,961	38,400	39,425
Wheat (1,000 bu.)	4,637	3,692	3,483

(Source: U.S. Department of Agriculture.)

Events, 1962.—In the general election of November 6, Gov. J. Millard Tawes, Democrat, was reelected and Rep. Daniel B. Brewster, 39-year-old Democrat, won the seat in the U.S. Senate vacated by retiring Republican Sen. John Marshall Butler. Tawes scored easily over former Rep. Frank Small, Jr., and Brewster polled 62% of the vote against Edward T. Miller, also a former congressman. The Democrats also won the state offices of comptroller and attorney general.

Maryland's new seat in the U.S. House of Representatives, run on an at-large basis, was won by Democrat Carlton R. Sickles. The Republicans' only House incumbent, Rep. Charles Mathias, was reelected, and the GOP added another seat when Rogers C. B. Morton ousted Democrat Thomas F. Johnson, who was under federal indictment in connection with the state's savings and loan scandals.

In the General Assembly, the Republicans picked up 4 seats in the Senate and 18 seats in the House of Delegates. Republicans now number 7 in the 29-member Senate and 25 in the 142-seat House of Delegates.

A congressional redistricting plan passed by the General Assembly in 1961, which would have set up a new 8th Congressional District comprising Prince Georges and Howard counties, was defeated by the voters. The General Assembly must now devise a new plan or leave the new seat to be filled on an at-large basis indefinitely. Voters turned down a pay raise for members of the General Assembly, and approved a tightening of insurance

laws and legislation increasing requirements to petition acts of the General Assembly to referendum.

The Maryland Court of Appeals in April ordered the Circuit Court of Anne Arundel County, where a reapportionment suit had been brought, to determine whether the state's urban voters suffered "invidious discrimination" in the apportionment of the General Assembly. This decision paved the way for a special session of the General Assembly which passed legislation reapportioning the House of Delegates (see above, *Legislation, 1962*). In July the Court of Appeals rejected a plea for greater suburban representation in the state Senate, ruling that population does not have to be taken into account in assigning Senate membership. The Maryland Committee for Fair Representation planned to appeal the decision to the U.S. Supreme Court. (See also REAPPORTIONMENT AND REDISTRICTING.)

Governor Tawes named a commission, headed by Professor Franklin L. Burdette of the University of Maryland, to draft a permanent reapportionment plan for submission to the General Assembly at its 1963 session. The permanent measure would be in the form of a constitutional amendment.

(See also BALTIMORE.)

"Legislation" and "Events" by:
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MASSACHUSETTS

A New England state of the United States, Massachusetts ranks 45th in area among the states (land, 7,867 square miles; inland water, 390) and 10th in population (5,161,000 on July 1, 1962, an 0.2% increase from the 1960 census figure of 5,148,578). Urban places, including towns (T), with populations above 25,000 in 1960:

Arlington T.	49,953	Medford	64,971
Attleboro	27,118	Melrose	29,619
Belmont T.	28,715	Methuen T.	28,114
Beverly	36,108	Milton T.	26,375
Boston (*capital*)	697,197	Natick T.	28,831
Braintree T.	31,069	Needham T.	25,793
Brockton	72,813	New Bedford	102,477
Brookline T.	54,044	Newton	92,384
Cambridge	107,716	Northampton	30,058
Chelsea	33,749	Peabody	32,202
Chicopee	61,553	Pittsfield	57,879
Everett	43,544	Quincy	87,409
Fall River	99,942	Revere	40,080
Fitchburg	43,021	Salem	39,211
Framingham T.	44,526	Somerville	94,697
Gloucester	25,789	Springfield	174,463
Haverhill	46,346	Taunton	41,132
Holyoke	52,689	Waltham	55,413
Lawrence	70,933	Watertown T.	39,092
Leominster	27,929	Wellesley T.	26,071
Lexington T.	27,691	Westfield	26,302
Lowell	92,107	Weymouth T.	48,177
Lynn	94,478	Woburn	31,214
Malden	57,676	Worcester	186,587

Government.—Chief executive and judicial officers in 1962 included John A. Volpe (Republican), governor, serving a two-year term; Edward F. McLaughlin, lieutenant governor; Kevin H. White, secretary of state; John T. Driscoll, treasurer; Thomas J. Buckley, auditor; Edward J. McCormack, Jr., attorney general; Owen B. Kiernan, commissioner of education; and Raymond S. Wilkins, chief justice of the 7-member Supreme Judicial Court.

The Massachusetts General Court (legislature), which convenes annually, comprised 25 Democrats and 15 Republicans in the Senate in 1962 and 150 Democrats, 84 Republicans, and 6 vacancies in the House of Representatives.

Legislation, 1962.—The General Court adjourned on July 27 after passing a record budget of $516,048,183. Bond issues amounting to $210,275,000 also were voted.

Some of the most notable bills passed related to public higher education. The University of Massachusetts was given fiscal autonomy from state agency control, and the other educational institutions gained greater freedom in hiring professional staff members. A medical school was established as part of the university, and the authorized enrollment at state institutions was increased from 17,180 to 21,989. On the elementary and secondary schools level, minimum salaries of schoolteachers were increased.

The code-of-ethics legislation passed in 1961 was strengthened, and a recommendation by Governor Volpe that a seven-member crime commission be established was approved. Governor Volpe also secured passage of a bill to audit the books of the Massachusetts Turnpike Authority and the Massachusetts Parking Authority, and vetoed a bill to give the Turnpike Authority control over the leasing of "air space rights" for buildings constructed over the toll-road extension into Boston.

The law covering political contributions and expenditures was revised to require candidates to make periodic reports during the campaign. A compromise was reached on another matter, the reapportionment of congressional districts. The state's delegation to the House of Representatives was reduced from 14 to 12, with one Democratic and one Republican seat being eliminated.

The Commission on Administration and Finance was reorganized into the Executive Office on Administration and Finance, working directly under the governor. Laws governing business activities on Sunday were liberalized, but Sabbatarians lost their fight for the Sunday opening of businesses which are closed for religious reasons on Saturday. Efforts to bring about a popularly elected constitutional convention were defeated, as were bills to legalize "beano," a state lottery, and off-track betting.

The state minimum wage was increased from $1.15 to $1.25 an hour (effective September 1963), and higher workmen's compensation benefits were approved.

Finance.—In the 1962 fiscal year, revenue of $730,878,785 included $399,315,171 from state taxes and $187,172,331 in federal funds. Chief tax yields were from individual incomes ($112,587,188), corporate incomes ($52,900,430), and motor vehicles ($81,850,347). Spending of $720,818,348 included $105,344,229 for education, $263,212,687 for health, welfare, and correction, and $157,103,921 for highways and waterways.

Education.—In the 1961–62 school year it was estimated that public elementary schools staffed by 21,190 teachers enrolled 604,000 pupils; secondary schools with 15,350 teachers enrolled 344,000; and parochial schools with 7,080 teachers enrolled 234,166. College enrollment totaled 138,167.

Estimated public school spending in the 1961–62 school year totaled $430.9 million, including current expenditures of $380 million ($450 per pupil) and capital outlays of $48 million. Revenue of $382 million was drawn chiefly from state funds ($93 million) and local districts ($270 million). Teachers' salaries averaged $5,775 (high school, $5,975; elementary, $5,625). Actual spending for higher education (1961 fiscal year) totaled $30,447,000.

Public Assistance.—In the 1961 fiscal year, public assistance payments to a monthly average of 115,185 persons totaled $155,999,924. This amount included $76,182,368 for the aged and $28,542,287 for dependent children.

Transportation and Communications.—With 197 miles of highway construction and reconstruction completed in 1961, *highways and roads* on Dec. 31, 1961, totaled 26,440 miles (24,440 surfaced). These served 1,876,906 *motor vehicles* (as registered on Aug. 31, 1962), including 1,665,020 automobiles. Operating in the state were (1960) 8 *railroads* (using 1,506 line miles of track); (1962) 14 regularly scheduled *airlines;* and 47 commercial and municipal *airports* and 4 seaplane bases.

Communications media included (1962) 59 AM and 39 FM *radio stations;* 4 VHF and 6 UHF *television stations;* (1961) 50 daily *newspapers* (circulation, 2,386,572); and (Jan. 1, 1962) 701,800 business and 1,752,100 residential *telephones.*

Labor Force.—The state's labor force on July 15, 1962, included a total of 1,949,600 nonagricultural

Edward Kennedy (left) and Edward McCormack, rivals for the Massachusetts Democratic senatorial nomination, debate on August 27. Kennedy won nomination and November 6 election.

WIDE WORLD

workers, compared with 1,939,700 a year earlier and an average of 1,936,300 for the 12 intervening months. Of nonfarm employees, 34.4% were in manufacturing, 20.2% in trade, and 16.9% in service industries. Unemployment on June 15, 1962, stood at 122,500, compared with 140,900 a year earlier.

Manufacturing.—Manufacturing engaged an average of 492,002 workers in 1960 and provided a payroll of $2,056,791,692. The value of products manufactured in the state totaled $10,565,422,271.

LEADING MASSACHUSETTS MANUFACTURES, 1960

Industry	Persons employed	Gross wages (in thousands)	Value of product[1] (in thousands)
Electrical machinery	51,562	$223,090	$1,100,846
Foundry & machine-shop products	23,211	113,943	461,438
Boots and shoes (nonrubber)	34,900	112,880	397,365
Women's clothing	25,923	69,978	323,443
Printing and publishing	16,729	84,392	323,096
Rubber goods	12,150	61,077	320,141
Paper and wood pulp	10,202	53,238	260,225
Chemicals (unclassified)	4,915	28,002	252,997
Fabricated plastics	11,635	41,719	213,628
Woolen and worsted goods	11,386	42,373	193,343

[1] FOB plant. (Source: Massachusetts Department of Labor and Industries, Division of Statistics.)

Mining.—Massachusetts ranked 42d among the states in the value of its mineral output in 1961, with 0.17% of the national total. It was fourth in production of sheet mica. Nearly all of the total value ($30,234,000) was represented by sand and gravel ($14,958,000) and stone ($13,399,000).

Fisheries.—The commercial fish and shellfish catch at Massachusetts ports in 1961 totaled 431,643,662 pounds valued at $32,900,189. Leading species were haddock (114,412,527 pounds valued at $9,662,241) and scallops (21,034,227; $8,009,852).

Agriculture.—Cash farm income for the first nine months of 1962 (excluding government payments) totaled $110,482,000, compared with $111,872,000 for the corresponding period of 1961. For the full year 1961, income comprised $94,594,000 from livestock, $57,062,000 from crops, and $638,000 in government payments. Principal income sources in 1961 were wholesale milk, $39,130,000, and eggs, $25,342,000.

The state's 11,000 farms in 1959 had an acreage of 1,142,000 (291,000 in harvested cropland). Livestock on farms on Jan. 1, 1962, included 153,000 cattle and 3,152,000 chickens.

MASSACHUSETTS CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Apples (1,000 bu.)	2,450	3,150	2,900
Corn for grain (1,000 bu.)	185	124	136
Cranberries (bbl.)	578,900	472,000	770,000
Potatoes (1,000 cwt.)	1,260	1,511	1,408
Tobacco (1,000 lb.)	8,149	4,370	4,932
Tomatoes (1,000 cwt.)	256	209	214

(Source: U.S. Department of Agriculture.)

Events, 1962.—The Massachusetts general elections of 1962 attracted national attention, especially with respect to the contest to fill the U.S. Senate seat vacated by President Kennedy and temporarily filled by Benjamin A. Smith. In the Democratic primary on September 18, the president's brother, Edward M. Kennedy, 30, defeated Attorney General Edward J. McCormack, Jr., nephew of House Speaker John W. McCormack. At the same time, George Cabot Lodge, son of former Senator and UN Ambassador Henry Cabot Lodge, won the Republican nomination from Rep. Laurence Curtis. In the November 6 election, Kennedy defeated Lodge, 1,162,611 to 877,669. An independent candidate, H. Stuart Hughes, Harvard professor who campaigned on a platform of nuclear disarmament, received 50,013 votes.

In the gubernatorial election, the Democratic candidate, Endicott Peabody, won a narrow victory over the Republican incumbent, John A. Volpe. After a recount, Peabody's margin was established at 5,431 votes. Democrats won the other statewide contests, with the exception of that for attorney general, in which Republican Edward W. Brooke became the first Negro elected to state office. The Democrats retained control of both houses of the General Court by wide margins, increasing their Senate seats by 3 (giving them 28 out of 40), but losing 3 House seats to reduce their superiority to 150–90.

The voters also rejected a constitutional amendment which would have permitted graduation of the income tax, and repealed a pay increase for the legislators.

At various times of the year, public attention was focused on charges of corrupt activities. State Rep. Harrison Chadwick was censured by the General Court for asserting on a nationwide television program that some legislators were connected with illegal bookmaking. State Rep. Charles Iannello served four months in jail in connection with the Metropolitan District Commission scandal. Six men were indicted and charged with fraudulent acts in relation to the Massachusetts Parking Authority, which operates the garage under the Boston Common.

Transportation difficulties also made news at times during the year, including a strike against the Metropolitan Transit Authority in March. The Mass Transportation Commission announced an experimental plan costing a total of $10,200,000, three fourths of which was provided by the federal government.

The economy of the state was at a generally prosperous level, with employment in defense-related industries and communications equipment gradually increasing. Some communities, notably in Bristol and Essex counties, participated in programs operated under the Area Redevelopment Act.

Studies of major state problems by special commissions began or were continued, including a survey of the entire educational system in the state and an investigation of the need for revising the state constitution. The Board of Regional Community Colleges opened a two-year college at Greenfield, and the University of Massachusetts announced a ten-year expansion plan with an estimated cost of $121,500,000.

The largest mail robbery in history occurred in Plymouth on August 14 when a mail truck was robbed of $1,551,277.

(See also BOSTON.)

"Legislation" and "Events" by:
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MATERIALS SCIENCE. See CERAMICS; PLASTICS; METALLURGY.

MATHEMATICS

The quadrennial International Congress of Mathematicians met in 1962 in Stockholm. The 2,400 mathematicians attending represented most of the countries where mathematical research is pursued. At every such congress two young mathematicians are awarded the Fields Medals for research conducted during the preceding four years. In 1962 the medals were awarded to John W. Mil-

nor of the United States and L. Hörmander of Sweden.

For the third successive congress, the new field of topology of differentiable manifolds has been represented—this time by medalist John W. Milnor of the United States. The importance of this field was already clear from the work of the Frenchman Henri Poincaré around 1900. Poincaré was seeking answers to questions about mechanical systems, especially systems of planets interacting by gravitational attraction: Does the system have motions which can repeat indefinitely, that is, which are periodic and stable? If the planets are not moving periodically, are there nevertheless configurations to which they will keep returning?

Despite its long history, this field is thought of as new because its status as a major independent branch of mathematics is recent. Its systematic treatment achieved some quick successes. Thus, all the compact 2-dimensional manifolds (beginning with sphere and doughnut-shaped torus) have long been known. Unexpectedly, even 3-dimensional manifolds proved intractable by methods such as Poincaré's, yet manifolds of 6 and more dimensions are required in analyzing even comparatively simple mechanical systems. The American J. W. Alexander and others produced ingenious counterexamples showing that generalizations which their contemporaries wished to prove were unfortunately false.

The devastating counterexample is also Milnor's hallmark. He showed in 1955 that two differentiable manifolds, though indistinguishable as topological spaces, could be essentially distinct in their differential properties; in 1961 he showed that they could even be decomposed into triangles, tetrahedrons, etc., in essentially irreconcilable ways. His proofs were by explicit description of manifolds of 7 and more dimensions, exhibiting phenomena to which no 3-dimensional intuition could be a guide. Milnor's ease in extra dimensions has been acquired by others, and there were reports at Stockholm on such subjects as knots in space of more than 3 dimensions. The "string" for such knots must be of more than the usual one dimension.

Today the fields of topology and measure theory, after a long period of independent development, are being brought to bear again on the problems of classical mechanics which inspired them. Advances of this sort were reported at Stockholm by S. Smale of the United States and Y. G. Sinai of the USSR.

Similarly, functional analysis, inspired before 1910 by the search for solutions of the differential equations of continuum mechanics and field theory, has returned lately to its starting point. In the past, mathematicians dealt primarily with functions belonging to Banach spaces (named in honor of the Polish mathematician S. Banach). Today the broader classes of generalized functions are utilized, of the kind introduced by the Russian S. L. Sobolev and the Frenchman L. Schwartz. Much new information is obtained concerning the existence and properties of solutions not yet computed, and methods by which to compute them. The second Fields Medal at the Stockholm Congress was awarded to L. Hörmander of Sweden for his leading role in this work.

The welter of new existence proofs created a mood of confidence which was shattered five years ago by the American H. Lewy. He showed that a certain linear partial differential equation—apparently quite innocuous—had no solutions whatever. Among his other contributions, Hörmander has greatly elucidated Lewy's example. Hörmander has set it into the context of a large class of differential equations for which no function, or even generalized function, is a solution.

CHANDLER DAVIS,
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MATTEI, Enrico

Italian industrialist and government official: b. Acqualagna, Italy, April 22, 1906; d. (in an airplane crash) near Milan, Oct. 27, 1962.

The son of an officer in the national police, Mattei began working when he was 14, and by the time he had reached his early 30's was operating a successful chemical firm near Milan. He joined the underground in World War II; by 1945 he was in command of the partisan forces in northern Italy. He was elected to Italy's first republican Parliament in 1945 as a member of the Christian Democratic Party. In the same year he was named northern commissioner of the Azienda Generale Italiana Petroli (Italian General Petroleum Agency), and soon headed the organization. Ordered to liquidate its assets, he continued instead to search for a source of fuel; in 1946 large methane deposits were found in Lombardy and near Milan. Appointed president of the newly organized Enze Nationale Idrocarburi (ENI, National Hydrocarbons Authority) in 1953, Mattei began formulating the exclusion of foreign oil companies from Italy, and turned ENI into a monopoly. Italy's oil production increased from 64 million cubic feet in 1946 to 5 billion cubic feet by 1958.

After being excluded (1954) from an Anglo-French-American-Dutch consortium in Iran, Mattei in 1955 obtained a drilling concession in the Sinai Peninsula from Egyptian President Gamal Abdel Nasser. He subsequently extended his operations to Iran, Sudan, Lybia, Tunisia, Somalia, Morocco, and Argentina. All of his agreements were based on a 75–25 division of royalties, with 75% remaining in the country of origin; this was a radical departure from the traditional 50–50 agreements negotiated by other Western powers. Mattei became one of the most powerful oil men in the world.

Wielding enormous political power in Italy, Mattei preferred to remain in relative obscurity. ENI owns gasoline stations, restaurants, an atomic power plant, and various factories, and Mattei had firm control of patronage. Yet he chose never to seek public office, and refused in 1959 to seek the prime ministership after the fall of a government headed by Amintore Fanfani.

MAURITANIA

Situated on the northwestern coast of Africa, the Islamic Republic of Mauritania has an estimated area of 419,229 square miles and a population (1960 est.) of 740,000. The majority of the population are nomadic Moors; a large minority of Negroes (Tukulör, Sarakolle, and Fulani) live in the Senegal Valley. The capital is Nouakchott (1961 est. pop., 6,000), a coastal village which is being reconstructed into a modern city. The national language is Arabic; the official language is French.

Government.—A former French overseas territory of French West Africa, Mauritania became independent on Nov. 28, 1960, and was admitted to the United Nations on Oct. 27, 1961. Executive power is vested in a president (Mokhtar Ould Daddah, elected Aug. 20, 1961); legislative power is in the hands of the unicameral National Assembly, whose 40 members were elected for five-year terms by universal suffrage on May 17, 1959. All the members of the National Assembly were members of the Mauritanian Regroupment Party, which united in Decem-

ber 1961 with all opposition parties to form a national political group known as the Party of the People.

Education and Religion.—School enrollment in 1958 constituted only 7.2% of the school-age population. Number of schools (with enrollments), 1960: 300 primary (9,000); 15 secondary (400). Islam is the state religion, but freedom of worship is guaranteed.

Finance.—Government revenue, 1962 est.: 2,481 million francs CFA; expenditure, 4,281 million; grant-in-aid from France, 1,800 million (246.85 francs CFA equal U.S.$1). In early 1962 the government established a development bank, with an initial capital of $608,000, of which Mauritania subscribed 58% and France 34%. Investment, 1961: authorized, 103 million French francs (31.7 million in 1960); expended, 49.8 million (9.59 million in 1960).

Transportation and Communications.—Transport is mainly by pack caravan, as there are no public railroads. Permanent dirt roads in 1958 aggregated 1,546 miles, including the 850-mile Trans-Mauritanian Highway. Port traffic, 1961: 152,000 tons. Motor vehicles number 1,300 (1957); radio receivers, 5,000 (1959).

Production.—The economy is based on subsistence farming and animal husbandry. Chief crops (with annual production estimates in metric tons): millet (100,000), dates (15,000), gum arabic (3,000), corn, rice, sweet potatoes, and peanuts. Marine products (metric tons, 1960): fresh fish (30,000), lobsters (1,300), lobster tails (700).

Foreign Trade.—Total exports, first 9 months of 1961: 351 million francs CFA; imports, 6,025 million. Chief export (in million francs CFA): fish (217); chief imports: iron and steel products (1,321), other metal products (614), automobiles (468). Principal customers: France and other countries in the franc zone; principal suppliers, France and the United States.

Events, 1962.—Mauritania's relations with neighboring Morocco and Mali remained strained during the year, as both countries continued to press their territorial claims against Mauritania. On May 2, three Mauritanian soldiers were executed and 21 sentenced to prison for an attack on a French officers' club in Nema, in southeastern Mauritania. It was claimed by Mauritania that the attack was inspired by Morocco and launched from a base in Mali.

Work continued during the year on Mauritania's major development projects: the iron deposits at Fort-Gouraud, being developed by Miferma (Société des Mines de Fer de Mauritanie); the copper deposits at Akjoujt, being developed by Micuma (Société des Mines de Cuivre de Mauritania); the 419-mile railroad from Fort-Gouraud to Port Étienne; and port facilities at Port Étienne.

J. L. L.

MAURITIUS

This densely populated British colony lies 500 miles east of Madagascar in the Indian Ocean. It comprises the island of Mauritius (area, 720 square miles) and several widely scattered island dependencies: Rodrigues (42 square miles; 1961 pop. est., 18,000); Diego Garcia (area, 11 square miles; pop. est., 650); and other coral island groups (aggregate area, 34 square miles). The total population (Dec. 31, 1961, est.) numbers 687,000, of whom 454,250 are Indo-Mauritians. Port Louis (pop. est. 113,065, including suburbs) is the capital and chief port. English and French are the official languages; Creole is the principal spoken language.

The colony is administered by a governor (John S. Rennie succeeded Sir Colville M. Deverell in September 1962). He is assisted by a 12-member Executive Council headed by a chief minister (S. Ramgoolam), and a 55-member Legislative Council (40 elected). Government revenue for 1962–63 was estimated at Rs.165,442,700; expenditure, Rs.164,965,460 (the Mauritius rupee equals U.S.$0.21). In 1961 the government conducted 120 primary, 3 secondary, 1 teacher-training, and 3 technical schools and 1 college, and aided 76 primary and 8 secondary schools (totaling 118,740 pupils). There were also 486 unaided primary and secondary schools (with 34,656 pupils). Transportation facilities include 77 miles of railroads, 740 miles of roads, and 15,669 motor vehicles. The airport at Plaisance is served by three foreign airlines.

Production of sugarcane, the principal crop, totaled 553,000 metric tons in 1961 (up 135% over 1960). Other crops include tea, aloe fiber, tobacco, and corn. Rum, soap, and matches are the chief manufactures. Total exports, 1961: £22 million; imports, £24 million. Chief exports: sugar (Rs.272,190,515), molasses (Rs.4,987,507), and tea (Rs.4,904,063).

MEAT INDUSTRY

The meat packing and processing industry in the United States buys the bulk of the livestock produced on nearly 4 million farms and ranches and provides farmers with approximately one third of their annual cash income. The industry includes the following: about 60 large terminal markets and several hundred markets of smaller size at which livestock is sold; approximately 2,800 meat packing plants and 1,500 meat processing plants; about 5,000 wholesale meat distributors; and 230,000 retail food stores at which meat is sold.

Sales of the meat industry in the United States in 1961 reached a new high of nearly $13.6 billion. Industry net earnings totaled $89 million, about six tenths of 1 cent per dollar of sales.

Meat production in the United States in 1962 was about 28.9 billion pounds. This included 15.5 billion pounds of beef (carcass weight), 11.6 billion pounds of pork, 1.0 billion pounds of veal, and 790 million pounds of lamb and mutton. Per capita consumption in 1962 averaged 89.0 pounds of beef, 5.5 pounds of veal, 5.0 pounds of lamb and mutton, and 63.0 pounds of pork, all of which totaled 162.5 pounds.

Generally, the United States does not export or import large quantities of meat. Foreign markets are valued by American meat packers as points of sale for such byproducts as lard, hides, and inedible fats. Additional markets for these byproducts are constantly being sought.

More than three quarters of meat production in the United States is processed in plants operated under federal inspection. The balance of the meat supply comes from plants operated under state or local regulations or is processed by farmers themselves, mainly for their own consumption.

(See also Food Research.)

Herbert B. Bain,
Director, Department of Public Information, American Meat Institute.

MEDICINE

Some progress was made in 1962 toward meeting the increasing need for physicians in the United States. Two new medical schools were accredited, bringing the total in the United States and its possessions to 87. One of these was formed from a college of osteopathy. Five additional universities were said to be proceeding with plans to establish medical schools, and seven other states were listed as probable sites of future schools. It has been estimated that it will be necessary to increase the number of medical graduates by 3,500 per year, by 1970. All of the new facilities mentioned above could be expected to furnish only a fraction of this number of additional doctors.

The proposal to use federal funds for new medical schools has met some opposition for fear that this course would lead to federal domination and regulation. At present, federal funds are available to medical colleges chiefly in the form

of research grants. Some medical educators feel that the use of these plentiful funds for research activities, but not for teaching facilities, leads to excessive diversion of personnel and interests to research, resulting in an anomalous situation in which medical research is interfering with medical education.

Total enrollment in medical schools in the United States and its possessions for the year 1961–62 was 31,078, an increase of 790 students over the preceding year. All schools graduated 7,168 new doctors, 174 more than in 1961. Physicians obtaining licenses for the first time numbered 8,023 (1961), of whom 1,580 were graduates of foreign medical schools. Deaths among doctors were estimated at 3,500, giving a net increase in physicians of approximately 4,500 during 1961.

After declining for four years, the number of applicants to American medical schools was stabilized for the year 1961–62. The American Medical Association (AMA), as well as other agencies, put into operation loan plans to assist students with the heavy expenses of medical education. The AMA also assisted with loans to displaced Cuban physicians now in the United States, to facilitate postgraduate training needed for work in the United States.

The federal administration's health program for the elderly, designed to be financed by compulsory taxation under the Social Security Act, again failed to pass Congress in 1962. It appeared that the limitations of this King-Anderson bill were not well understood by the population at large. The plan came to be known popularly as Medicare, but actually it provided for only limited hospital and nursing-home care for those retired under Social Security—and this without regard to whether or not they might need financial assistance.

Medical and hospital organizations continued to support private voluntary health insurance programs, which have shown such rapid growth in recent years, as the proper means of insuring good medical care. Low-cost programs for persons over age 65 were offered by Blue Cross and Blue Shield associations, as well as by commercial companies.

Further progress was made in various states toward extending programs of medical assistance to the aged under the existing Kerr-Mills amendments of 1960 to the Social Security Act. Under this law federal funds are used to increase benefits through locally administered state plans, based on the need of individuals for financial assistance. A proposed amendment would vary the standards required for demonstration of need according to the length of illness and effect of expenses on the individual's income. (See also OLD AGE; SOCIAL SECURITY; SOCIAL WELFARE.)

Meanwhile other problems of medical care were reported from around the world. Physicians in Saskatchewan, Canada, gave notice that they would not practice under a compulsory government-controlled medical care plan, and many closed their offices for "vacation" when the plan went into effect July 1, 1962, leaving only limited personnel for free emergency medical services in hospitals. After extensive negotiations, a compromise was reached. Provisions were made to permit physicians to practice outside the state program and to allow voluntary nonprofit health insurance plans to operate in conjunction with the government program. By November it was reported that probably one tenth of the physicians of the province had moved elsewhere and that a large majority of those remaining were practicing outside the government-controlled plan. (See also SASKATCHEWAN.)

In Great Britain, as had been anticipated, an "unusually large" increase of 11.5 percent in the cost of operation of the National Health Service plan of socialized medicine in 1961 was reported. This followed an increase of 8.2 percent in 1960 and brought expenditures to $2,265,000,000 for England and Wales, as compared with $967,075,600 in the first year the plan was in operation.

Even more significant was the report in the *British Medical Journal* that for the five years 1955–60, Britain lost 600–700 physicians a year by emigration to other countries. It was said that this represented the loss of one third of the country's yearly production of new doctors, and necessitated filling many hospital appointments with foreign graduates.

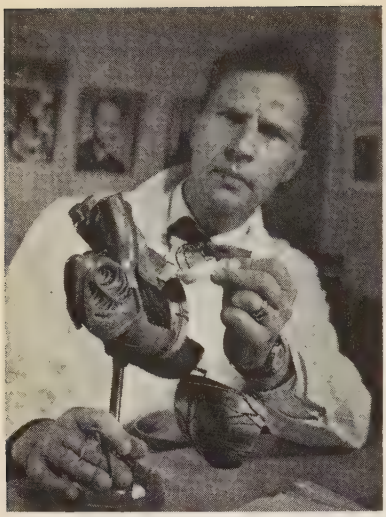
The 1962 Nobel Prize in medicine and physiology was awarded jointly to Francis Harry Compton Crick of Cambridge University, Maurice Hugh Frederick Wilkins of Kings College (London), and James Dewey Watson of Harvard University. The award was made for discoveries concerning the molecular structures of nucleic acids, including the demonstration that the deoxyribonucleic acid molecule is composed of a double-strand helix. (See also NOBEL PRIZES.)

Genetics.—The nucleic acids have been in the forefront of news of medical research in genetics, viruses, and cancer for a number of years. Several Nobel prizes have been awarded in medicine and chemistry for studies related to their structure, synthesis, and function. They generally are regarded as the fundamental life substance of living cells. Deoxyribonucleic acid (DNA) is believed to carry in its structure the genetic information of the cell. Ribonucleic acid (RNA) is believed to be synthesized by DNA in such fashion as to act as the messenger and template to carry the genetic directions to the manufacturing components of cells.

In producing the complex compounds, nature begins with relatively small building blocks. Thus, proteins are made up of large numbers of simple amino acids. These are assembled first into chains or groups, which then are joined to form the large molecule. In the Watson-Crick model of the DNA molecule the two strands of the double helix are composed of sugars and phosphate groups, with four organic bases acting as bridges between the strands at intervals. RNA also contains four bases, but one of these is different from those in DNA.

The basic research reported has been described as a breakthrough in the beginning of understanding of the genetic code of cells. In connection with the synthesis of messenger RNA, it was found that a given sequence of bases in the directing DNA molecule would lead to the production of RNA with a related pattern of number and type of bases in its structure. Such synthesis presumably carries the code of directions from DNA to the messenger and template RNA. Other investigators studying the influence of RNA on synthesis of amino-acid chains demonstrated similar control. To a cell-free system containing all 20 of the amino acids, ribosomes, and other raw materials for the synthesis, they added a type of RNA containing only one base, uracil. Under these conditions only one of the 20 available amino acids, phenylalanine, was incorporated into the chain. When another base was substituted in the RNA, a different amino acid was utilized. Reports indicated that it will be possible to learn what arrangement of bases or molecular structure in the coding units of RNA controls the utilization of each amino acid in protein synthesis.

The importance of the exact regulation of incorporation of amino acids is dramatically illus-



Scientist demonstrates how team at Uppsala Academy, Sweden, succeeded in inserting artificial valves in the human heart.

PICTORIAL PARADE

trated by genetic "mistakes" which occur in the synthesis of amino-acid chains of the protein hemoglobin of human red blood cells. It is known that when, because of genetic defect, one of the normally present amino acids (glutamic acid) is replaced by another (valine) in its sequence along the chain, abnormal hemoglobin will result and may lead to crippling anemia. This sickle cell anemia was the first such condition identified as a "molecular disease," but more than 20 abnormal human hemoglobins now are recognized.

Fascinating experiments were described during 1962 in which red blood cells from normal individuals were caused to produce abnormal sickle cell hemoglobin when incubated with material containing RNA obtained from the bone marrow of a patient with sickle cell anemia. In the reverse experiment, RNA-containing material from normal bone marrow caused young sickle red cells to make what appeared to be normal hemoglobin. It was presumed that the alteration of hemoglobin synthesis in each case was due to the introduction of a new RNA template.

Another inherited blood disorder (genetic defect) has come to light which involves a hazard of one type, but also a presumed environmental advantage in the form of increased resistance to severe malaria. About 10 percent of Negro troops treated with a new anti-malarial drug during the Korean War became severely anemic. This increased susceptibility to the drug was traced to a deficiency in their red blood cells of an enzyme, glucose-6-phosphate dehydrogenase. In malarial infections the parasites grow inside red blood cells, and they require this enzyme. Its deficiency thus could increase resistance to the disease.

Now studies of populations in malaria-infested areas of Africa have revealed frequent occurrence of the enzyme deficiency, but the trait was rare in other areas. Therefore, by a quirk of nature in generations past, individuals with a mutant genetic defect, which would have made them more susceptible to certain chemicals if they had been exposed, were rendered more resistant to a severe disease to which they were exposed. Thus, they were able to survive the disease and transmit the enzyme deficiency to their progeny. This discovery illustrates the complexity of factors which may influence the selection of "the fittest" for survival in the evolution of a population.

With the perfection of a simple diagnostic test, a new campaign was begun to detect another genetic disease, phenylketonuria, in newborn babies. The condition occurs only rarely, but early detection is imperative. Affected children are unable to metabolize the amino acid phenylalanine, and unless diet free from this substance is instituted, severe brain damage and mental retardation are apt to result. (See also BIOCHEMISTRY; GENETICS.)

Immunity.—One of the most active areas of medical research is the study of immune reactions, auto-immune processes, and auto-immune diseases. "Rheumatoid factor" found in persons with rheumatoid arthritis has been shown to react with various fractions of the gamma globulins of the blood, which carry antibodies. A prepared antiserum against certain hemolytic streptococci was found to react strongly with human heart tissue. (Rheumatic fever follows streptococcal infections and injury to the heart is its most serious effect.) It is assumed that in rheumatic fever the body forms antibodies against components of the streptococci, but because of cross-reaction, the antibodies also damage heart tissue.

Auto-antibodies to colon tissue have been demonstrated in the blood of patients with ulcerative colitis. Experimental production of a similar disease state in dogs by injecting them with prepared colon antiserum now has been reported. Some very severe anemias are due to destruction of red blood cells by auto-immune reactions. Attempts have been made to treat such anemia with 6-mercaptopurine which, like X-ray therapy, suppresses immune reactions. However, as in its application to tumor therapy, the toxicity of the drug limits its usefulness.

One of the significant developments of 1962 was the accumulation of evidence that the thymus gland is closely concerned with mechanisms of immunity. Its function has been a mystery over the years, but it now appears that the thymus, which is active early in life, is responsible for producing lymphoid tissues capable of forming antibodies which will be needed for defense against disease. Animals from which the thymus was removed soon after birth showed "severe depletion in the lymphocyte(s) . . . and serious immunologic defects." This discovery represents another step toward understanding basic immunologic processes such as those concerned in auto-immune diseases and the rejection of tissue grafts.

Cancer.—Much work continues in the study of the possible causative relationship of viruses to human cancer. Such relationship has long been established for malignant tumors in animals. A finding of great interest was the demonstration that an adenovirus, which is known only as a cause of respiratory infection in man, could induce highly malignant tumors when injected into young hamsters. The common herpes simplex virus, which causes "fever blisters," appeared to produce more frequent skin cancers in mice when it was injected at the same time chemical carcinogens were being applied to the skin. This virus alone did not cause tumors, however.

The mouse polyoma virus is known to produce a wide variety of malignant tumors when injected into newborn mice. On the other hand, natural infection with this virus occurs widely in both laboratory and wild mice, without producing the high incidence of tumors which follows its injection into the newborn animals.

New chemicals for treatment of malignant tumors are being developed constantly. However the specific chemical cure for cancer has not been found, and drugs produce only suppression or temporary remission of tumor growth. Among experimental drugs, methyl GAG was reported as promising in the treatment of leukemia, but very toxic. A new member of the actinomycin group of antibiotics, actinomycin X2, was found to have more potent antitumor properties than related compounds, in laboratory trials. New information

also was obtained concerning the reaction of the compound with nucleic acid.

There was renewed attention to the effects of cigarette smoking on health, particularly on the development of lung cancer. A special detailed report by the Royal College of Physicians in Great Britain stated that cigarette smoking is a cause of lung cancer, although not the only cause. Restriction of cigarette advertising was recommended or put into effect in several European countries. In the United States there was pressure for governmental study and action in the matter. A special Advisory Committee on Smoking and Health, consisting of ten physicians and scientists, was appointed by the surgeon general, U.S. Public Health Service. The committee was given the responsibility for reviewing all available evidence concerning smoking and other environmental factors, such as smog, which may affect health. The members were selected to obtain as authoritative, objective, and unbiased opinions as possible. (See also CANCER; PUBLIC HEALTH.)

Drugs.—The year 1962 marked the 20th anniversary of the practical use of penicillin and the beginning of the antibiotic era in medicine. Uncounted millions of lives have been saved through the control of infections by these drugs. An important new semisynthetic penicillin, sodium oxacillin, was introduced during the year. It is the first form of penicillin to be active against resistant staphylococci when given by mouth. Other new experimental antibiotics include cephalothin (a derivative of cephalosporin C) and capromycin. The former was described as much more potent than the parent substance and active against some penicillin-resistant organisms. Capromycin proved to be useful in the treatment of tuberculosis and less toxic than streptomycin.

However, news of drugs during the year is more likely to be remembered by tragedy than by triumph. It was determined that deformities of the extremities (phocomelia) of a number of babies, chiefly in Europe, was related to the use by their mothers of a new sedative drug, thalidomide, during early pregnancy. This represented an hitherto unrecognized type of drug toxicity. Thalidomide had been tested by all standard techniques in animals and seemed to be an almost ideal sedative and sleep-producing compound, much less dangerous than the commonly used barbiturates. Therefore, its tragic effects when taken by expectant mothers were completely unexpected. Fortunately the drug was not marketed in the United States, but it was used in limited clinical trials.

It is hoped that animal studies with thalidomide may yield information concerning the causes of prenatal defects. It was emphasized that as a basic precaution, expectant mothers should take as few drugs as possible, and only on medical advice, especially during early pregnancy. (See also PEDIATRICS.)

Other significant drug reactions were reported. Two fairly widely used drugs were withdrawn from the United States market because of such effects: the anticholesterol drug Triparanol (MER-29) and an antidepressant or psychic energizer known as Monase. The occasional production of abnormal changes in the lungs by excessive exposure to cosmetic hair sprays was confirmed by the report of a larger series of cases, including three fatalities.

Under stimulus of the thalidomide reports, new drug-control legislation, which had been pending for some time, was enacted by Congress. The bill was not as broad as originally advocated, but it does grant important new regulatory powers to

U.P.I.

President Kennedy presents the nation's highest award for government workers to Dr. Frances Kelsey (left) on August 17, as Sen. Hubert Humphrey (center) watches. Dr. Kelsey denied approval for the sale in the United States of thalidomide, a sedative that caused the deformation of babies.

government agencies, aimed at insuring the safety and efficacy of drugs. (See also FOOD AND DRUG ADMINISTRATION.)

Among new drugs is one reported to give protection against migraine headaches in a large percentage of susceptible persons. Methysergide must be administered consistently, however, in order to prevent attacks.

Heart and Circulation.—Diseases of the heart and blood vessels consistently cause more deaths than any other group of diseases. Consequently it is encouraging to witness steady improvement in the treatment of some of these conditions. Unfortunately little progress was made in dealing with the greatest killer of all, coronary heart disease.

However, high blood pressure is one of the important factors contributing to deaths from circulatory diseases. Fortunately there has been steady improvement in drugs for control of blood pressure, with the recent introduction of new compounds which are more reliable and have fewer undesirable effects. An encouraging report has come from one authority in this field who found that at least some hypertensive patients, after well regulated treatment for a period of years, were able to discontinue medication without showing the usual tendency to relapse.

As complex X-ray and radioactive tracer techniques for the study of the kidneys have improved, an unexpectedly large number of cases of hypertension have been found to be due to abnormality of these organs. Restriction of blood supply (by disease or malformation of a kidney artery) or chronic disease of one kidney may produce severe hypertension. Such abnormalities may be relieved surgically in a large proportion of cases.

Arteries elsewhere in the body and the heart are being studied by the injection of radiopaque dyes and then making conventional or cine X-ray pictures. Particular attention now is being paid to the arteries supplying blood to the brain. Severe narrowing or stoppage of one of these vessels is apt to lead to a severe stroke. If a localized zone of narrowing is found in the extracranial portion of such a vessel, the obstruction usually may be relieved by surgery with consequent safeguarding of the blood supply to the brain.

Other spectacular advances in technology have achieved increasing usage during the past year. Accounts of the implantation of artificial pacemakers are carried frequently in the daily press. In such instances the mechanism which normally initiates the heart beat may be blocked or become inoperative. The artificial pacemaker supplies

rhythmic small shocks to the heart through wires which are implanted surgically. Patients have been maintained in reasonably normal activity and relieved of frequent seizures for periods of months by this method. Other types of electric shock are used to regulate the rhythm of the heart or to restart hearts which may have stopped in "cardiac arrest" under emergency conditions.

Less progress has been made in dealing with coronary artery disease, which results in decrease in blood supply to the heart muscle itself. Attempts have been made to improve the blood supply by connecting other small arteries in the chest to the coronary circulation, and an improved operation of this type was described in 1962. (See also HEART DISEASE.)

Infectious Diseases.—A notable achievement during 1962 was the demonstration that the Eaton agent, which had been regarded tentatively as a large virus, is in reality a very small bacterium, one of the pleuropneumonia-like organisms. It also was found to be the cause of a large percentage of puzzling lung infections, the so-called atypical or viral pneumonias.

Another milestone was the successful treatment of a viral infection by an antimetabolite drug of the type used in cancer therapy. The drug interferes with the formation of DNA, on which the virus is dependent for growth. The infection treated was a superficial one, but in the form of ulcers on the cornea which may cause severe loss of vision if not checked. The drug used chiefly was 5-iodo-2'desoxyuridine.

While there was continued decline in the incidence of polio to a new low in 1962, confusion arose concerning the use of oral (Sabin) vaccine for mass inoculation which had been expected to largely eliminate the disease. Oral vaccine for types I and II virus had been licensed in 1961, but approval of type III was withheld until March 1962. All three types then were used until early fall, when it appeared that the more troublesome type III vaccine had caused a few cases of infectious polio in adults. The Public Health Service then advised that this type be restricted to children and that only types I and II be given to adults. Uncertainty caused delay in some community campaigns. By December the Public Health Service had withdrawn its recommended restrictions, but pointed out a small risk for adults.

Further experience was gained with measles vaccines, both live and killed virus types. The former was used successfully in Africa, where measles is a serious disease with comparatively high mortality. Work has continued on vaccines to combat the common cold and other respiratory infections. Considerable protection from such illness in Army recruits, due to adenoviruses, was provided by a vaccine. The majority of respiratory infections are believed to be caused by syncytial virus, parainfluenza viruses, the Eaton agent, and adenoviruses. A vaccine containing all of these, and perhaps other respiratory viruses, was planned.

Miscellaneous.—Unusual uses for very low temperatures in medicine were reported. A supercold needle-like probe was used to freeze small areas deep in the brain, instead of destroying them by other means, in the treatment of Parkinson's disease. Stomach ulcers and hemorrhage from the stomach were treated successfully by circulating a refrigerated solution through a balloon placed in the stomach.

(See also SURGERY and the Index entries on *Medicine* and specific diseases and drugs.)

JAMES PAISLEY HENDRIX,
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MELONS. See VEGETABLES.

MENTAL HEALTH. See PSYCHIATRY AND MENTAL HEALTH and the Index entry, *Mental Health.*

MENZIES, Robert Gordon

Prime minister of Australia: b. Jeparit, Victoria, Australia, Dec. 20, 1894.

Son of a country storekeeper, Menzies was graduated from the University of Melbourne with first-class honors in law and, in 1918, entered on a brief but brilliant legal career. He served in the Victoria legislature from 1928 to 1934 and then was elected to the federal House of Representatives, also becoming attorney general in the cabinet of Prime Minister Joseph Lyons. On Lyons' death in 1939, Menzies became premier and leader of the United Australia Party. In 1941, with his party and administration beset by disunity, he resigned. In eight years out of office during the Labour regime, he reorganized his party and renamed it the Liberal Party; and in December 1949, having formed a coalition with the farm bloc's Country Party, he was returned to office.

After the Liberal-Country Party coalition won the Australian general election by a narrow margin on Dec. 9, 1961, Prime Minister Menzies formed a new cabinet (December 22), relinquishing the portfolio of external affairs to Sir Garfield Barwick. In 1962, Menzies conferred with British Prime Minister Macmillan in London (May 30) and with President Kennedy in Washington (June 18–20), principally on the effects on Australian trade of Britain's projected entry into the European Economic Community (EEC). Menzies called for permanent safeguards of the trade of the Commonwealth nations with Great Britain, rather than the protection until 1970 which was being considered, and warned that Great Britain's ties with the Commonwealth might otherwise be weakened. Menzies and the other Commonwealth prime ministers took the same position at their annual meeting in London, September 10–19.

(See also AUSTRALIA; COMMONWEALTH OF NATIONS; GREAT BRITAIN.)

MERCHANT MARINE

On Sept. 1, 1962, there were 907 vessels of 1,000 gross tons and over in the active oceangoing United States merchant fleet, or 20 less than on Sept. 1, 1961. The total United States merchant fleet (including military types in reserve fleets), active and inactive, consisted of 2,877 vessels, or 41 less than a year earlier. The decrease was accounted for by a drop of 45 ships in the government-owned and an increase of 4 ships in the privately owned fleet.

MERCHANT FLEETS OF THE WORLD[1]

Country	No. ships	Dwt. tons
World total	17,426	177,290,000
United States:		
Privately owned	973	14,097,000
Government owned	1,760[2]	16,878,000
United Kingdom	2,363	25,685,000
Norway	1,360	17,342,000
Liberia	811	16,693,000
Japan	1,133	10,396,000
Greece	726	8,958,000
Italy	646	6,739,000
West Germany	873	6,393,000
France	636	6,196,000
Other countries	6,145	47,913,000

[1] Oceangoing steam and motor ships of 1,000 gross tons and over as of Dec. 31, 1961. [2] Excludes Navy-owned ships in reserve fleets of Maritime Administration.

Government Fleet.—The government fleet numbered 1,889 on Sept. 1, 1962, compared with 1,934 on Sept. 1, 1961. Most of the decrease was caused by scrapping of Liberty ships (built during World War II) from the National Defense Reserve Fleet, which dropped from 1,897 to 1,860

vessels. About 500 of this type of ship are being kept under preservation for emergency use, in addition to the 900 ships previously selected for retention for their potential national defense value.

The net loss in the government fleet of 45 ships resulted from scrapping of 57 reserve fleet ships and transfer of 2 ships to other government agencies, while 7 ships were traded in by private owners, a net of 6 ships were placed in the reserve fleet by the Navy, and the Nuclear Ship *Savannah* was accepted by the Maritime Administration from the builder for experimental operation.

Private Fleet.—The total privately owned fleet increased from 984 to 988 ships during the year. Thirteen ships were returned from foreign to United States registration and 26 new ships were delivered, while 24 ships were transferred to foreign flags, 7 were traded in to the government for credit toward new construction, and 4 were marine casualties. Two ships were exchanged for better types of government-owned reserve fleet ships.

Shipbuilding.—Large oceangoing ships under construction or conversion in United States shipyards on Sept. 1, 1962, numbered 57 vessels with a total deadweight tonnage of 873,163 and an estimated value of $564.6 million. (A year earlier, 81 ships totaling 1,336,573 deadweight tons and valued at $784.9 million were being built or converted.) Of these, 53 were new ships for private owners, comprising 10 tankers, 4 combination passenger-cargo-container ships, and 39 freighters. Three small hydrographic ships were being built for the Coast and Geodetic Survey. The remaining ship was a conversion.

During the year ending Sept. 1, 1962, 40 new ships were completed: 22 freighters, 4 tankers, 2 experimental ships—the Nuclear Ship *Savannah* and the Hydrofoil Ship *Denison*—and 12 conversions. Orders were placed for 16 ships, including 12 new freighters and 1 cargo-passenger-containership, 1 tanker, an oceanographic ship for the Coast and Geodetic Survey, and a conversion.

The long-range replacement program undertaken by United States shipping companies receiving government help, totaling 300 ships to be completed by the late 1970's, had delivered 47 ships by Sept. 1, 1962, and 43 others were under construction at that time.

Research was under way for design of an experimental surface-effect ship for the government which would ride over the surface of sea and land on a cushion of air. Many other research projects were under way to improve the operating efficiency of merchant ships.

Trade.—The 15 lines having contracts with the government to serve essential United States trade routes had a total of 315 ships in subsidized service on Sept. 1, 1962, 12 more than the number a year earlier. The government paid the difference on several principal items of operating expenses between these ships and the costs of their foreign competitors. The share of United States trade carried by United States flag ships continued to decline to 8.8% of total commercial and aid cargoes in 1961.

DONALD W. ALEXANDER,
Maritime Administrator.

MERCURY. See MINERAL PRODUCTION.
MERCURY, Project. See SPACE FLIGHT—*Manned Space Flight.*

METALLURGY

Low-density, high-elastic-modulus materials are needed for missile and spacecraft structures. Magnesium-thorium alloys with a density of 0.065 pounds per cubic inch and an elastic modulus of 6,500,000 pounds per square inch (psi.) are used. A weight saving of 20% is promised by new, lower-density magnesium-lithium alloys.

Beryllium.—Beryllium, with a density of 0.068 pounds per cubic inch and an elastic modulus of 44 million psi., would provide elastic stability at about half the weight. High cost, poor ductility, and fabrication difficulties presently limit the use of beryllium to reentry heat shields, guidance-gyroscope parts, and moderator and reflector materials for nuclear reactors.

Progress is being made in beryllium production and fabrication. Vitro Corporation of America has a pilot plant in operation for processing low-grade beryllium ores in Utah. A new concentration plant has been built by the Mineral Concentrates and Chemical Company in Colorado for treating beryl-bertrandite ore. The Brush Beryllium Company has completed a $6 million expansion increasing the output of its Elmore, Ohio, plant to 30,000 pounds of beryllium per month. Brush also has a new $3 million mill at Cleveland, Ohio, which will double its fabrication capacity, and, it is expected, reduce the price of finished beryllium products.

Beryllium oxide, beryllia, has been produced recently in high-density form. Its unusually high thermal conductivity and strength at high temperatures make it useful in ceramics.

Light, intermetallic compounds with beryllium, known as beryllides, are attracting attention for high-temperature structural use. They are lighter and more resistant to high-temperature oxidation than existing materials. The top-use temperature is said to be 50% higher than cobalt-, nickel-, and columbium-base superalloys.

Columbium.—Recent progress has been made in the production of columbium (niobium) metal and in the development of columbium-base alloys for strength in the 2500°F. temperature range and of columbium alloys for superconductivity.

With a large electron-beam furnace, Temescal Metallurgical Corporation produces columbium ingots directly from semipurified oxide. This new process produces nuclear-grade columbium ingot at $15 a pound and structural-grade alloy ingot at $12 a pound. Temescal estimates that by 1970 a production rate of 800 tons per month will be reached and a price of $4 a pound achieved.

Haynes Stellite Company has announced a new high-strength columbium alloy, Cb-752, containing 10% tungsten and 5% zirconium. It can be fabricated by conventional methods and has a tensile strength of 25,000 psi. at 2400°F. Two other new columbium-base alloys for high-temperature service have been developed and are commercially available from du Pont. They are D-14, an alloy with zirconium, and D-36, an alloy containing titanium and zirconium.

Superconducting materials are needed to produce magnetic fields of high intensity for plasma devices to produce electrical power directly from heat and to compress plasma for controlled thermonuclear-fusion experiments. A columbium-tin compound, Cb_3Sn, has proved a good superconducting material, and Bell Telephone Laboratories has developed a suitable wire by cold drawing and heat-treating a composite of mixed columbium and tin powder in a columbium metal sheath. Superconductivity at an average current density of 150,000 amperes per square centimeter in magnetic fields as strong as 88,000 gauss has been obtained with this wire. Radio Corporation of America, by another method, produces the columbium-tin alloy as a thin coating on fine wire. The Wah Chang Corporation has drawn wires less than

NASA: WIDE WORLD

Photos taken by Tiros weather satellites. (*Left*) The Great Lakes and adjacent areas, with Lakes Superior and Michigan at top of picture. (*Right*) Tropical storm Becky, over the Atlantic Ocean 500 miles from the coast of western Africa, in late August.

0.01 inch in diameter from zirconium alloys containing 25% columbium. These are said to maintain superconductivity in fields up to 80,000 gauss at current densities of 10,000 amperes per square centimeter.

(See also CHEMISTRY; IRON AND STEEL; MINING.)

O. CUTLER SHEPARD,
Professor of Metallurgy, Stanford University.

METALS. See CHEMISTRY; METALLURGY; MINERAL PRODUCTION; MINING.

METEOROLOGY AND CLIMATOLOGY

The seasons from autumn 1961 through summer 1962 brought their usual wide variety of weather.

Autumn 1961.—Very cool weather in the lower Great Plains and Far West brought temperature deficits up to 4°F. In contrast, it was 1–4°F. above the average east of the Mississippi. A noteworthy hot spell occurred in the Northeast in the first 10 days of September, which brought to many places their highest temperatures of the year. In October, southern California had a heat wave which brought record-breaking late-season temperatures to San Diego (107°F.). November was very warm in the East.

Rainfall was above normal in the Rocky Mountains and midcontinent regions, but the Southeast had less than 50% of the average. A heavy belt of rain from Texas to Michigan was caused by hurricane Carla, which killed 46 and injured 500 persons and left property and crop damages in excess of $300 million.

In October, 700 lives were lost in floods in Bihar State, India. November brought flooding in the Ukambani and Tana rivers of Kenya, with disruption of communications. Rains in Uganda raised the level of Lake Victoria to the highest stage since 1917, and the Congo also experienced the worst rains in 50 years.

Winter 1961–62.—Winter temperatures were generally below average over most of the United States. Exceptions were the southernmost districts along the Mexican border and the Gulf coast, where February had excesses above 6°F. Parts of the state of Washington were very warm. The greatest cold centered from northwestern Oklahoma to Lake Superior, with a deficiency of 6°F. in central Iowa. In most other areas, temperatures 2 to 4°F. lower than average were experienced.

Precipitation was particularly heavy in the northern Great Plains, the lower Mississippi Valley, the southern Appalachian region, and southern California where excesses of 50% above average were noted.

In the middle of January, central Australia's 6-year drought was broken by 6 inches of rain north of Alice Spring. On February 17 the worst storm since February 1825 hit the coast of the Netherlands and northwestern Germany, killing 322 persons and leaving about 100,000 homeless. In December a 2-week cold spell caused death by freezing to 600 persons in the Ganges Plains of northern India.

Spring 1962.—April over the United States was a relatively cool month, succeeded by a very warm May with summerly heat in most parts of the nation east of the Rocky Mountains. This compensated for the earlier cool weather and resulted in close to average temperatures everywhere for the season as a whole, with few departures exceeding 2°F.

Precipitation was close to average, except in the northern Great Plains, where up to twice the average amounts were received. This definitely ended the drought conditions in the Dakotas and northern Mountain states. February and March rains also ended a 3-year drought in California, while unprecedented snowfall in Nevada improved water supplies well above the low 1961 levels.

The most spectacular weather event during the season was a late winter storm along the Atlantic seaboard between March 5 and 9. It brought heavy snowfalls from Virginia to New England. Worst damages resulted, however, from the gale-driven storm surge along the coast. Gales with gusts up to 85 miles per hour piled water on 7- to 10-feet-high spring tides, resulting in waves of up to 30 feet high. Thirty-three persons were killed, mostly by drowning, and 1,250 were injured; about 1,800 dwellings were destroyed and 17,000 were damaged. Total damages were estimated at $300 million.

Spring droughts threatened crops in China, Korea, the Philippines, and northeastern Brazil. Drought also struck Lebanon and South Africa. At the same time floods ravaged areas in Cuba, Dahomey, Poland, Iran, and Uzbekistan.

Summer 1962.—In most parts of the United States, especially the East, the summer was cool. In July the northern Great Plains and New England were as much as 2° to 4°F. below average. Only the Gulf coast states had slightly above-average temperatures. Rainfall was near or above average in central and eastern Texas, the Gulf coast, and in the Plains states. Deficiencies were marked in Louisiana and genuine drought developed in some parts of Pennsylvania, New York, New Jersey, and Maryland.

June floods caused serious damage to crops in southern China, and torrential rains in July caused devastation in the Canton area. Downpours from Kyushu to central Japan, where 8 to 10 inches of rain fell the night of July 3–4, killed 19, flooded out 56,800 persons, and caused great damage to roads. Excessive monsoon rains in the Philippines during the middle of July left 360,000 persons homeless. Taiwan was particularly hard hit by typhoon Nora early in August, with 80 persons killed, 1,400 injured, and thousands made homeless.

Storm Statistics.—Complete United States statistics for 1961 showed a total of 682 tornadoes on 169 days, causing 51 deaths and 917 injuries. Other windstorms caused 64 deaths. There were 10 tropical storms in the North Atlantic and Caribbean. Eight of these reached hurricane intensity, causing 299 fatal casualties (46 in the United States). The remarkable thing about the hurricane season was the complete absence of tropical storm activity in July and August; however, there were only three storm-free days in September. On September 11, four hurricanes were in existence simultaneously, the first such occurrence on record.

In the North Pacific there were 41 tropical cy-

clones in 1961, 11 more than the annual average. Of these storms, 23 reached typhoon intensity.

Hurricane Studies.—Television pictures from satellites and reconnaissance flights into the eyes of hurricanes have given a completely new understanding of these storms. The Tiros III satellite alone spotted 50 tropical cyclones in all stages of development. The emerging new model of the hurricane shows that a single major updraft cell in the front right sector of the wall of the eye of the storm is the primary seat of energy conversions. In a typical hurricane, updrafts of 2,100 feet per minute were observed to heights of over 50,000 feet in this cell. Behind it, downdrafts of the same magnitude prevailed. The water within the cloud cell is severely undercooled. Observations of liquid water at −60°C. have been reported. Above this "energizer" cell there is outflow of air which results in a wide cirrus cloud shield.

The subcooled water of the eye wall was the target of a cloud-seeding study of hurricane Esther in 1961. This hurricane had a circular eye 15 to 20 miles in diameter. The experiment involved a single, almost instantaneous, injection of silver iodide in the cloud cell. Seeding took place in cloud tops near the point of maximum wind from 4 miles inside the cloud wall surrounding the eye to 8 miles into the rainy shield. After seeding, radar spotted rapid transition. The water in the northern eye wall froze rapidly. It is estimated that 400 cubic miles of cloud were converted from water to ice in about 40 minutes. This is equivalent of an energy release of heat of fusion of 200 million kw.-hr., or the yield of 8 atomic bombs with 20 kilotons energy release. However, it still represents one tenth of 1% of the total energy released by the hurricane in the same time span. An evaluation of the experiment showed that there was, as had been assumed before, a temporary reduction of 10% in maximum wind speeds, due to an outward diffusion of energy.

The fine-scale structure of the spiral rain bands of tropical storms has also been revealed. These bands, which bring the major amounts of rain, have a zone of low pressure along their front edge. The surface winds converge into this zone, and divergence of air flow takes place to the rear of the bands.

The new findings also throw a light on hurricane formation, which seems to be due to dynamic instability in the air. The sequence appears to be that areas of low-level unorganized convection in easterly waves drift under high-level anticyclonic systems at the 50,000-foot level. These help in outflow of mass over the top of the lower disturbance, causing at the surface a low pressure system which is then maintained by the heat of condensation of water vapor.

Satellite Meteorology.—Three additional Tiros weather satellites were launched during the year. The useful lifetime of Tiros IV extended from February 8 to June 12. In that interval the satellite obtained 836 useful cloud pattern pictures on which 102 storm advisories were based. Tiros V was launched on June 19 to help in the discovery of tropical storms. Its orbit, inclined 58° to the equator, enabled it to obtain cloud pictures from latitudes 65°N. to 65°S. Tiros VI was launched on September 18.

In its pursuit of a space policy devoted to peaceful purposes, the United States started to share Tiros cloud pictures with other countries by radio facsimile. This system started on April 15, 1962, with broadcasts beamed to Europe, South America, Africa, the Far East, and the Southwest Pacific.

The first results of infrared radiation measurements from satellites have become available. Small radiometers composed of black and white thermistors, weighing only a few ounces, receive the dark radiation coming from the earth. The intensity of this radiation is governed by the temperature of the radiating surface. The instruments differentiate primarily between the earth's surface and high upper-cloud surfaces. Cloud covers determine the radiation pattern. Inasmuch as cloud covers of variable vertical development are caused by low-pressure centers and fronts, the radiation pictures indicate these weather features and their motion. The highest radiation readings are found over high pressure systems, where clear sky prevails. Oceans and cloudless vegetated land areas reflect 7% of the incoming radiation; cloud surfaces, 55%; and deserts, 25%.

A special infrared spectrometer has been designed for use in future meteorological satellites. This will measure the outgoing terrestrial radiation in four narrow spectral intervals in the 15-micron carbon dioxide band and will make it possible to infer the mean temperatures of four atmospheric layers above 25,000 feet with an accuracy of 1°C. (See also Space Flight.)

NEWSDAY

At Fire Island, N.Y., barge pumps landfill to repair damage caused by a storm that hit the east coast on March 7.

Cloud Physics.—A new Air Force dispenser permits production of carbon dioxide snow directly from liquid carbon dioxide carried in aircraft. This enables pilots to create holes in supercooled stratus cloud decks when and where required. Another device has been developed which electronically counts and optically measures raindrops. It can automatically handle up to 10,000 drops per minute in each of 13 size classes. It will permit the gathering of better basic data on natural rain formation, ranging from drizzle to cloud bursts.

Continuous measurements of freezing nuclei have shown extreme, and often very rapid, variations in the atmosphere. Changes by several hundred percent in a few hours are not uncommon. Nuclei active at −20 to −30°C. vary from a few to hundreds of thousands per liter.

Hotel swimming pools at Miami Beach, Fla., are inundated by high waves resulting from an Atlantic storm, in March.

WIDE WORLD

Considerable new attention has been paid to lightning processes and their relation to precipitation. New spectral photographs of lightning showed bands of atomic and molecular nitrogen as most prominent features. They also gave evidence of the presence of cyanide. Temperatures within the strokes were estimated at 6,000 to 30,000°K. High-speed photographs also showed in some strokes steady luminosity lasting one fifth of a second. Such a relatively long flow of electricity from cloud to earth can contribute materially to the earth's negative charge. These continuing currents bring charges of about 135 coulombs to earth with a current intensity of 80 amperes.

The old observation of increased rates of rainfall after lightning discharges in thunderstorms has been checked and verified with radar. In the cloud space 2 to 3 miles upward, radar-reflecting droplets form a few seconds after lightning, and 30 to 60 seconds later heavy rain starts at the surface. The evidence points toward a coalescence of the droplets initiated by the electrical phenomena connected with lightning.

A field experiment in Illinois attempted to test the hypothesis that high electric space charges introduced into clouds might enhance precipitation. Energized wires 8½ miles long were charged to a high potential in an area with a dense network of rain gages. Radar observations of clouds also were available. In nine summer storms no changes significantly different from what would have been expected naturally took place.

An evaluation of three seasons of anti-lightning operations in the forests of California by use of ground-based silver iodide dispensers showed neither significant reduction in lightning nor any appreciable increase in rainfall. The number of available freezing nuclei was, however, materially enhanced. The work suggested that seeding from airborne generators might have been more effective.

Upper Atmosphere.—There is good evidence that helium ions are an important constituent of the upper atmosphere above 800 miles. The helium-rich layer is estimated to be 1,200 miles thick; above it, protons prevail.

Atmospheric pressure waves with periods from 20 to 80 seconds and amplitudes of 1 to 8 dynes per square centimeter have been associated with high geomagnetic activity. They are noted several hours after the onset of strong geomagnetic disturbances created by solar corpuscular rays. Their origin is sought in the levels above 60 miles.

A complete new model of atmospheric ozone circulation has been developed. This shows that near the equator the major amounts of ozone are concentrated above 14 miles, whereas in high latitudes the ozone concentration rises rapidly above 6 miles. The differences between high and low latitudes are most pronounced in winter and spring. An ozone transport from lower to higher latitudes takes place above 12 miles. It moves through gaps in the tropopause associated with jet streams into the lower layers, and even to the surface. There the ozone is destroyed by contact with other substances. (See also ATMOSPHERE RESEARCH.)

Numerical Weather Prediction.—The practical operational forecasts of atmospheric flow are now based on a 3-level baroclinic model. Initial data and predicted winds and pressure contours are for the 850-millibar level (about 5,000 ft.), 500-millibar level (about 18,000 ft.), and 200-millibar level (about 35,000 ft.). The model is based on a nongeostrophic vorticity equation, carrying both rotational and irrotational components of the wind. It includes both surface friction and mountain effects. Vertical motions are included in the prediction. Upward motions indicate areas of cloud development and rainfall.

Radar observations are now being digitized and will soon be amenable to incorporation into local prediction schemes using automatic data-processing equipment. Radar echoes of squall lines and of single intense storms which move on a collision course often permit the prediction of tornado development at the point of intersection.

New Observational Techniques.—A new electric hygrometer for radiosondes has been designed. It consists of a thin film of barium fluoride, which has a very rapid response to environmental humidity changes. This substance is much superior to the conventional lithium chloride element.

A useful technique has been demonstrated for measurements of higher atmospheric winds. A solid-propellant sounding rocket produces a smoke trail combination of titanium tetrachloride with atmospheric water vapor. The drift of the highly persistent smoke can be observed with theodolites or photographed for ready calculations of wind speeds and directions. This gives the actual instantaneous motions in the various layers and eliminates the averaging through the layer performed by the usual pilot-balloon procedure.

An automatic isotope-powered weather station installed on Sherwood Head, on Axel Heiberg Island, 750 miles from the North Pole, has operated very satisfactorily for a year. It can report temperatures from −60 to +50°C., pressures from 950 to 1,080 millibars, wind speeds to 150 knots, and wind directions to the nearest 10 degrees. Its 250-watt output sender is put on the air by a precision chronometer every three hours. The signals are clearly received at the manned station at Resolute Bay, 250 miles to the southwest. A similar unit with a 10-watt generator has been placed in operation near Minna Bluff, 54 miles south of McMurdo Sound in the Antarctic.

H. E. LANDSBERG,
Director, Office of Climatology, United States Weather Bureau.

METHODIST CHURCH

Total membership of Methodist churches throughout the world was officially announced as 19.5 million in 1962. The number of Methodist adherents was estimated at 42.5 million. These figures included the various branches of Methodism. In the United States, the denomination known as The Methodist Church reported a membership of 10,153,003 in nearly 40,000 churches. Fourteen of the churches had more than 5,000 members each, but the average Methodist church in the United States had about 250 members.

The Board of Missions of The Methodist Church announced early in 1962 record disbursements during its past fiscal year for mission work in the United States and 44 countries overseas. Expenditures totaled $33,785,000. This was $3,667,000 more than the previous year. The Methodist Church was reported as being vigorously alive in Cuba and still alive and growing in Estonia (now a part of the Soviet Union).

In New York City, a site was being cleared for a Church Peace Center for the United Nations, to be erected by The Methodist Church. The 12-story structure was expected to be occupied in 1963 by Methodist and other offices related to the cause of world peace or the United Nations.

Further steps were taken toward the development of a Methodist center in Washington, D.C., to house national Methodist agencies and other offices. In Evanston, Ill., a new Methodist building housing five national Methodist agencies and other offices was consecrated. The five agencies formerly had their headquarters in Chicago.

Methodist representatives participated in a consultation on church union and had "unity conversations" with representatives of three other Protestant denominations—Protestant Episcopal Church, United Presbyterian Church in the U.S.A., and United Church of Christ. The Methodist Church and the Evangelical United Brethren Church also discussed a possible merger.

Officers of the Council of Bishops of The Methodist Church are Bishop Marshall Reed, Detroit, Mich., president; Bishop Paul N. Garber, Richmond, Va., president-designate (to take office in April, 1963); and Bishop Roy H. Short, Nashville, Tenn., secretary.

The denomination's first television series for children, *Breakthru*, went on the air in 1962, and a second series was begun.

In a year of increasing perplexity concerning church-state relations, the first Methodist-sponsored national institute on church-state relations was held in Washington, D.C.

WILLIAM M. HEARN,
Associate Secretary, Commission on Public Relations and Methodist Information of The Methodist Church.

METROPOLITAN AND REGIONAL PLANNING. See CITY PLANNING; HOUSING.

MEXICO

The third largest republic of Latin America (area, 760,335 square miles), Mexico extends south from the United States to the borders of Guatemala and British Honduras.

Population.—Mexico's population (1960 census) of 34,625,903 is growing at one of the fastest rates in the world (3.4%). Although more than half the population resides in rural areas, the proportion is declining. The largest cities (1960 census) are Mexico City, the national capital, which is located in the Federal District (4,636,075); Guadalajara (703,866); and Monterrey (615,009). Considerably more than half the population is of mixed European-Indian descent; most of the remainder is Indian. Spanish, the official language, is spoken by more than 90% of the population. Persons speaking only Indian languages number fewer than 800,000; a much larger number of persons speak both Spanish and an Indian tongue.

Government.—Although Mexico is a federal republic (29 states, 2 national territories, and a Federal District), the central government exercises much more authority than its counterpart in the United States. President Alfonso López Mateos was elected to a 6-year term beginning Dec. 1, 1958; he cannot be re-elected. The legislature consists of a Senate of 60 members, and a Chamber of Deputies with 178 deputies. The government has been dominated for many years by the Institutional Revolutionary Party (PRI), which is essentially moderate in its policies. All but 6 of the national deputies are members of the PRI. The president appoints the Supreme Court of 21 members for life tenure. The states have elective governors and legislatures; most of these officials are members of the PRI.

Education and Religion.—More than half the population is illiterate, and the rapid growth of population makes it difficult to improve the literacy rate. Of the total 1962 federal budget, the largest allocation—$196 million, or 20% of total expenditure—was for education. The budget provided funds to print 22 million primary textbooks for free distribution (see also below, *Events, 1962*). In 1960 about 40% of the school-age children could not attend school because of the lack of facilities. An estimated 5,583,000 pupils were enrolled in primary schools in 1962. In 1960, 207,732 students attended 693 secondary and vocational schools, and an estimated 30,000 students were enrolled in 79 teacher-training schools. University enrollment at 18 institutions in 1958 was 123,254. Roman Catholicism is the dominant church affiliation.

Finance.—In recent years the government's fiscal position has been strong as the result of a near balance between revenues and expenditures, close control of credit and inflation, and a sound balance of payments situation. Foreign exchange reserves totaled $390.3 million at the end of 1961, or $20 million less than at the end of 1960. Mexico's foreign debt at the end of 1961 stood at $818.7 million (up 23.4% from a year earlier); $115.1 million was paid on the principal and interest of foreign obligations in 1961. Foreign credits totaled about $250 million in 1961 (down $37 million from 1960).

The 1962 federal budget totaled 12,319 million pesos, up 11% from the 1961 budget (12.5 pesos equal U.S.$1). Allocations for 1962 included 39% of total expenditure for economic development, 35% for investment and social services (including education), and 10% for the armed forces. Income taxes were the largest single source of revenue, accounting for 34% of total revenues (compared with 32% in 1961). Authorized investment in the public sector increased to 10.523 billion pesos in 1961 (up 20% from 1960). The two largest investors in the public sector are the government petroleum monopoly, PEMEX, and the Federal Electricity Commission.

Transportation and Communications.—The transportation and communications systems have been much improved and expanded in recent years by governmental actions. The 16,000-mile railway system is a state enterprise. In 1961 the government opened a new railway on the Pacific coast. In 1960 there were 17,940 miles of paved roads, and 10,666 of surfaced roads. The World Bank in 1962 loaned Mexico $30 million for road-building programs. There are 8 Mexican national airlines, 3 of which fly international routes. The government took control of Guest Aerovias de Mexico, the country's third largest airline, on Aug. 1, 1962. In 1960 there were some 545,000 telephones, 4 million radio receivers, and 600,000 television sets.

Economic Conditions.—Since about 1940 the Mexican economic growth rate has been high. Growth has been fastest in industry, but quite rapid in agriculture; mining output has lagged. The annual economic growth rate in real terms averaged 7.5% in the 1940's, and 5.0% in the 1950's. The rate of growth, which was 4.6% in 1959 and 5.7% in 1960, declined drastically to 3.5% in 1961, when the gross national product was estimated at 139.1 billion pesos ($11,128 million). The economy was relatively dormant in 1961; per capita income failed to increase because of the high population growth, and prices remained stable.

Economic growth is closely controlled by the government, and is aided by large public investments. Authorized public investment rose to 10.523 billion pesos in 1961, from 8.73 billion in 1960. In 1961, private investment declined, and total Mexican borrowing abroad decreased in 1961 to $249.9 million, or about $37 million less than in 1960.

Agriculture.—Mexico is virtually self-sufficient in agricultural products, and has a valuable export traffic. About 50% of the economically active population is engaged in agriculture. Agricultural growth was only 3% in 1961, and practically negligible in 1960. In 1961, agricultural and grazing operations accounted for 20.4% of the gross national product, and was valued at $2.27 billion.

WIDE WORLD

Arriving in Mexico for two-day visit, President Kennedy (waving) is shown with President López Mateos being welcomed by an enthusiastic crowd in Mexico City on June 29.

In 1961 about 50% of the cultivated land was allotted to corn production, which totaled about 5.5 million tons (500,000 tons more than in 1960, but 63,000 below the 1959 record), and covered domestic requirements. The bean crop in the 1961–62 crop year was estimated at a record 620,000 tons, which was sufficient for domestic needs. Coffee production in 1961 was 2.1 million sacks (about 132 pounds each). Cotton production in the 1961–62 crop year was some 1.8 million bales (down 10% from 1960–61).

Industry.—In 1961, manufactures accounted for 25.6% (or $2,848 million) of the gross national product. Growth was at a low rate in consumer goods (up 3.5%) and construction (up 1%), but continued at high levels in petroleum (up 15%) and electric power (up 10%), the last two being government monopolies. Chemical production was up 12%. The key iron and steel industry continued to grow; steel ingot production increased to 1,682,000 tons (up 9.3% over 1960).

Mining and Petroleum.—Although mining employs few persons and accounted in 1961 for only 2.5% (or $278 million) of the gross national product, it contributes heavily to exports. In recent years production has stagnated because of low world prices and legislation requiring largely Mexican ownership of mining properties, the effect being to decrease foreign investment in mining. Mineral output by volume was 1.4% higher than in 1960, and metallic mineral production was up 11.8%, largely because of the greater output of iron ore for the steel industry. Production was down for most metallic minerals, which were leading exports. Chief minerals (metric tons, 1961): coal, 1,044,000; iron ore, 687,600; lead, 178,800; zinc (primary), 51,840; and gold, 269,000 ounces.

The petroleum industry grew rapidly again in 1961. Production of crude, distillate, and natural gas liquids increased 8.05 million barrels in 1961; output averaged 320,070 barrels per day (297,190 per day in 1960). Refined oil production in 1961 was 119.9 million barrels, up 11.7 million from 1960. Total operating receipts of PEMEX in 1961 were 6,479 million pesos (up 11.9%), of which domestic sales accounted for 6,004 million.

Foreign Trade.—Exports of agricultural products have grown in recent years; industrial exports have also increased; but mineral exports have lagged. The large imbalance between Mexico's commodity exports and imports is well compensated for by other factors, particularly the large income from foreign tourists and remittances by Mexican workers in the United States. Most imports are production goods, reflecting the government's policy of building industry, and the existence of a consumer goods plant able to supply the national market.

In 1961, exports of goods and services totaled $1.61 billion (of which $802 million was merchandise exports), and imports of goods and services were $1.679 billion. Net return from tourism in 1961 was $386 million ($373 million in 1960). Agricultural and stock exports accounted for 55% of 1961 merchandise exports, and mining contributed 25.5%. Principal exports and 1961 values: cotton, $159.5 million; coffee, $74.6 million; sugar, $68.8 million; and petroleum, $34.7 million. The United States took 57% of Mexican export value in 1961, and supplied 68% of total import value.

Events, 1962.—Conservatives charged that the slowdown in economic growth and the flight of capital were due to government policies damaging to business confidence, including particularly an alleged tendency toward socialization of the economy. The government, in turn, attempted to make further private investment in the country a matter

of patriotic duty. It also devoted much effort to assuring the business community that the latter would retain a permanent and important role in the economy. In July the government announced a list of 500 fields in which it hoped that private enterprise would expand its activities.

The government's conservative opposition continued to charge it with radicalism and dictatorship, and criticized Mexico's noninterventionist stand on Cuba at the meeting of American foreign ministers in January. A quarrel developed between conservatives and the government over a federal program for the compulsory distribution of free school books. Conservatives declared that the books were socialistic and anti-Catholic; the government said that the conservative critics lacked concern for education of the poor, and that they were motivated by economic and political aims. Demonstrations against the textbooks centered in Monterrey. Conservatives were even more unhappy with leftist parties than with the ruling PRI. The Cuban crisis in October brought new demands from the conservative National Action Party (PAN) for government action against Castro.

Ex-president Lázaro Cárdenas remained the government's most prominent leftist critic, even though his position was more ambiguous than usual. As a member of the pro-Castro National Liberation Movement (MLN), he supported more "revolution" for Mexico. On the other hand, Cárdenas held a government position as director of an irrigation project, and in August he praised the social and economic efforts of the administration, but criticized the Roman Catholic Church and private business. In November there were rumors that Cárdenas had left the MLN, but rightists expressed doubts. Rightists also denounced as a Communist maneuver the break with the MLN announced in June by V. Lombardo Toledano, head of the Popular Socialist Party and longtime advocate of Communist policies. Leftist criticism of Lombardo suggested, however, that his position in leftist ranks was weakening.

Opposition to the government also was expressed by persons who staged "hunger marches" on the capital; they were chiefly peasants ostensibly protesting abuses of the agrarian reform program. There also were incidents involving squatters who attempted to seize land. It seemed likely that in many cases both marchers and squatters were in part stimulated by political agitators.

The government and the PRI defended themselves in various ways against leftist charges of "rightism" and insensitivity to the needs of the poor. The refusal to take strong action against Castro was part of this defense; also important was the constant attention paid to social and economic development. President López Mateos stated in his message to Congress in September that in the past 12 months he had distributed 3.37 million hectares (the hectare equals 2.47 acres) through the government's land-reform program, and that total federal distribution during his administration was 10.043 million hectares. (An additional half-million hectares were distributed by the states.) Congress on September 12 completed action on a constitutional amendment granting the government authority to force any company to share its profits with employees. The government continued its efforts to ensure supplies of low-cost food and clothing, partly through the National Company for Popular Subsistence.

The National Border Program for the rehabilitation of nine Mexican cities on the United States border was accelerated in 1962. Construction of a highway, a park, and an area for public buildings in Ciudad Juarez was finished in April, marking completion of the first phase of the program. A three-year plan for economic development was announced by the government in May.

The Mexican people enthusiastically welcomed President and Mrs. Kennedy during their visit to Mexico City from June 29 to July 1. Following his talks with President López Mateos on inter-American affairs and common economic matters, a joint communiqué disclosed that the United States would move to lessen the damage that saline waters from the Colorado River was causing to Mexican agricultural land.

Earthquakes occurred in the Mexico City and Acapulco areas in May. At least three persons were killed, and there was extensive property damage.

(See also INTER-AMERICAN AFFAIRS.)

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MICA. See MINERAL PRODUCTION.

MICHIGAN

A North Central state of the United States, Michigan ranks 23d among the states in area (land, 57,019 square miles; inland water, 1,197) and 7th in population (7,991,000 on July 1, 1962, a 2.1% increase from the 1960 census figure of 7,823,194). Urban places with populations above 25,000 in 1960:

Allen Park	37,494	Lansing (*capital*)	107,807
Ann Arbor	67,340	Lincoln Park	53,933
Battle Creek	44,169	Livonia	66,702
Bay City	53,604	Madison Heights	33,343
Birmingham	25,525	Midland	27,779
Dearborn	112,007	Muskegon	46,485
Detroit	1,670,144	Oak Park	36,632
East Detroit	45,756	Pontiac	82,233
East Lansing	30,198	Port Huron	36,084
Ferndale	31,347	Roseville	50,195
Flint	196,940	Royal Oak	80,612
Garden City	38,017	Saginaw	98,265
Grand Rapids	177,313	St. Clair Shores	76,657
Hamtramck	34,137	Southfield	31,501
Hazel Park	25,631	Southgate	29,404
Highland Park	38,063	Warren	89,246
Inkster	39,097	Wyandotte	43,519
Jackson	50,720	Wyoming	45,829
Kalamazoo	82,089		

Government.—Chief executive and judicial officers in 1962 included John B. Swainson (Democrat), governor, serving a two-year term; T. John Lesinski, lieutenant governor; James M. Hare, secretary of state; Sanford A. Brown, treasurer; Billie S. Farnum, auditor general; Frank J. Kelley, attorney general; Lynn M. Bartlett, superintendent of public instruction; and Leland W. Carr, chief justice of the 8-member Supreme Court.

The Michigan Legislature, which convenes annually, comprised 23 Republicans and 10 Democrats (with 1 vacancy) in the Senate in 1962, and 56 Republicans and 53 Democrats (with 1 vacancy) in the House of Representatives.

Legislation, 1962.—The 1962 session was marked by a continuation of the struggle between the Democratic governor and the Republican-controlled Legislature. The principal achievement was a compromise agreement on a tax program. New "nuisance taxes" increased levies on beer, cigarettes, and liquor; the corporation franchise tax was increased; and a use tax was placed on telephones, telegraph, and leased wires. One of the principal reasons for raising new state revenue was to provide increased state aid to schools, but a rider on one bill raised the pay of legislators by $2,000 annually.

As in the past, numerous measures approved by the Legislature were vetoed by the governor. Two bills providing for a 19th Congressional District, granted as a result of the 1960 census, met this fate, making it necessary to elect a congressman-at-large.

The Legislature did not adjourn at the close of its deliberations in midsummer as had been customary in other years, but recessed on June 28 and again on July 26 until December 27. By recessing instead of adjourning the senators and representatives could call themselves back into session for any emergency that might develop. This was done because the U.S. Supreme Court had taken no action on a suit seeking reapportionment of state senatorial districts. By this strategy, the Republican legislators could block any move by the governor to call

them back into special session for the purpose of redistricting the Senate. (See also below, *Events, 1962.*)

Toward the year's end it was feared that a quorum could not be secured during the holidays and that therefore the effective date of 162 bills which can not become law until 90 days after official adjournment would be delayed. Among the most controversial of these was legislation dealing with the Sunday closing of retail stores. However, both houses met as scheduled and adjourned.

Finance.—In the 1962 fiscal year, revenue of $1,228,346,845 included $980,462,974 from state taxes and $146,576,902 in federal funds. Chief tax yields were the 4% general sales tax ($426,308,466) and taxes on corporate incomes ($60,331,084) and motor fuels ($152,630,517). Spending of $1,243,830,930 included $491,949,382 for education, $343,877,807 for health, welfare, safety, defense, and adult correction, and $232,130,634 for highways.

Education.—In the 1961–62 school year, public elementary schools staffed by 36,918 teachers enrolled 1,055,186 pupils; junior and senior high schools with 26,353 teachers enrolled 621,210; and private and parochial schools with 8,353 teachers enrolled 314,770. College enrollment totaled 177,045 in 92 institutions, including 16 junior colleges and 76 senior colleges and universities.

Estimated public school spending in the 1961–62 school year totaled $922,401,000, including current expenditures of $699,078,000 ($440.13 per pupil) and capital outlays of $175,240,000. Revenue of $1,114,569,000 was drawn chiefly from state funds ($355,709,000) and local districts (461,230,000). Teachers' salaries averaged $6,162 (high school, $6,300; elementary, $6,065). Actual spending for higher education (1961 fiscal year) amounted to $231,537,000.

Public Assistance.—In the 1962 fiscal year, public assistance to a monthly average of 324,251 persons totaled $169,053,043. This amount included $69,504,546 to the aged (including medical payments) and $53,817,935 for dependent children.

Transportation and Communications.—A total of 479 miles of highway construction and reconstruction was completed in the 1962 fiscal year; *highways and roads* on Jan. 1, 1962, totaled 111,209 miles (90,581 surfaced). These served 3,616,816 *motor vehicles* (as registered on June 30, 1962), including 2,846,028 automobiles. Operating in the state were (1961) 28 *railroads* (using 6,593 line miles of track); (1962) 11 regularly scheduled *airlines;* and 85 commercial and municipal *airports.*

Communications media included (1962) 108 AM and 36 FM *radio stations;* 1 UHF and 16 VHF *television stations;* 54 daily *newspapers* (circulation, 2,346,730) and 292 other newspapers; and (January 1) 853,300 business and 2,530,500 residential *telephones.*

Labor Force.—The state's labor force in July 1962 included 169,000 agricultural workers. Nonagricultural employment totaled 2,551,300, compared with 2,519,900 a year earlier and an average of 2,514,300 for 1961. Of nonfarm employees, 36% were in manufacturing, 16.3% in trade, and 13% in government services. Unemployment in July 1962 had dropped to 177,000 from 297,000 a year earlier.

Manufacturing.—Manufacturing engaged 964,043 workers in 1960, including 691,109 in production, and provided a payroll of $6,086,853,000. Adjusted value added by manufacture amounted to $10,864,688,000.

LEADING MICHIGAN MANUFACTURES, 1960

Industry group	Total employees	Total payroll	Adjusted value added by mfr.[1]
		(in thousands)	
Transportation equipment	289,563	$1,927,288	$3,945,457
Nonelectrical machinery	130,032	869,043	1,458,986
Primary metals	80,505	526,052	999,258
Fabricated metals	86,012	506,670	838,154
Food and kindred products	58,394	306,429	712,516
Chemicals and products	35,135	234,612	676,656
Electrical machinery	32,644	182,227	355,453
Paper and allied products	28,553	167,501	331,350
Printing and publishing	28,934	172,726	294,798
Stone, clay, glass products	18,265	102,207	221,430

[1] For definition, see footnote 1 in the article *Industrial Production.* (Source: *1960 Annual Survey of Manufactures.*)

Mining.—In 1961, Michigan ranked 12th among the states in the value of its mineral output, with 2.44% of the national total. It was first in output of bromine, calcium-magnesium chloride, magnesium compounds, and peat; second in gypsum, iodine, iron ore, lime, and sand and gravel; and third in manganiferous ore.

MICHIGAN MINERAL PRODUCTION, 1961

(In short tons, except as noted)

Mineral	Quantity	Value
Cement:		
Portland (376 lb. bbl.)	21,948,000	$ 75,172,000
Masonry (280 lb. bbl.)	1,515,000	4,467,000
Clays	1,817,000	1,975,000
Coke	2,958,342	51,460,000[1]
Copper (recoverable content of ores)	70,245	42,147,000
Gypsum	1,295,000	5,095,000
Iron ore, usable (long tons)	9,384,000	87,604,000
Lime	1,211,000	15,960,000
Natural gas (1,000 cu. ft.)	27,697,000	5,844,000
Peat	209,266	2,002,000
Petroleum (1,000 bbl.)	18,898[2]	55,182,000[2]
Salt, common	3,885,000	31,284,000
Sand and gravel	54,603,000	47,790,000
Stone	28,731,000	30,103,000
Other minerals	...	46,186,000
Total	...	$442,696,000[1,3]

[1] Value for processed materials is not included in total. [2] Preliminary. [3] Total adjusted to eliminate duplication of value of clays and stone. (Source: U.S. Bureau of Mines.)

Agriculture.—Cash farm income for the first nine months of 1962 (excluding government payments) totaled $540,704,000, compared with $522,881,000 for the corresponding period of 1961. For the full year 1961, income comprised $394,273,000 from livestock, $339,674,000 from crops, and $37,178,000 in government payments. Principal income sources in 1961 were wholesale milk, $202,922,000; cattle, $85,144,000; and wheat, $59,893,000.

The state's 112,000 farms in 1959 had an acreage of 14,783,000 (7,155,000 in harvested cropland). Livestock on farms on Jan. 1, 1962, included 1,752,000 cattle, 747,000 hogs, and 7,196,000 chickens. An average of 175,000 family and 42,000 hired workers engaged in farming in 1961.

MICHIGAN CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Apples (1,000 bu.)	10,520	16,000	12,000
Beans, dry edible (1,000 bags)	4,586	7,358	7,527
Cherries (tons)	81,100	103,500	138,000
Corn for grain (1,000 bu.)	76,879	101,864	91,520
Maple sirup (1,000 gal.)	83	82	73
Potatoes (1,000 cwt.)	7,077	9,116	8,585
Soybeans (1,000 bu.)	3,876	7,410	7,898
Sugar beets (1,000 short tons)	832	1,178	1,077
Wheat (1,000 bu.)	33,969	39,996	29,965

(Source: U.S. Department of Agriculture.)

Events, 1962.—The financial crisis which had plagued the state government for six years eased somewhat in 1962. Late in the year there were in-

Republican George W. Romney and his wife (right) hail his victory in Michigan's gubernatorial election, November 6.

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dications that tax revenues would be some $30 million more than had been expected and that the state deficit could be reduced from $85 million to about $55 million. The increase in revenue resulted in part from larger sales tax collections and from income derived from newly passed "nuisance" taxes (see above, *Legislation, 1962*).

Increased spending was partly accounted for by the fact that unemployment in mid-September had dropped to its lowest point in seven years. The automobile industry had another prosperous year; new car sales for the nation exceeded the 1961 total by early November, and all indications were that the final figure would be the highest since the 1955 boom.

In the November elections, Republican George Romney, former president of American Motors, defeated incumbent John B. Swainson for governor (1,419,046 to 1,340,549), ending the 14-year hold on that office by the Democratic Party. Other state offices were captured by the Democrats. In congressional races, the 10 Republican and 7 Democratic incumbents were reelected. The Republicans gained a seat in the 4th District, and in the race for congressman-at-large former Democratic National Committeeman Neil Stabler defeated former Rep. Alvin M. Bentley.

Political observers attributed the defeat of Swainson to his veto of the Bowman bill and to the belief that the governor's office had become the symbol of voter frustration over the impasse on tax and fiscal reform. The governor's veto of the Bowman bill, which would have exempted nonresidents from Detroit's new 1% income tax, turned many suburban residents against him. Dissatisfaction over the relationships between the governor and the Legislature also was expressed by the voters in outstate areas when several Republican leaders were defeated in the spring primary elections.

The state Constitutional Convention which convened in October 1961 completed its work in mid-May. The new constitution, which will be presented to the voters in April 1963, was the result of compromise and was completely satisfactory to neither the Republicans nor the Democrats. The vote for acceptance by the convention was split almost exactly on party lines, with the majority Republicans supporting the document. The new constitution increases the governor's term from two to four years, and empowers him to reorganize executive agencies and reduce the number from the present 100-plus to 20. It provides for the election of some state administrative offices which are at present appointive, and also for a Court of Appeals to assist the state Supreme Court. A major issue in the document are its provisions for the apportionment of legislative districts. It calls for the establishment of 38 senatorial districts and for future apportionment based on a formula crediting 80% to population and 20% to area. Such apportionment was charged as being unconstitutional in a case pending before the U.S. Supreme Court.

The issue of redistricting the Senate was raised in a suit filed by State AFL-CIO President August Scholle, who charged that the existing apportionment, because of the disparity in population of the districts, violated the 14th Amendment to the federal Constitution. The Michigan Supreme Court's Democratic majority supported Scholle on July 18 and ordered a new reapportionment based on population. Failure by the Legislature to do this would have required senatorial candidates to run on a statewide basis in the fall elections. Republican leaders appealed the decision to the U.S. Supreme Court, and on July 27 won a stay from Justice Potter Stewart (pending a decision by the full court. (See also REAPPORTIONMENT AND REDISTRICTING.)

(See also DETROIT.)

"Legislation" and "Events" by: ROSS N. PEARSON, *Associate Professor of Geography, University of Michigan.*

MICROBIOLOGY. See Index entry.

MIDDLE EAST

Among the most important contemporary factors in the Arab part of the Middle East (that is, the Middle East excluding the "northern tier" countries of Turkey, Iran, Pakistan, and Afghanistan) is the fundamental and irreconcilable opposition between two forces, neither of which is in truth very congenial to the United States and its allies.

Monarchies versus Socialist Revolutions.—On the one side in this clash are the traditional regimes, conservative in the extreme, patriarchal and autocratic, where all power is in the hands of the ruling family. In many cases these ruling families now derive fantastically high incomes from oil royalties. The kingdom of Saudi Arabia and the tiny sheikhdom of Kuwait both exemplify such traditional states. Opposed to them, and threatening them, are leftward programs aiming at the end of traditional regimes and the redistribution of property, and basing themselves on the stirring up of the masses. Such movements find inspiration and support in the "Arab Socialism" of President Nasser of the United Arab Republic (a grandiose title that disguises Egypt, which since the secession of Syria in September 1961 is no longer united with anything else). Nasser's measures against property owners in the fall of 1961, which precipitated the Syrian revolt, amounted to a declaration of war on his part against both the middle classes and the ruling sheikhs of the whole Arab world.

This basic antagonism was brought into sharp focus in September–October 1962 by events in the monarchy of Yemen, in southwestern Arabia. The death of the imam of Yemen was immediately followed by a pro-Nasser revolt in the Yemenite Army, which overthrew his successor, embarked on a purge of his supporters, hailed Nasser as the leader of Pan-Arabism, and promised the country a "socialist future." As was to be expected, Nasser undertook to give the new regime any military assistance which it required, while the cause of the overturned but ancient dynasty was taken up by Prince Hassan, who proclaimed himself the new imam and tried to organize a counterrevolution. He had support among many of the tribal chiefs, and also was promised the support of Saudi Arabia and Jordan.

Events in this rather minor state thus immediately conjured up, almost automatically, opposing forces throughout much of the Arab world, and led to the possibility of widespread involvement. King Hussein of Jordan, on October 21, declared his readiness to send support of every kind to the royalist cause in Yemen.

Whether ultimately successful in Yemen or not, the threat of leftward revolution was likely to push the more intelligent of the traditional Arab rulers in the direction of modernization. It appeared significant that in mid-October King Saud of Arabia, who had been acting as his own prime minister, dissolved his cabinet and appointed Prince Faisal, one of his numerous half-

A crowd in Ta'izz, Yemen, hails a speech by General al-Sallal, leader of a republican coup after the death of the old imam on September 19. The soldiers on the wall are Egyptians; President Nasser of the UAR gave his support to al-Sallal.

PICTORIAL PARADE

brothers, to head the new government. Prince Faisal is said to be an able administrator interested in saving the monarchy through introducing timely reforms.

Position of Nasser.—Insofar as Nasser of Egypt was concerned, events in Yemen meant an increment of prestige which was all the more welcome because it was rather obviously necessary. It has been noted that Nasser's political aims over the past year or two seem to have been concerned less with the Arab world and more with Africa, where indeed he is the most important political figure in the "Casablanca group" of states (see AFRICA). The erosion of the tremendous prestige which Nasser enjoyed in 1956 appears to be due chiefly to his desire to dominate rather than accept the position of working with equal partners.

Inherent in the situation in 1962 was the likelihood of ideological and political cooperation between Egypt and newly independent Algeria, another Islamic state. If Nasser was prepared to have such an alliance on equal terms (something he has not hitherto accepted with any Arab state), it would be a formidable left-wing threat to the remaining feudal monarchies of the Middle East. Nothing else but equality, however, would be acceptable to the momentarily disorganized but politically sophisticated Algerians.

Arab Disunity.—Basic dissensions within the Arab world brought its fragile political organization, the Arab League, to the very verge of final dissolution in 1962. Already boycotted by Premier Kassem of Iraq for its support of Kuwait in 1961, the league suffered a walkout by Egypt on Aug. 28, 1962. The incident took place at a meeting of the league convoked at Shtōra, Lebanon, at the request of Syria, to discuss its complaint against Egypt of interference in Syrian internal affairs. (The Syrian government in question was one which took office in March 1962 after a military coup d'état. The new regime was further to the left than the six-month-old government which it replaced, but not far enough to be willing to tolerate Nasser's habitual subversive attempts.)

The Egyptian delegation walked out of the league meeting in protest against the consideration of the Syrian complaint. The embarrassed remaining members, seeking a compromise, then arrived at the convenient conclusion that since Egypt had no representatives present it was impossible to consider the question. Nasser thus escaped censure, but his ambitions to lead the Pan-Arab movement seemed even further from realization. Events in the ambiguous political forum of Syria seemed likely to provide the clue to future trends in the Arab Middle East.

The Lebanon meeting had another interesting consequence in the announcement a few days later, after a meeting between King Hussein and King Saud, that the kingdoms of Jordan and Saudi Arabia would place their armed forces under a joint command, and would take measures to advance economic unity. It is difficult to assess the significance of such plans, of which there has been a plethora of late. However, the two kingdoms might well complement and strengthen each other against the chill threat of revolution; for Saudi Arabia is wealthy and Jordan poor, but Jordan has a bountiful supply of the trained military and civilian talent that Saudi Arabia lacks. If the *rapprochement* between Saudi Arabia and Jordan is real and permanent, it will put an end to an era of hostility between them.

South Arabian Federation.—At the very time when traditional rule was being challenged in Yemen, in the neighboring Aden Protectorate and Aden Colony the British government was engaged in an interesting piece of political construction based largely on cooperation with a considerable number of traditional native rulers. Negotiations in London in July resulted in the publication (August 20) of a White Paper outlining the government's plan to fuse Aden Colony with 11 of the emirates of the much larger Aden Protectorate (which have banded together as the Federation of South Arabia) to form a new political entity.

The first stage of this plan does not go beyond the setting up of a new federal capital city across the bay from the existing city of Aden and the creation of a federal parliament. It was hoped that Aden Colony and all the remaining emirates (there are 23 in all) would join later, and so create a new country about the size of Italy and with a population of just over 1 million, which would achieve full internal self-government by stages and, later, sovereignty and Commonwealth membership. A threat to this plan arose from the existence of two nationalist parties in the 75-square-mile Aden Colony, which could put up effective

Prince Talal of Saudi Arabia (right center), who rebelled against his brother, King Saud, meets President Nasser of the United Arab Republic (left center) in Cairo after he had publicly aligned himself with the policies of Nasser.

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opposition to a political union with the totally autocratic emirates of the Protectorate.

If the plan succeeded, however, it would provide a secure political setting into the indefinite future for the British military base of Aden, which is, outside Cyprus, the one remaining British base in the Middle East. On it depends the defense of British oil interests in Kuwait and Trucial Oman and throughout the Middle East, as well as the discharge of Western treaty obligations to Iran and Pakistan.

The British plans for southern Arabia formed a parallel and complement to what that government was doing in the Far East in trying to create a new Federation of Malaysia (see FAR EAST). Both were attempts to integrate a vulnerable collection of small states into a viable and stable larger unit. If both attempts succeeded they would provide linchpins of security at the two ends of the Indian Ocean, from which British and other Western forces could operate as necessary. Throughout the 19th century, after their acquisition by Britain (Singapore in 1819, Aden in 1839), these two British bases were the twin foundations on which was secured the peace and stability of the whole vast Indian Ocean area. The two proposed federations were an ingenious attempt to enable that function still to be discharged in the widely changed circumstances of the later 20th century.

British oil interests in the Middle East were enhanced in 1962, and anxiety over possibly vulnerable Kuwait to some extent lessened, by a rich oil strike in the Persian Gulf sheikhdom of Abu Dhabi, in Trucial Oman. Oil production, which began in July, soon reached 30,000 barrels a day and was expected to go much higher.

The Non-Arab Middle East.—There was a paucity of major developments in the non-Arab countries of the Middle East. The new regime in Turkey completed two years in power in May, but the country was in a state of comparative stagnation and disillusionment. Israel continued to experience the unremitting hostility of her Arab neighbors, but their mutual enmities were such that not even her start in diverting Jordan River water to the Negev could unite them in action to prevent it. At a meeting of the Central Treaty Organization's Military Committee in London in April, Pakistan pressed for a unified command structure analogous to that of the North Atlantic Treaty Organization, but was unable to obtain progress in that direction. In a speech on August 6 at Quetta, President Ayub Khan of Pakistan advocated the fusion of the three Muslim states, Afghanistan, Iran, and Pakistan, into a greater political entity—a prospect remote as long as Pakistan and Afghanistan are not even on a basis of normal friendly relations. Between Pakistan and Iran, however, relations were indeed very close.

Perhaps the most interesting development, from the long-term point of view, was the proposal by the United States to furnish funds to develop the small south Iranian port of Bandar Abbas on the Indian Ocean into a first-class harbor having good communications with the north and east of Iran and also with Afghanistan. The beneficial possibilities of the project were so far-reaching that it could alter the whole economic and political pattern of that part of the Middle East.

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MIDWAY. See PACIFIC ISLANDS.
MIGRATION. See IMMIGRATION AND NATURALIZATION; REFUGEES AND DISPLACED PERSONS.
MILITARY AFFAIRS. See the Index entry, *Military.*
MILITARY POLICY, U.S. See NATIONAL SECURITY.
MILK. See DAIRY PRODUCTS and the Index entry, *Milk.*

MILWAUKEE

Wisconsin's largest city, Milwaukee had a population in 1960 of 741,324 (1962 est., 752,000), making it the 11th most populous city in the nation. The city's land area (1962) is 96.5 square miles. The Milwaukee metropolitan area, comprising Milwaukee and Waukesha counties (795 square miles), had a 1960 population of 1,194,290, 17th largest in the United States. Milwaukee city and county has a population (1962 est.) of 1,147,880.

Milwaukee has a long-standing reputation for clean, conservative government, with emphasis on high-quality services. Every four years (the next time in 1964) voters elect on a nonpartisan basis a mayor, attorney, comptroller, treasurer, and Common Council of 20 aldermen, 1 from each ward.

The total budget under control of the Common Council for 1963 was $114,421,881, including $10,023,117 for capital improvements. In addition, the city issued $18,895,000 in general obligation bonds and $2,000,000 in water revenue bonds for capital improvements.

The six-year capital improvements program called for expenditures of $215,782,292 through 1967. The city's bonded indebtedness in 1962 was $127,782,292.

Public school enrollment in 1962 was 112,647. For 1963, the public school budget was $53,525,744, in addition to $6,250,000 in school construction bonds. Parochial school enrollment in the area was 119,000.

Assessed value of real estate in Milwaukee in 1962 was $2,053,559,230, up $67,862,165 over 1961. Combined city and school taxes for 1963 rose for the 11th consecutive time. The rate was $47.42 per $1,000 of assessed valuation, compared with $45.73 in 1962. Assessments are made at about 53% of true value.

In mid-1962, 499,100 persons were employed, 2,100 over 1961, and 16,700 were unemployed in the two-county metropolitan area. The total value of manufactured products in Milwaukee County was about $3.14 billion. Primary products included engines, turbines, castings, heavy machinery, metal products, metal working machinery, and beer. Retail sales totaled $1.38 billion.

Seaway tonnage handled through the Great Lakes port of Milwaukee during 1962 was slightly lower than in 1961, the port's biggest year.

In 1962, Milwaukee won a six-year court fight with the village of Brown Deer for undisputed possession of most of the old town of Granville, an area potentially rich in industrial uses. The state Supreme Court transferred 4.5 square miles of the town from Brown Deer to Milwaukee, and permitted Milwaukee to keep an additional 11.5 square miles which the city had annexed.

The city's new South Side water plant was put into operation in 1962. Part of a $58 million expansion program, it increased productive capacity 25% and permitted unrestricted lawn sprinkling for the first time in years.

In May, the Hearst-owned Milwaukee *Sentinel* was shut down by a strike for the first time in its 125-year history. Publication resumed in July after the newspaper was purchased by the city's other daily, the Milwaukee *Journal.*

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MINERAL PRODUCTION

World mineral production again reached new peaks in 1961, in response to an ever-expanding demand for raw materials. According to the U.S. Bureau of Mines *Minerals Yearbook*, 43 of the 65 world and free world totals were higher in 1961 than 1960. Percentage gains ranged from a 1% gain in pig iron to an almost 40% gain in production of lithium minerals. There were 37 new

records established, 30 in the world group and 7 in the free world group.[1]

The United States was the leading producer of 29 of the 52 commodities for which totals for the entire world were compiled. Other free world countries led in 16 items, namely: Canada (asbestos, nickel, and platinum), Brazil (beryl), France (byproduct elemental sulfur), Republic of the Congo (industrial diamonds), Italy (mercury), Republic of Korea (graphite), Jamaica (bauxite), Japan (pyrites), Malaya (tin, mine and smelter), Mexico (fluorspar and silfur), Peru (bismuth), and Republic of South Africa (gold). The Sino-Soviet bloc ranked first in 13 items—the USSR in chromite, coal (all grades), coke (metallurgical), corundum, iron ore, lead (mine), magnesite, manganese ore, and peat; China in antimony and tungsten; and East Germany in coke (low-temperature) and fuel briquettes.

Africa continued in 1961 as the world's major source of mineral supply for over 97% of the world's industrial diamonds and over 99% of lithium minerals, and remained the chief source of columbite-tantalite minerals (82%) and cobalt (77%). It produced 52% of the world's gold in 1960. These contributions, together with 40% of the beryl and 34% of the chromite, clearly establish Africa's position as a major source of space- and nuclear-age metals. Africa also accounted for 21% to 31% of the 1961 supply of manganese ore, vanadium, antimony, copper, and platinum-group metals. In addition to its leading position in diamonds and lithium minerals, Africa produced important quantities of other nonmetallics: corundum (38%), vermiculite (26%), and phosphate rock (26%).

Because the United States imports well over half of its requirements of diamonds, lithium, flake graphite, columbite-tantalite minerals, strategic-grade long-fiber asbestos, cobalt, chromite, manganese ore, beryl, and antimony, the importance of Africa to the United States as a source of raw materials is apparent.

Latin America accounts for almost all of the free world's quartz crystal of piezoelectric quality. In 1961 the following percentages of United States imports came from Latin America: bauxite, 100; piezoelectric quartz crystal, 99; natural amorphous graphite, 77; bismuth, 80; crude petroleum and petroleum products, 68; cadmium, 66; iron ore, 59; copper, 74; antimony content of ore, 60; fluorspar, 68; beryl, 44; zinc, 61; and manganese ore, 51.

According to the Bureau of Mines, the value of all minerals produced in the United States in 1961 was $18,131,000,000, an increase of $17,896,000,000 over 1960. Natural gas and petroleum were chiefly responsible for the gain.

Since the United States government suspended Treasury sales of nonmonetary silver to domestic consumers in November 1961, the price of silver has advanced almost 40%. Consumption of silver continues to be greater than production. A preliminary estimate placed 1962 production at 235,200,000 fine ounces.

The USSR and Communist China release a few official statistics on mineral production. They provide a helpful base for the Bureau of Mines to estimate other facets of the mineral industry, and the bureau believes the data presented herein correctly reflect production trends and give a reasonably accurate picture of the order of magnitude and of the physical volume of production.

The following tables show the trend of production of the more important mineral commodities in the major producing countries during recent years. Totals include output of minor countries not listed. In some cases production data are too incomplete to justify showing a total. Listing usually includes countries that have produced more than 1% of the total at any time since 1939. (These tables are based largely on data supplied by the Foreign Activities Staff of the U.S. Bureau of Mines, with gaps filled from other sources.)

Figures in parentheses are for the preceding year, as a substitute for those lacking for the year indicated. A figure with fewer decimal places indicated than others in the same table is an estimate. A question (?) means unknown or an estimate; a dash (—) means no production reported.

WORLD PRODUCTION OF MAJOR MINERALS

	1939	1959	1960	1961
Aluminum		(Thousands of metric tons)		
Austria	—	65.6	68.0	67.7
Cameroun	—	42.3	43.9	47.6
Canada	75.0	538.5	691.3	601.6
China	—	70.4(?)	80.0(?)	100.0(?)
Czechoslovakia	—	26.0	40.0(?)	50.0(?)
France	50.0	173.0	235.2	279.2
Germany[1]	200.	151.2	168.9	172.6
Hungary	1.5	45.7	49.5	51.1
Italy	34.2	75.0	83.6	83.4
Japan	23.0	100.1	133.2	153.7
Norway	31.0	145.9	164.8	171.9
Poland	—	22.8	26.0	47.6
Spain	1.1	22.6	24.0	28.2
Switzerland	28.0	34.4	39.7	42.0
USSR	45.	625.0(?)	675.0(?)	900.0(?)
United Kingdom	25.0	24.8	29.4	32.8
United States	148.4	1,772.7	1,827.5	1,727.0
Total (est.)	667.	4,060.	4,520.	4,715.
Antimony		(Metric tons)		
Algeria	217.	1,030.	712.	653.
Australia	419.	638.	156.	119.
Austria	102.	572.	613.	606.
Bolivia[5]	9,225.	5,502.	5,327.	6,740.
Canada	550.(?)	752.	749.	593.
China	12,017.	15,000.(?)	17,500.(?)	17,000.(?)
Czechoslovakia	1,012.(?)	1,600.(?)	1,600.(?)	1,600.(?)
Japan	270.	308.	271.	195.
Mexico	7,243.	3,286.	4,231.	3,608.
Morocco	474.	229.	281.	360.(?)
Peru	775.	719.	817.	717.
South Africa	6.	12,355.	12,281.	10,708.
Spain	22.	160.	220.	180.(?)
Turkey	460.	1,253.[6]	1,367.[6]	1,368.[6]
USSR	(?)	6,000.(?)	6,000.(?)	6,000.(?)
United States	328.	615.	578.	625.
Yugoslavia[2]	1,511.	2,281.	2,410.	2,463.
Total (est.)	38,200.	53,000.	56,000.	54,000.
Arsenic (white)		(Thousands of metric tons)		
Belgium[5]	3.33	2.87	(2.87)(?)	(?)
Canada	0.79	0.72	0.78	0.14
France	5.99	8.00	8.50	12.3(?)
Germany[1,6]	1.26	0.16	0.10	0.13(?)
Italy	1.15	1.14	0.59	0.60(?)
Japan	3.54	1.08	1.13	1.10(?)
Mexico	7.06	10.47	10.05	13.20(?)
Portugal	0.32	0.54	0.74	0.70(?)
S. Rhodesia	—	0.48	0.19	0.18(?)
Sweden	10.20	11.00	13.71[6]	11.00(?)
United States	20.27	4.71	(?)	(?)
Total[15] (est.)	56.5	42.3	52.0	53.4
Asbestos		(Thousands of metric tons)		
Canada	330.6	952.9	1,014.6	1,066.5
Cyprus	10.4[5]	13.1	21.2	20.0(?)
Italy	6.8	45.2	51.4	57.0
South Africa	20.0	165.5	159.5	176.8
S. Rhodesia	52.9	108.6	121.5	146.6
Swaziland	7.2	22.5	29.1	27.9
USSR	(?)	545.0(?)	600.0(?)	800.0(?)
United States	14.0	41.2	41.0	47.9
Total (est.)	(?)	2,060.	2,210.	2,520.
Barite		(Thousands of metric tons)		
Algeria	(?)	21.8	48.3	27.0
Brazil	(?)	50.8	39.8	42.4[5]
Canada	(?)	216.8	140.0	161.4
China	(?)	50.0(?)	60.0(?)	80.0(?)
France	(?)	86.4	90.0	90.0(?)
Germany[1]	420.3	388.6	469.6	485.0(?)
Greece	24.1	129.7	150.0(?)	120.0(?)
Italy	53.9	121.3	143.3	127.3

[1] Commodities in the world group included: metals—aluminum, bauxite, bismuth, copper (mine and smelter), gold, pig iron, lead (mine and smelter), nickel, steel ingots, zinc (mine and smelter); nonmetals—asbestos, cement, diamonds, feldspar, fluorspar, magnesite, phosphate rock, potash, pyrites, salt, sulfur (native), sulfur (byproduct elemental), talc, fuel briquettes, and crude petroleum. Commodities in the free world group were: white arsenic, selenium, tellurium, titanium (ilmenite), vanadium, pumice, and vermiculite.

WORLD PRODUCTION OF MAJOR MINERALS, Cont'd

	1939	1959	1960	1961
Barite (cont'd)				
Japan	(?)	19.4	22.8	29.2
Mexico	—	285.7	286.3	251.3
Morocco[19]	—	36.8	84.3	82.2
Peru	—	95.8	109.6	111.2
Spain	8.9	25.6	25.9	25.0(?)
USSR	(?)	120.0(?)	130.0(?)	130.0(?)
United Kingdom	96.3	62.1	61.2	74.4
United States	331.9	786.7	699.7	662.6
Yugoslavia	(?)	107.3	109.5	115.0
Total (est.)	(?)	2,720.	2,800.	2,770.
Bauxite		(Thousands of metric tons)		
British Guiana	483.7	1,701.3	2,510.9	2,411.7
China	—	300.0(?)	350.0(?)	400.0(?)
Dominican Rep.	—	771.5	688.6	733.6[17]
France	800.	1,757.0	2,037.7	2,182.0
Ghana[5]	—	150.2	228.1	196.1
Greece	186.9	918.5	930.0	1,300.0
Guinea	—	301.0	1,190.0	1,766.7
Haiti	—	259.0	272.0	266.8
Hungary	485.	956.7	1,188.5	1,358.3
India	9.1	218.0	384.0	476.0
Indonesia	230.7	387.3	395.7	419.9
Italy	484.0	294.2	315.5	323.1
Jamaica	—	5,207.5	5,837.0	6,770.1
Malaya	93.7	387.9	459.2	409.9
Sarawak	—	210.2	289.4	257.5
Surinam	511.6	3,430.0	3,455.0	3,405.2
USSR	270.(?)	3,000.0(?)	3,500.0(?)	4,000.0(?)
United States	381.3	1,727.5	2,029.9	1,247.7
Yugoslavia	318.8	815.0	1,025.0	1,232.0
Total (est.)	4,344.	23,020.	27,410.	29,430.
Beryl		(Metric tons)		
Argentina	299.	585.	670.	700.(?)
Australia	6.	322.	193.	250.(?)
Brazil	276.	879.	1,696.	1,700.(?)
Congo, Rep. of[21]	—	424.	591.(?)	400.(?)
India	9.	—[17]	907.[17]	803.[17]
Malagasy Rep.	(?)	425.	636.	600.(?)
Mozambique	—	1,414.	1,496.	930.(?)
S. Rhodesia	—	399.	489.	359.
South Africa	(?)	184.	295.	174.
S. West Africa	(?)	154.	375.	229.
United States	86.	386.	461.	1,018.
Total (est.)	676.[15]	5,700.[20]	8,500.[20]	7,800.[20]
Bismuth		(Metric tons)		
Bolivia[5]	13.	221.	183.	211.
Canada[2]	186.	152.	192.	218.
France (in ore)	—	55.	55.	68.(?)
Japan[2]	(?)	101.	118.	130.(?)
Korea[14] (in ore)	—	103.	144.	147.(?)
Mexico[2]	164.	239.	272.	272.(?)
Peru[2]	454.	335.	414.	474.
Spain[2]	—	24.	14.	12.(?)
United States	(?)	(?)	(?)	(?)
Yugoslavia[2]	(?)	91.	105.	98.
Total (est.)[20]	1,300.	2,300.	2,400.	2,500.
Cadmium		(Metric tons)		
Australia	175.	346.	306.	300.(?)
Belgium	531.	686.[5]	718.[5]	134.[5](?)
Canada	426.	980.	1,069.	1,088.
Congo, Rep. of the	—	475.	505.	190.
France	130.	244.	254.	250.
Germany[1]	401.	420.	409.	429.
Italy	146.	250.	290.	347.
Japan	80.(?)	491.	568.	615.(?)
Mexico[2]	—	51.	92.	65.(?)
Mexico[16]	817.	522.	1,030.(?)	1,140.(?)
Poland	221.	270.(?)	280.(?)	290.(?)
S. West Africa[16]	82.	587.	786.	793.
USSR	50.	456.(?)	470.(?)	500.(?)
United Kingdom[8]	106.	141.	107.	99.
United States	2,173.	3,902.[8]	4,618.[8]	4,510.
Total (est.)	4,577.	9,000.	10,010.	9,110.
Cement		(Millions of metric tons)		
Argentina	1.13	2.36	2.64	2.84
Australia	0.68	2.62	2.79	2.86
Austria	0.74	2.42	2.83	3.08
Belgium	2.55	4.44	4.39	4.75
Brazil	0.7	3.84	4.47	4.71
Canada	0.91	5.70	5.25	5.58
China	0.54	12.27	16.00(?)	14.00(?)
Czechoslovakia	0.28	4.74	5.05	5.34
France	(?)	14.00	14.17	15.53
Germany[1]	13.96	23.16	24.91	27.22
India	1.73	6.94	7.84	10.40
Italy	5.11	14.23	15.85	17.99
Japan	5.07	17.27	22.54	24.64
Mexico	0.41	2.71	3.09	3.04
Poland	1.49	5.32	6.59	7.36
Rumania	0.53	2.85	3.05	3.31
South Africa	0.95	2.65	2.70	2.60
Spain	1.19	5.73	5.56	6.05
Sweden	1.18	2.82	2.81	3.01
Switzerland	(?)	2.68	3.04	3.60

WORLD PRODUCTION OF MAJOR MINERALS, Cont'd

	1939	1959	1960	1961
USSR	5.7	38.78	45.52	51.00
United Kingdom	8.34	12.79	13.50	14.38
United States	21.27	60.67	56.99	57.75
Yugoslavia	0.66	2.22	2.40	2.34
Total (est.)	93.	294.13	318.30	340.65
Chromite		(Thousands of metric tons)		
Albania	3.0	247.0	286.0	300.0(?)
Cuba	59.6	39.7[17]	29.7[17]	—[17]
Greece	57.1	80.0	100.0(?)	40.0(?)
India	49.9	85.2	100.1	45.9
Japan	57.4	57.7	67.5	70.4
New Caledonia	52.0	44.0	39.2	36.7
Philippines	127.6	653.5	734.4	640.3
South Africa	160.0	680.3	771.9	897.9
S. Rhodesia	139.1	492.7	606.4	536.0
Turkey	191.6	387.7	481.4	402.7
USSR	(?)	850.(?)	915.(?)	920.(?)
United States	3.7	95.3[25]	97.1[25]	74.4[25]
Yugoslavia	59.5	107.0	100.6	108.1
Total (est.)	1,163.	3,945.	4,470.	4,225.
Coal		(Millions of metric tons)		
Australia	17.5	33.9	38.1	41.0
Belgium	29.8	22.8	22.5	21.5
Bulgaria	(?)	15.3	17.1	18.6
Canada	14.1	9.6	10.0	9.4
Czechoslovakia	37.3	78.8	84.6	91.5
France	50.2	59.8	58.2	55.3
Germany[26]	388.9	439.3	469.3	481.7
Saar	(?)	16.2		
Hungary	10.6	25.3	26.5	28.2
India	28.2	47.8	52.7	56.1
Japan	51.4	48.7	52.5	55.8
Netherlands	13.1	12.2	12.5	12.6
Poland	65.5	108.4	113.8	116.9
South Africa	16.9	36.5	38.2	39.6
USSR	134.5	506.6	513.2	506.4
United Kingdom	235.1	209.4	196.7	193.5
United States	404.9	392.5	394.0	381.4
Yugoslavia	6.1	21.1	22.7	24.1
Total (est.)	1,647.	2,519.1	2,632.7	2,607.0
Cobalt		(Metric tons)		
Canada	332.	1,429.	1,618.	1,468.
Congo, Rep. of the	1,080.	8,431.	8,222.	8,400.
Morocco[19]	680.	1,207.	1,271.	1,290.
N. Rhodesia	1,598.	2,059.	1,847.	1,543.
United States	—	1,057.	(?)	(?)
Total (est.)	4,200.	15,800.[15]	15,200.[15]	14,600.[15]
Coke[18]		(Thousands of metric tons)		
Australia	1,402.	2,274.	2,675.	2,756.
Austria	(?)	1,763.	2,046.	1,781.
Belgium	5,177.	7,217.	7,539.	7,252.
Canada	1,830.	3,715.	3,513.	3,538.
China	(?)	22,000.(?)	25,000.(?)	22,000.(?)
Czechoslovakia	2,367.(?)	7,878.	8,458.	8,536.
France	8,151.	13,138.	13,607.	13,447.
Germany[1]	43,511	42,865.	44,681.	44,445.
Saar	(?)			
India	1,947.	4,299.	4,778.	6,600.(?)
Italy	1,985.	3,054.	3,715.	3,897.
Japan	(?)	7,120.	8,549.	10,913.
Netherlands	2,208.	4,128.	4,558.	4,554.
Poland	(2,523.)	10,879.	11,283.	12,252.
South Africa	185.	2,000.	2,145.	2,196.
Spain	685.	2,407.	2,574.	2,345.
USSR	16,670.	53,400.	56,200.	58,600.(?)
United Kingdom	14,187.	17,321.	19,136.	18,114.
United States	40,212.	50,678.	51,917.	46,911.
Total (est.)	(?)	262,286.	279,725.	277,520.
Columbite-Tantalite		(Thousands of pounds)		
Brazil[5]	130.	241.	284.	233.[17]
Congo, Rep. of the[21]	361.	536.	560.[17]	277.[17]
Malaya	—	269.	208.	206.
Mozambique	(?)	320.	335.	298.
Nigeria	965.	3,591.	4,612.	5,284.
Norway	—	639.	590.	708.
Portugal[17]	—	65.	69.	52.
Rhodesia, Fed. of.	—	116.	108.	138.
United States	—	189.	—	—
Total (est.)	1,545.	6,050.	6,850.	7,370.
Copper (mine)		(Thousands of metric tons)		
Australia	19.8	96.5	111.0	93.2
Canada	276.2	358.6	398.5	408.0
Chile	339.2	546.2	532.2	547.6
China	—	50.0(?)	70.0(?)	100.0(?)
Congo, Rep. of the[2]	122.6	282.1	302.3	295.2
Cyprus[5]	6.0	36.3	35.5	28.7
Germany, East	30.0[26]	18.9(?)	25.0(?)	25.0(?)
Japan	91.0	85.2	89.2	96.5
Mexico	44.9	57.3	60.3	49.3
Peru	44.0	49.8	181.7	198.0
Philippines	7.5	49.5	44.0	51.9
Rhodesia, Fed. of	215.1	554.2	590.1	588.2
South Africa	14.3	49.0	45.8[2]	52.6
S. West Africa	3.5	31.2	20.5	25.2

WORLD PRODUCTION OF MAJOR MINERALS, Cont'd

	1939	1959	1960	1961
USSR[2,8]	130.5	435.0(?)	500.0(?)	550.0(?)
United States	660.7	748.3	979.9	1,057.0
Yugoslavia	64.2[2]	34.6	33.3	50.1
Total (est.)	2,251.	3,660.	4,210.	4,410.
Diamonds		(Thousands of carats)		
Angola	690.	1,016.	1,058.	1,148.
Brazil	350.(?)	350.(?)	350.(?)	350.(?)
Congo, Rep. of the	8,360.	14,855.	13,452.	18,143.
Ghana	1,088.	3,076.	3,273.	3,040.
Sierra Leone	600.	1,294.	1,962.	1,937.
South Africa	1,250.	2,834.	3,146.	3,788.
S. West Africa	35.	931.	936.	906.
Tanganyika	3.[5]	624.	537.	685.
Total (est.)	12,500.	26,800.	27,700.	33,700.
Feldspar		(Thousands of metric tons)		
Canada	11.3	16.3	12.6	8.9
Colombia	—	15.0	15.0	15.0(?)
France	(?)	80.0	75.0	75.0(?)
Germany[1]	11.4	189.0	241.5	240.0(?)
Italy	12.5	61.0	86.4	89.6
Japan	4.1	61.2	92.9	95.0(?)
Norway	24.3	61.0	66.0	70.0
Philippines	—	1.7	4.0	14.8
South Africa	—	10.6	15.9	23.7
Sweden	40.8	46.9	55.2	55.0(?)
United States	257.5	557.2	510.4	504.8
Yugoslavia	—	19.6	14.0	20.0(?)
Total (est.)	(?)	1,400.	1,490.	1,530.
Fluorspar		(Thousands of metric tons)		
Canada	11.4	67.0(?)	70.0(?)	69.0(?)
China	(?)	200.0(?)	250.0(?)	250.0(?)
France	(51.9)	100.2	118.0	200.0
Germany[1]	162.0	121.3	130.2	109.4
Italy	13.2	157.9	162.3	150.8
Mexico	—	328.8	362.7	386.1
South Africa	10.3	63.8	103.0	87.0
Spain	8.4	89.2	111.0	140.0(?)
USSR	(?)	175.0(?)	190.0(?)	210.0(?)
United Kingdom	38.8	84.4	99.1	100.8
United States	165.8	167.9	208.5	186.0
Total (est.)	577.	1,710.	1,990.	2,090.
Fuel Briquettes		(Millions of metric tons)		
Australia	0.42	0.68	1.54	1.90(?)
Belgium	1.56	1.00	1.08	1.13
Czechoslovakia	0.84	0.71	0.76	0.79(?)
France	8.36	6.56	6.07	6.08
Germany[26]	51.88	73.96	76.52	78.58
Hungary	0.45(?)	1.08	1.06	1.10(?)
Japan	(?)	2.25(?)	2.70(?)	2.95(?)
Korea[14]	—	2.00(?)	2.23	2.25(?)
Netherlands	1.34	1.12	1.24	1.26
Poland	0.47	1.00	1.03	1.05(?)
Spain	0.79	1.28	1.14	1.10(?)
USSR	(?)	8.50(?)	8.50(?)	8.50(?)
United Kingdom	0.81	1.75	1.48	1.50(?)
United States	1.0	0.82	0.70	0.54
Total (est.)	69.[15]	104.0	107.4	110.0
Gold		(Millions of ounces)		
Australia	1.65	1.09	1.08	1.07
Canada	5.09	4.48	4.63	4.44
Colombia	0.57	0.40	0.43	0.40
Congo, Rep. of the[21]	0.55	0.35	0.32	0.23
Ghana	0.79	0.91	0.89	0.97
Japan	1.96	0.26	0.26	0.29
Mexico	0.84	0.31	0.30	0.27
Philippines	1.04	0.40	0.41	0.42
South Africa	12.82	20.07	21.38	22.94
S. Rhodesia	0.80	0.57	0.56	0.57
USSR	5.20	10.0(?)	11.0(?)	12.00(?)
United States	4.62	1.64	1.68	1.57
Total (est.)	40.04	42.80	45.40	47.70
Graphite		(Thousands of metric tons)		
Austria	24.0	62.1	88.0	81.0
Ceylon[5]	22.8	8.0	9.2	9.1
China	(?)	40.0(?)	40.0(?)	40.0(?)
Germany[1]	24.2	11.2	11.6	12.3(?)
Italy	5.7	3.1	3.7	4.1
Japan	1.4	4.0	4.5	3.5
Korea[14]	83.4	82.6	92.3	88.5
Malagasy Rep.	12.2	11.4	14.4	15.5(?)
Mexico	9.8	27.8	34.3	19.5(?)
Norway	4.3	4.9	6.0	6.0(?)
United States	(?)	(?)	(?)	(?)
Total (est.)	205.	370.	420.	400.
Gypsum		(Thousands of metric tons)		
Australia	180.9	525.1	590.2	630.0
Canada	1,390.2	5,428.0	4,620.4	4,549.4
France	(?)	3,743.3	3,855.0	3,850.0(?)
Germany[1]	(?)	959.5	1,044.7	1,100.0(?)
India	69.8	857.0	997.0	865.0
Italy	433.1	1,981.8	2,000.0	2,000.0(?)
Japan	164.8	540.6	734.6	724.4
Mexico	(?)	827.8	789.8	777.9
South Africa	40.8	203.0	195.8	173.4

WORLD PRODUCTION OF MAJOR MINERALS, Cont'd

	1939	1959	1960	1961
Spain	—	2,138.0	2,140.0(?)	2,140.0(?)
UAR (Egypt)	700.2	523.5	400.0	400.0(?)
USSR[22]	(?)	3,500.0(?)	4,000.0(?)	4,500.0(?)
United Kingdom	1,042.8	3,442.2	3,652.7	3,721.2
United States	2,927.2	9,888.3	8,914.6	8,619.0
Total (est.)	8,031.	39,620.	39,115.	39,025.
Iron (pig) incl. ferroalloys		(Millions of metric tons)		
Australia	1.12	2.55	2.93	3.21
Austria	..[12]	1.84	2.23	2.26
Belgium	3.06	5.97	6.55	6.45
Canada	0.85	3.92	4.01	4.58
China	(?)	20.50	27.50	22.00(?)
Czechoslovakia	1.61	4.25	4.70	4.97
France	7.46	12.66	14.37	14.85
Germany[1]	20.3	18.39	25.74	25.42
Saar	..[12]	3.21		
Hungary	0.46(?)	1.12	1.26	1.31
India	1.79	3.11	4.19	4.69
Italy	1.10	2.19	2.82	3.20
Japan	3.0	9.90	12.34	16.39
Luxembourg	1.8	3.44	3.79	3.83
Netherlands	0.28	1.14	1.35	1.46
Poland	—	4.37	4.56	4.77
Rumania	0.12	0.85	1.01	1.06
South Africa	0.30	1.81	2.00	2.36
Spain	0.48	1.71	1.93	2.23
Sweden	—	1.50	1.63	1.76
USSR	15.2	42.97	46.76	50.90
United Kingdom	8.11	12.78	16.02	15.01
United States	32.32	56.37	62.25	60.52
Yugoslavia	0.06	0.90	1.02	1.06
Total (est.)	102.	224.15	259.00	262.45
Lead (smelter)		(Thousands of metric tons)		
Argentina	14.0	31.1	25.7	28.0
Australia[13]	238.6	241.7	246.9	214.1
Belgium[8]	96.2	88.4	92.7	99.9
Bulgaria	—	32.7	40.4	41.0
Canada	172.9	127.8	145.2	156.4
China	0.5	60.0(?)	70.0(?)	85.0(?)
France	42.4	69.9	74.4	71.5
Germany[1]	175.5	149.5	147.7	140.6
Italy	38.8	45.0	43.6	45.2
Japan	18.2	60.9	69.4	80.3
Korea, North	—	19.0(?)	30.0(?)	40.0(?)
Mexico	213.7	187.0	186.2	176.4
Morocco[19]	—	28.5	31.7	24.5
Peru	24.3	56.8	74.1	76.5
Poland	25.0[8]	38.7	39.7	39.8
Spain	26.0	68.5	71.2	77.2
Sweden	—	36.8	44.6	38.8
Tunisia	22.9	21.8	19.9	18.5
USSR	74.8[8]	320.0(?)	320.0(?)	350.0(?)
United States	404.3	309.2	346.9	407.8
Yugoslavia	—	85.4	89.1	90.4
Total (est.)	1,765.	2,190.	2,320.	2,410.
Magnesium		(Thousands of metric tons)		
Canada	—	5.54	6.61	7.02
China	—	1.00(?)	1.00(?)	1.00(?)
France	3.9	1.76	2.14	2.08
Germany[1]	14.	0.50	0.30(?)	0.30(?)
Italy	0.3	4.50	5.45	5.50(?)
Japan	1.6	1.56	2.14	2.20(?)
Norway	—	9.59	10.32	15.00(?)
USSR	1.	20.00(?)	25.00(?)	31.00(?)
United Kingdom[8]	5.1	2.17	3.74	3.80(?)
United States	3.0	28.15	36.35	36.96
Total (est.)	29.4	74.80	93.00	104.90
Manganese Ore		(Thousands of metric tons)		
Brazil	257.8	1,033.0	999.2	1,000.0(?)
British Guiana	—	—	124.7	196.1
Chile	12.6	38.8	45.9	35.0
China	(?)	1,000.0(?)	1,250.0(?)	1,000.0(?)
Congo, Rep. of the	—	386.2	373.9	312.2(?)
Cuba	102.4	53.3[6]	16.0[17]	42.0[6](?)
Ghana[6,27]	388.1	524.1	544.5	391.3
Hungary	(22.2)	154.3	123.3	120.0(?)
India	858.2	1,187.4	1,182.0	1,214.0
Japan	(?)	348.1	324.0	296.4
Mexico	61.	165.0(?)	155.5(?)	141.4(?)
Morocco[19]	75.4	470.6	483.1	571.1
Portuguese India	8.2	75.8	107.2	100.0(?)
Rumania	41.5	196.8	175.0	200.0(?)
South Africa	419.7	970.0	1,194.0	1,417.7
USSR	2,557.0	5,516.0	5,872.0	5,900.0(?)
United States	29.8	207.9	72.6	41.8
Total (est.)	5,175.	12,958.	13,611.	13,555.
Mercury		(Thousands of flasks)		
Chile	(0.04)	2.01	2.88	2.90(?)
China	4.93	23.(?)	23.00(?)	26.00(?)
Czechoslovakia	2.67	0.73(?)	0.73(?)	0.73(?)
Italy	67.15	45.83	55.46	55.43
Japan	1.36	5.99	5.79	5.30(?)
Mexico	7.38	16.42	20.11	18.51(?)
Peru	—	2.53	3.03	2.70[6](?)
Philippines	—	3.52	3.09	3.00(?)

WORLD PRODUCTION OF MAJOR MINERALS, Cont'd

	1939	1959	1960	1961
Mercury (cont'd)				
Spain	35.91	51.68	53.37	50.00(?)
Turkey	—	1.32[5]	1.34	1.30(?)
USSR	(?)	25.(?)	25.00(?)	25.00(?)
United States	18.63	31.26	33.22	31.66
Yugoslavia	(?)	13.34	14.07	15.95
Total (est.)	145.	223.	242.	240.
Mica		(Thousands of metric tons)		
Argentina	0.3	0.2[5]	0.2[6]	0.1[6](?)
Brazil	0.4	1.2	2.0	2.0(?)
Canada	1.0	0.4	0.8	0.9
India[5]	10.1	23.4	29.7	26.4
Malagasy Rep.	0.6	1.0	1.0	1.0
South Africa	1.0	1.7	3.3	2.5
United States	22.8	92.4	89.1	90.1
Total (est.)	(?)	160.	165.	160.
Molybdenum		(Thousands of metric tons)		
Canada	—	0.34	0.35	0.35
Chile	0.03	1.72	2.01	1.68
China	(?)	1.50(?)	1.50(?)	1.50(?)
Japan	(?)	0.38	0.38	0.38
Mexico	0.52	0.03	0.06	(4)
Norway	0.43	0.23	0.25	0.25(?)
USSR	(?)	4.50(?)	5.00(?)	5.40(?)
United States	13.76	23.11	30.95	30.19
Total (est.)	15.2	31.9	40.6	39.9
Nickel (mine)		(Thousands of metric tons)		
Albania	—	1.7(?)	2.5(?)	2.5(?)
Canada	102.5	169.2	194.6	214.6
Cuba	—	18.0	12.8(?)	7.5(?)
Finland	(?)	0.4	2.3	2.3(?)
New Caledonia	10.6	26.1	39.3	42.4
Poland	—	1.3(?)	1.3(?)	1.3(?)
South Africa	(?)	2.7(?)	3.0(?)	2.6(?)
USSR	(?)	55.0(?)	58.0(?)	75.0(?)
United States	0.4	10.5	11.4	10.1
Total (est.)	122.	285.	324.	360.
Petroleum		(Millions of barrels)		
Algeria (incl. Sahara)	(28)	9.7	67.6	123.1
Argentina	18.61	44.7	64.2	85.0
Canada	7.84	184.8	189.5	220.5
Colombia	23.86	53.6	55.8	52.9
Indonesia	62.09	139.0	153.0	156.8
Iran	78.15	344.8	385.7	431.7
Iraq	30.79	311.2	353.8	365.5
Kuwait	—	504.9	594.3	600.2
Kuwait-Neutral Zone	—	42.4	49.8	64.4
Mexico	42.90	96.4	99.0	106.8
Qatar	—	61.4	63.1	64.4
Rumania	45.65	83.5	85.7	86.3
Saudi Arabia	3.9	399.8	456.5	508.3
Trinidad	19.27	40.9	42.4	45.5
USSR	216.87	945.8	1,079.4	1,211.8
United States	1,264.96	2,574.6	2,574.9	2,621.8
Venezuela	206.47	1,011.5	1,041.7	1,065.8
Total (est.)	2,086.	7,133.4	7,674.5	8,188.0
Phosphates		(Thousands of metric tons)		
Algeria	450.	571.8	563.0	425.7
Christmas Is.[5]	178.0	502.3	511.5	705.4
Fr. Oceania	160.7[5]	368.0	404.0	368.8
Morocco[10]	1,703.0	7,163.5	7,472.5	7,949.7
Nauru Island[5] / Ocean Island[5]	1,244.2	1,211.4 / 319.4	1,372.9 / 324.7	1,302.7 / 306.2
Tunisia	1,627.9	2,185.0	2,096.0	1,981.8
UAR (Egypt)	547.5	679.0	567.0	570.0(?)
USSR	1,618.	6,000.(?)	6,600.0(?)	7,700.0(?)
United States	3,817.4	16,123.7	17,787.0	18,856.9
Total (est.)	11,500.	38,475.	41,525.	44,450.
Platinum Metals		(Thousands of ounces)		
Canada, total[9]	284.3	328.1	460.3	404.9
Platinum	148.9	150.4	221.8	(?)
O.P.M.[11]	135.4	177.7	238.5	(?)
Colombia	39.1[10]	31.5[17]	28.9[17]	28.2[17]
South Africa[9]	65.3	380.4(?)	406.3(?)	357.0(?)
USSR	100.(?)	300.0(?)	330.0(?)	350.0(?)
United States	41.2	15.5	23.6	43.2
Total (est.)	543.	1,060.	1,250.	1,190.
Potash[6]		(Thousands of metric tons)		
France	598.0	1,461.9	1,535.0	1,675.5(?)
Germany, East / Germany, West	2,061.7	1,600.(?) / 1,838.0	1,600.0(?) / 1,977.5	1,600.0(?) / 2,043.8
Israel	31.8	65.3	98.0	120.0(?)
Spain	25.5	244.8	264.3	270.0(?)
USSR	122.0(?)	1,050.0(?)	1,100.0(?)	1,200.0(?)
United States	283.2	2,162.0	2,393.7	2,479.0
Total (est.)	—	8,500.	9,050.	9,550.
Pyrite		(Thousands of metric tons)		
Australia	55.1	226.6	242.5	238.8
Canada	206.5	997.5	936.5	459.0
China	(?)	700.0(?)	1,000.0(?)	1,200.0
Cyprus	403.9	1,246.0	1,081.4[5]	976.2
Germany[1]	560.5	469.5	537.5	531.5
Greece	217.2	129.1	130.0(?)	170.0(?)
Italy	977.7	1,522.0	1,545.2	1,580.2

WORLD PRODUCTION OF MAJOR MINERALS, Cont'd

	1939	1959	1960	1961
Japan	(?)	3,389.8	3,692.2	3,931.1
Norway	1,024.9	744.2	832.7	720.0
Portugal	502.3	631.5	654.9	652.9
South Africa	29.8	503.3	500.1	446.8
Spain	2,600.0	2,119.6	2,252.8	2,050.0(?)
Sweden	191.7	346.9	412.3	450.0(?)
United States	524.7	1,073.6	1,032.6	1,003.2
Yugoslavia	127.3	290.0	417.0	364.0
Total (est.)	10,800.	18,700.0[20]	19,600.0[20]	19,700.0[20]
Salt		(Millions of metric tons)		
Brazil	0.56	0.85	0.92	0.92(?)
Canada	0.39	3.01	3.00	2.94
China	3.0	11.40(?)	12.90(?)	14.00(?)
France	2.13	3.48	3.84	3.80(?)
Germany, East / Germany, West	3.72	1.69 / 3.65	1.79 / 3.97	1.79(?) / 4.68
India	1.92	3.18	3.44	3.47
Italy	1.36	1.99	2.60	2.62(?)
Japan	0.64	1.17	0.89	0.83
Poland	0.65	1.83	1.95	2.05
Rumania	0.37	0.84	1.05	1.05(?)
Spain	0.82	1.35	1.39	1.39(?)
UAR (Egypt)	0.44	0.38	0.52	0.52
USSR	(?)	6.50(?)	7.50(?)	8.00(?)
United Kingdom	3.26	5.55	5.93	5.76
United States	8.41	22.83	23.12	23.32
Total (est.)	31.97	80.00	85.00	87.50
Silver		(Millions of ounces)		
Argentina	4.77	1.55	1.67	1.43
Australia	15.32	15.08	15.20	13.00(?)
Bolivia[5]	7.24	4.50	4.89	3.90
Burma	5.94	2.04	1.98	1.74
Canada	23.16	31.92	34.02	31.17
Congo, Rep. of the	2.80	4.77	3.96	3.47
Honduras	4.21	3.17	2.95	3.54
Japan	11.	6.65	6.91	7.95
Mexico	75.87	44.08	44.53	40.34
Peru	18.80	27.23	30.76	33.58
South Africa	1.18	2.02	2.23	2.29
S. West Africa	0.6	2.0	1.0	1.8
Sweden	1.12	3.10	2.66	2.83
USSR	(?)	25.0(?)	25.0(?)	25.00(?)
United States	63.87	23.00	36.80	34.90
Yugoslavia	(?)	2.83	3.03	3.45
Total (est.)	267.	221.9	240.2	231.8
Sulfur (native)		(Thousands of long tons)		
Chile	27.0	21.7	30.9	39.4
Italy	350.2[8]	188.7	114.4	86.2
Japan	202.6[12]	215.7	243.7	238.6
Mexico	—	1,310.9	1,279.3	1,173.6
USSR	(?)	600.0(?)	800.0(?)	900.0(?)
United States	2,091.0	4,639.8	5,037.3	5,477.5
Total (est.)	2,700.	7,150.0	7,730.0	8,240.0
Talc		(Thousands of metric tons)		
Austria	(?)	51.2	82.3	84.9
Brazil	(?)	21.2	19.9	20.0(?)
Canada	11.9	35.5	37.8	43.6
France	(?)	175.6	175.1	178.7
Germany[1]	7.7	30.0(?)	32.0	32.0
India	22.6	64.5	93.4	92.9
Italy	71.4	109.3	124.4	133.0
Japan	(?)	485.5	592.4	630.0(?)
Norway	31.5	85.1	90.0(?)	90.0(?)
Spain	5.5	27.8	28.0	28.0(?)
Sweden	7.2	14.4	15.9	16.0(?)
United States	230.4	718.1	666.3	690.7
Total (est.)	500.	2,310.	2,490.	2,620.
Tin (mine)		(Thousands of long tons)		
Australia	2.8	2.4	2.2	2.6
Bolivia[5]	27.2	23.8	19.4	20.4
China[2]	15.0[8]	26.0(?)	28.0(?)	30.0(?)
Congo, Rep. of the[21]	7.1	10.3	10.1(?)	8.0(?)
Indonesia	27.8	21.6	22.6	18.6
Malaya	46.8	37.5	52.0	56.0
Nigeria	9.6	5.5	7.7	7.8
Thailand	17.3[5]	9.5	12.1	13.3
USSR[2]	(?)	15.0(?)	17.0(?)	20.0(?)
Total (est.)	176.	161.5	181.5	188.0
Titanium		(Thousands of metric tons)		
Ilmenite				
Australia[23]	0.7	84.9	109.0	175.4
Canada[24]	3.4	245.4	353.4	420.4
Finland	—	86.2	83.7	19.3
India	241.7	303.0	250.0	174.0
Malaya[5]	11.1	74.0	120.0	108.7
Norway	55.0	226.1	232.0	311.0
Senegal	4.3	29.9	21.9	15.7(?)
South Africa	—	79.1	82.0	89.8
United States	13.2	576.0	713.4	709.8
Total (est.)	(?)	1,757.1	2,000.2	2,098.7
Rutile				
Australia	0.5	83.2	90.1	102.8
South Africa	—	3.1	3.4	3.2
United States	(?)	8.6	8.0	8.2
Total (est.)	(?)	96.5	103.6	116.4

WORLD PRODUCTION OF MAJOR MINERALS, Cont'd

	1939	1959	1960	1961
Tungsten[7]		(Thousands of metric tons)		
Argentina	1.31	0.75	0.76(e)	0.75(e)
Australia	1.03	1.11	1.88	2.61
Bolivia[8]	3.34	2.42	2.15	2.82
Brazil[8]	..[4]	1.46	2.00	1.46
Burma	7.82	0.75	1.10	1.04(e)
China	12.87	18.00(e)	20.00(e)	20.00(e)
France	0.28	0.87	0.71	0.76
Korea[14]	3.97	3.17	5.33	6.83
Peru	0.17	0.49	0.49	0.43
Portugal	3.85	2.25	2.89	2.92
Spain	0.37	0.78	0.93	1.00(e)
Sweden	0.16	0.34	0.35	0.40
Thailand	0.38	0.50	0.44	0.51
USSR	0.3(e)	9.00(e)	9.50(e)	10.00(e)
United States	3.89	3.31	6.65	7.48
Total (est.)	42.0	52.0	63.0	67.3
Uranium Oxide (U_3O_8)		(Short tons)		
Australia	—	1,100.(e)	1,100.(e)	1,400.(e)
Canada	—	15,392.	12,748.	9,822.
France	—	955.	1,388.[29]	1,637.[29]
South Africa	—	6,445.	6,409.	5,468.
United States	—	16,420.	17,760.	17,399.
Total (est.)[15]	—	43,320.	40,740.	35,850.
Vanadium		(Thousands of metric tons)		
Finland	—	0.51	0.57	0.57(e)
Peru	1.02	—	—	—
South Africa	—	0.29	0.60	1.29
S. West Africa	0.51	0.65	0.76	1.04
United States	0.90	3.37	4.51	4.78
Total (est.)[15]	2.91	4.83	6.43	7.78
Zinc (smelter)		(Thousands of metric tons)		
Australia	72.4	118.3	122.2	140.9
Belgium[8]	186.0	224.3	247.6	245.5
Canada	159.3	231.6	236.7	243.1
Congo, Rep. of the	—	54.8	53.4	57.0
France	61.0	146.3	150.1	166.0
Germany[1]	231.	137.9	141.8	141.0
Italy	33.4	75.7	79.4	68.4
Japan	54.2	159.3	180.5	212.4
Mexico	35.4	55.7	52.9	51.8
Netherlands	25.3	32.2	36.1	39.6
N. Rhodesia	10.4	30.4	30.3	30.3
Norway	45.9	48.8	44.0	46.3
Poland	117.9	168.1	175.5	182.0
Spain	7.7	24.5	45.0	52.5
USSR	80.(e)	335.0(e)	345.0(e)	400.0
United Kingdom	56.2	74.1	75.5	94.4
United States	460.2	724.5	725.3	768.2
Total (est.)	1,650.	2,808	2,952	3,195

[1] Federal Republic only, in postwar years. [2] Smelter output. [3] Crude. [4] Less than 50 tons. [5] Exports. [6] Marketable in equivalent K_2O. [7] Concentrates, 60 per cent WO_3. [8] Includes secondary. [9] Total platinum group metals. [10] Exports of crude platinum. [11] Other platinum metals. [12] Included under Germany. [13] Includes Pb content of lead bullion. [14] Republic of Korea only, in postwar years. [15] Excludes estimate for USSR. [16] Cadmium content of flue dust exported for treatment elsewhere; to avoid duplication, data are not included in total. [17] U.S. imports. [18] Oven and beehive coke, excluding breeze. [19] Southern Zone (formerly French Morocco) only. [20] Includes estimate for USSR. [21] Including Ruanda-Urundi. [22] Estimated amount used in construction only. [23] Sales. [24] Since 1950, Ti slag (70% TiO_2). [25] Excludes quantity consumed by American Chrome Company. [26] Total Germany. [27] Dry weight. [28] Negligible. [29] Includes Gabon and Madagascar.

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MINERALOGY. See Index entry.

MINING

The laboratories and research centers of the U.S. Bureau of Mines made important contributions to the nation's growing demands for minerals and mineral fuels in 1962. New ground was gained in programs to develop improved mining techniques and to find better ways of producing conventional metals as well as high-purity materials for electronics, nuclear energy, and space exploration. Marked advances occurred in the mining, processing, and utilization of coal; in the making of iron and steel; and in the large-scale conservation of America's resources of essential helium.

Minerals Development.—Outstanding success was achieved during the year in one phase of the Bureau of Mines' iron ore program when a new blast-furnace feed, averaging about 80% iron, was tested in an experimental blast furnace operated by the bureau at Bruceton, Pa. Made from Lake Superior taconite and prereduced with North Dakota lignite, the pelletized feed made possible the highest productivity and lowest fuel-consumption rates ever recorded in operating the experimental furnace. Even more promising is the fact that the experimental methods used in preparing the pellets may ultimately contribute to economic processing of the nation's vast reserves of nonmagnetic taconite.

Another significant event occurred when Blast Furnace Research, Inc., an organization representing 22 major steel- and iron-producing companies in the United States and Canada, joined the bureau in a cooperative agreement under which ex-

BUCYRUS ERIE COMPANY

The dipper of the world's largest stripping shovel, used to mine coal in Kentucky, is bigger than a two-car garage.

tensive studies will be conducted utilizing the bureau's experimental furnace. This work, to continue for two years, will be directed toward further increasing efficiency and economy in blast-furnace operation and also improving the quality of the pig iron such furnaces produce.

Research on metallic tungsten and chromium was concerned mainly with developing fundamental scientific data, improving processing techniques, and broadening utilization of low-grade ores. The bureau's basic studies in vapor deposition of tungsten led more than 20 industrial firms to engage actively during the year in developing applications for its vapor-deposition process. Meanwhile, the bureau pursued new and promising methods for using domestic low-grade ores of tungsten and chrome. In addition, a successful laboratory technique was developed for making high-purity ductile molybdenum, a metal whose

heat resistance has won it consideration as a structural material for missiles and space vehicles.

Other metallurgical achievements of the year included development of processes for making vanadium alloys, vanadium, and high-purity nickel.

In the field of mining, research on mine-systems analysis advanced as industrial engineering principles were applied to operational problems. Studies to develop permissible angles for slopes of open-pit copper mines continued, and progress was made in devising mathematical and statistical techniques to indicate probability and cost of mineral discovery. Explosive anchorage of rock bolts for underground support in soft rocks showed promise, and a new series of tests was begun with bureau-developed precast concrete support sets of improved design.

Helium.—Large-scale conservation of irreplaceable helium resources began during the year with deliveries of the first helium to be conserved under helium-purchase contracts awarded by the government to four private companies. The contracts, providing for federal purchases of up to $47.5 million worth of helium annually for 22 years, were negotiated under authority of legislation that became effective in March 1961. On the basis of the purchase agreements, private firms are financing and building and will operate five plants in the Southwest that ultimately will recover some 62 billion cubic feet of the helium, which has many essential uses in industry and defense. The first installation built under the conservation program began operating late in 1962 near Bushton, Kans., and four others were scheduled to be on stream by the spring of 1963.

Helium purchased under the program will be transported through a 430-mile pipeline—constructed and operated by the government—to the federally owned Cliffside gasfield near Amarillo, Texas, where it will be stored underground until needed in the future. Wastage of helium—formerly at the rate of 4 billion cubic feet a year when natural gases containing the element were burned as fuel—will be drastically curbed.

In response to continued increase in demand during fiscal 1962, the Bureau of Mines shipped nearly 600 million cubic feet of helium, about three fourths of it to federal agencies.

A helium plant with a capacity of 65 million cubic feet a year, built by Kerr-McGee Oil Industries, Inc., Oklahoma City, Okla., began producing and marketing helium from the Pinta Dome field in eastern Arizona in November 1961. This operation, not a part of the government helium conservation program, is the first private venture into helium production since the 1930's.

A helium research program is an integral part of the helium conservation effort. Besides conducting studies to develop and improve techniques for extracting and saving helium, scientists at the bureau's new center in Amarillo perform fundamental investigations to learn more about the properties and uses of helium. Such research helps assure that the conserved helium will be used wisely and effectively to further scientific progress and to advance the national economy.

Fuels Research.—Bureau studies continued to stress improved methods of extracting, preparing, processing, and using mineral fuels.

During test demonstrations in Pennsylvania and Washington, jets of water under high pressure were used successfully in mining both anthracite and bituminous coal. Other experiments were conducted in which the explosive gas methane was removed by two different methods in advance of mining a bituminous coal seam in West Virginia.

Research to determine the feasibility of transporting relatively large sizes of coal hydraulically was aimed at combining hydraulic mining with coal pipelines and thereby making coal available to some markets at lower cost.

Development progressed on a coal-fired gas turbine for central-station power plants. Operated in conjunction with a standard steam boiler, such a turbine promises an increase of 4% to 8% in overall efficiency.

In other coal research, process development continued on converting bituminous coal to high-Btu. gas, on producing metallurgical coke from coals presently considered unsuitable, on irradiating coal and reacting it with superhot (30,000°C.) gases, and on obtaining jet aircraft fuel and other valuable products from coal carbon disulfide.

In petroleum research, 12 additional sulfur compounds were identified in crude oil from Wasson, Texas, and 8 in crude oil from Wilmington, Calif. More than 90 identifications have now been made of such compounds, which create costly problems in petroleum refining.

Health and Safety.—Highlighting bureau research in health and safety during the year were experiments and field tests demonstrating the versatility of rigid polyurethane foam in sealing and maintaining the stability of mine openings, controlling ventilation, combating mine fires, and insulating combustible material from heat. Made by combining two readily available chemicals which expand in seconds to many times their volume, this foam becomes rigid in a few minutes. It promises to be useful in many phases of mining.

In the effort to devise a practical methane-monitoring system for gassy mechanized coal mines, three prototypes were tested extensively in the bureau's Experimental Coal Mine near Bruceton, Pa. Results were so promising that two units are scheduled for further testing in an active mine.

After rigorous testing, bureau approvals were issued covering new types or models of many varieties of mining accessories, including electrical-mechanical equipment, coalmine roof drills with integral dust collectors, respiratory-protective devices, and fire-resistant hydraulic fluids. For the first time, the bureau approved diesel-powered equipment for use underground in gassy noncoal mines and tunnels.

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MINISTRY, Canadian. See CANADA.

MINNESOTA

A North Central state of the United States, Minnesota ranks 12th among the states in area (land, 80,009 square miles; inland water, 4,059) and 18th in population (3,475,000 on July 1, 1962, a 1.8% increase from the 1960 census figure of 3,413,864). Urban places with populations above 15,000 in 1960:

Albert Lea	17,108	Minneapolis	482,872
Austin	27,908	Minnetonka	25,037
Bloomington	50,498	Moorhead	22,934
Brooklyn Center	24,356	Richfield	42,523
Columbia Heights	17,533	Robbinsdale	16,381
Crystal	24,283	Rochester	40,663
Duluth	106,884	Roseville	23,997
Edina	28,501	St. Cloud	33,815
Faribault	16,926	St. Louis Park	43,310
Fridley	15,173	St. Paul (*capital*)	313,411
Hibbing	17,731	South St. Paul	22,032
Mankato	23,797	Winona	24,895
Maplewood	18,519		

Government.—Chief executive and judicial officers in 1962 included Elmer L. Andersen (Republican), governor, serving a two-year term; Karl F. Rolvaag, lieutenant governor; Joseph L. Donovan, secretary of state; Val Bjornson, treasurer; Stafford King, auditor; Walter F.

Mondale, attorney general; Erling Johnson, commissioner of education; and Oscar R. Knutson, chief justice of the 7-member Supreme Court.

The Minnesota Legislature, which convenes in odd-numbered years, comprised a 67-member (nonpartisan) Senate in 1962 and a 135-member (nonpartisan) House of Representatives.

Finance.—In the 1962 fiscal year, revenue of $922,252,640 included $408,971,511 from state taxes and $125,463,341 in federal funds. Chief tax yields were from selective sales and gross receipts ($209,932,619), individual incomes ($129,337,381), and property ($23,777,520). Spending of $935,504,655 included $215,066,487 for education, $217,494,846 for health, welfare, and safety, and $242,171,396 for highways.

Education.—In the 1960–61 school year, public elementary schools staffed by 14,990 teachers enrolled 359,459 pupils; junior-senior high schools with 15,134 teachers enrolled 280,038; and private and parochial schools with 5,631 teachers enrolled 163,253. College enrollment totaled 83,174.

Estimated public school spending in the 1961–62 school year totaled $392 million, including current expenditures of $295 million ($442 per pupil) and capital outlay of $75 million. Revenue of $450.5 million was drawn chiefly from state funds ($145 million) and local districts ($230 million). Teachers' salaries averaged $5,450 (high school, $5,700; elementary, $5,225). Actual spending for higher education (1961 fiscal year) amounted to $92,036,000.

Public Assistance.—In the 1962 fiscal year, public assistance payments to a monthly average of 122,465 persons totaled $97,416,546. This amount included $50,721,927 for the aged and $21,841,852 for dependent children.

Transportation and Communications.—A total of 507 miles of highway construction and reconstruction was completed in 1961. *Highways and roads* on Jan. 1, 1962, totaled 124,588 miles (105,929 surfaced). These served 1,825,907 *motor vehicles* (as registered on Sept. 1, 1962), including 1,324,964 automobiles. Operating in the state were (1961) 23 *railroads* (using 8,150 line miles of track); 7 regularly scheduled *airlines;* and 129 commercial and municipal *airports* and 21 seaplane bases.

Communications media included (1962) 69 AM and 8 FM *radio stations;* 10 *television stations;* 25 daily *newspapers* (circulation, 2,011,289) and 364 other newspapers (750,158); and (January 1) 364,300 business and 1,101,300 residential *telephones.*

Labor Force.—The state's labor force in August 1962 included 315,000 agricultural workers. Nonagricultural employment totaled 1,003,986, compared with 978,000 a year earlier and an average of 958,400 during 1961. Of nonfarm workers, 24.7% were in manufacturing, 24.2% in trade, and 15.2% in government services. Unemployment in August 1962 was down to 53,600 from the 72,400 of the previous August. (See also below, *Events, 1962.*)

Manufacturing.—Manufacturing establishments in the state employed during 1961 an average of 228,400 persons who received $1,315,000,000 in wages. Adjusted value added by manufacture (1960) totaled $2,362,883,000.

LEADING MINNESOTA MANUFACTURES, 1960

Industry group	Total employees	Total payroll (in thousands)	Adjusted value added by mfr.[1] (in thousands)
Food and kindred products	50,316	$265,789	$558,148
Nonelectrical machinery	29,896	167,343	310,260
Printing and publishing	20,106	121,116	193,630
Paper and allied products	12,692	69,005	165,565
Instruments and related products	13,230	81,561	153,907
Chemicals and allied products	5,124	28,724	142,037
Stone, clay, glass products	9,360	51,477	137,396
Fabricated metals	14,252	76,515	127,818
Transportation equipment	9,101	53,143	109,423

[1] For definition, see footnote 1 in the article *Industrial Production.* (Source: *1960 Annual Survey of Manufactures.*)

Mining.—Minnesota ranked 11th among the states in 1961 in the value of its mineral output, with 2.48% of the national total. The state ranked first in iron ore and in manganiferous ore production. Because of the drop in iron ore output, the state's total mineral value declined 13% from 1960.

Agriculture.—Cash farm income for the first nine months of 1962 (excluding government payments) totaled $1,075,307,000, compared with $1,054,641,000 for the corresponding period of 1961. For the full year 1961, income comprised

MINNESOTA MINERAL PRODUCTION, 1961

(In short tons, except as noted)

Mineral	Quantity	Value
Clays	176,000	$ 241,000
Coke	...[1]	...[1]
Iron ore, usable (long tons)	44,699,000	407,152,000
Manganiferous ore (5 to 35% Mn.)	181,835	...[3]
Sand and gravel	30,690,000	24,143,000
Stone	3,957,000	9,975,000
Other minerals	...	9,404,000
Total	...	$450,509,000[3]

[1] Figure withheld to avoid disclosing individual company's confidential data. [2] Value included in "Other minerals." [3] Value has been adjusted to eliminate duplication of value of raw materials used in manufacturing cement or lime. (Source: U.S. Bureau of Mines.)

$1,070,671,000 from livestock, $439,249,000 from crops, and $78,710,000 in government payments. Principal income sources in 1961 were cattle, $335,523,000; wholesale milk, $304,180,000; hogs, $231,449,000; soybeans, $123,571,000; and corn, $118,956,000.

The state's 146,000 farms in 1959 had an acreage of 30,796,000 (18,918,000 in harvested cropland). Livestock on farms on Jan. 1, 1962, included 4,258,000 cattle, 3,519,000 hogs, 1,024,000 sheep, and 17,957,000 chickens. An average of 225,000 family and 37,000 hired workers engaged in farming in 1961.

MINNESOTA CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Apples (1,000 bu.)	282	370	325
Barley (1,000 bu.)	28,807	27,300	19,864
Corn for grain (1,000 bu.)	260,873	324,242	275,188
Flaxseed (1,000 bu.)	8,078	6,444	5,480
Oats (1,000 bu.)	185,386	159,988	147,192
Soybeans (1,000 bu.)	39,894	53,843	44,733
Wheat (1,000 bu.)	18,234	24,560	17,982

(Source: U.S. Department of Agriculture.)

Events, 1962.—In the closest gubernatorial election in the state's history, only 142 votes in a total of more than 1.2 million separated Gov. Elmer L. Andersen, Republican, and Lt. Gov. Karl F. Rolvaag, Democrat–Farmer Laborite (DFL), when the returns were certified by the State Canvassing Board on November 29. The board declared Andersen the victor, 619,722 votes to 619,580; but the District Court granted Rolvaag's petition for a recount, which was in process at year's end.

A. M. Keith, DFL, was elected lieutenant governor, and four incumbents (two Republican and two DFL) were returned to the other state executive offices. Conservatives won control of both houses of the officially nonpartisan legislature for the first time since 1952. Four Republicans and four Democrat-Farmer Laborites were certified elected to the U.S. House of Representatives.

The biggest upset was recorded in the 5th District (Minneapolis) where state Sen. Donald M. Fraser, DFL, unseated Republican Walter H. Judd, a 10-term veteran of the House. Another long-time congressman, H. Carl Andersen, who had served in the House for 24 years, had lost his bid for renomination in the Republican primary after his name was linked with Texas financial manipulator Billie Sol Estes.

Three amendments to the state constitution were approved by the voters. The new laws permit investment of state funds in corporate securities as well as government bonds, abolish a state debt limitation of $250,000, and extend the biennial legislative session from 90 to 120 days.

Mayor George J. Vavoulis won a second term in the St. Paul municipal election on April 24, and three labor-endorsed candidates and three conservatives were elected to the City Council. Public housing and urban renewal were the major campaign issues. A plan presented to the council in

August for redevelopment of the St. Paul loop, proposing about $63 million in new construction, had widespread support from civic and business leaders.

On January 13 a new $8.5 million terminal for the Minneapolis–St. Paul International Airport was dedicated at Wold-Chamberlain Field. It is estimated that by the early 1970's, 4 million airline passengers will pass through the terminal each year.

In August the number of nonfarm workers employed in the state exceeded a million for the first time (1,003,986). However, employment in mining and related industries on the Iron Range remained below normal. General cargo shipping at Duluth, totaling 75,755 tons through September, was almost 50,000 tons under that for the same period of 1961. In this fourth season since the opening of the St. Lawrence Seaway, grave concern was being expressed about the failure of shipping to develop to the level expected for the Minnesota port city.

The Minneapolis *Star* and *Tribune* suspended publication for 116 days from April 12 to August 7 as the result of a strike by the Teamsters Union, which was later joined by four other unions.

"Events" by: JEANNE SINNEN,
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MINT, U.S. See TREASURY DEPARTMENT, U.S.

MIQUELON. See SAINT PIERRE AND MIQUELON.

MISSILES

The Cuban crisis of late 1962 emphasized the fact that the United States lacked an adequate defense against ballistic missiles. It also revealed that the Soviet Union had probably surpassed the United States in the development of mobile medium-range missiles. The deterrent effects of the U.S. Strategic Air Command and of the many intercontinental ballistic missiles (ICBM's) known to be operational at the time were seemingly sufficient, nonetheless, to force the Soviet Union to order dismemberment of its Cuban-based strategic missiles. (See also CUBA; INTER-AMERICAN AFFAIRS; UNITED STATES.)

By the end of 1962, the United States had 200 nuclear-tipped ICBM's in operational readiness and assigned targets in the Soviet Union. Emplaced in bases spanning the nation, these missiles—126 Atlases, 54 Titans, and 20 Minutemen—reportedly gave the United States at least twice the ICBM strength of the Soviet Union.

Antimissile Missiles.—Top defense officials admitted early in the Cuban crisis that the United States had no military defense against the ballistic missiles deployed in Cuba, 90 miles south of the United States mainland. Advocates of the Army's three-stage Nike-Zeus missile pointed out that if the U.S. Department of Defense had properly encouraged development of this antimissile missile system it could have been placed in operation in a matter of months instead of years.

This opinion was reinforced by an earlier spectacular success of the Nike-Zeus in intercepting an Atlas ICBM nose cone re-entering the earth's atmosphere in a test on July 19, 1962. An Atlas was launched from Vandenberg Air Force Base, Calif., across the Pacific Missile Range. On Kwajalein Atoll, about 4,700 miles away, Nike-Zeus acquisition radar detected the approaching target, computers calculated its trajectory, and a launcher fired a Zeus to intercept it. The "kill" reportedly was made at an altitude of between 100,000 and 200,000 feet, the first time a reentering body was known to have been intercepted by an antimissile missile. Although the Zeus did not physically contact the Atlas nose cone, its approach was within the lethal radius of a nuclear warhead—a sufficient condition for destruction.

Despite this success, the Defense Department did not approve eventual Nike-Zeus production by the Army; but money was available for continued development work. The main objections to the Zeus weapons system were that it could not distinguish between warheads and decoys, and could not satisfactorily handle a saturation attack of many warheads. Army proponents of Zeus disputed these criticisms.

DIRECTORY OF MAJOR U.S. MISSILES

Missile	Status[1]	Service	Approx. range (miles)[2]	Engine type
		Surface-to-Surface		
Atlas	O	Air Force	5,500–9,000	Liquid rocket
Corporal	O	Army	75	Liquid rocket
Davy Crockett	O	Army	Short	Solid rocket
Honest John	O	Army	12	Solid rocket
Jupiter	O	Air Force	1,500+	Liquid rocket
Lacrosse	O	Army	20	Solid rocket
Little John	O	Army	10	Solid rocket
M-55	O	Army	Short	Solid rocket
Mace A	O	Air Force	650+	Solid/turbojet
Mace B	O	Air Force	1,200+	Solid/turbojet
Matador	O	Air Force	500	Solid/turbojet
Minuteman	O	Air Force	5,500	Solid rocket
Lance	D	Army	3–30	Storable liquids
MMRBM	S	Air Force	300–1,800	Solid rocket
Pershing	P	Army	400	Solid rocket
Polaris A-1	O	Navy	1,200	Solid rocket
Polaris A-2	O	Navy	1,500	Solid rocket
Polaris A-3	T	Navy	2,500	Solid rocket
Redstone	O	Army	200	Liquid rocket
Regulus I	O	Navy	500	Solid/turbojet
Sergeant	O	Army	75+	Solid rocket
Shillelagh	D	Army	Short	Solid rocket
Slam	S	Air Force	Global	Nuclear-powered ramjet
Thor	O	Air Force	1,500	Liquid rocket
Titan I	O	Air Force	5,000	Liquid rocket
Titan II	D	Air Force	5,500+	Storable liquids
		Surface-to-Air		
Bomarc A	O	Air Force	200	Liquid/ramjets
Bomarc B	O	Air Force	400+	Solid/ramjets
Hawk	O	Army	22	Solid rocket
Mauler	D	Army	...	Solid rocket
Nike-Ajax	O	Army	25	Solid/liquid
Nike-Hercules	O	Army	75	Solid rocket
Nike-Zeus	D	Army	200	Solid rocket
Redeye	D	Army	...	Solid rocket
Sprint	S	Army	...	...
Talos	O	Navy	65	Solid/ramjet
Tartar	O	Navy	10	Solid rocket
Terrier	O	Navy	10	Solid rocket
Terrier (advanced)	O	Navy	20	Solid rocket
Typhon	D	Navy	200	Solid/ramjet
		Air-to-Surface		
Bullpup A	O	Navy-Air Force	3–6	Solid or storable liquids
Hound Dog	O	Air Force	600	Turbojet
Quail (Decoy)	O	Air Force	200+	Turbojet
Shrike	D	Navy	...	Solid rocket
Skybolt	C	Air Force	1,000+	Solid rocket
Zuni	O	Navy	5	Solid rocket
		Air-to-Air		
Falcon	O	Air Force	5+	Solid rocket
Genie	O	Air Force	6	Solid rocket
Sidewinder (2 models)	O/P	Navy-Air Force	2+	Solid rocket
Sparrow III	O	Navy	5–8	Solid or storable liquids
		Antitank		
Entac	O	Army	2,200[3]	Solid rocket
M72 (Law)	O	Army	500[3]	Solid rocket
SS10	O	Army	1,600[3]	Solid rocket
SS-11	O	Army	3,800[3]	Solid rocket
Tow	D	Army	...	Solid rocket
		Antisubmarine		
Alfa	O	Navy	900[3]	Solid rocket
Asroc	O	Navy	8	Solid rocket
Astor	D	Navy	11	Solid rocket
Subroc	O	Navy	25–30	Solid rocket

[1] Status code: O, operational; D, under development; P, in production; S, under study; T, under test; C, cancelled. [2] Nautical miles unless otherwise indicated; 1 nautical mile equals 1.15 statute miles. [3] Range in yards.

Three days before the Zeus test, Soviet Premier Nikita Khrushchev claimed that his country had an antimissile system that could "hit a fly in the sky." Defense Secretary Robert S. McNamara subsequently answered the Russian boast by pointing out that the Zeus shot "evidences the extensive and continuing nature of the United States program to understand the capabilities and limitations of antimissile systems."

The Nike-Zeus scored two more Atlas intercepts in late 1962, one on December 12 and a most remarkable one ten days later. In the last test the antimissile missile made the first known "kill" of an ICBM deploying decoys, thereby showing that the Nike-Zeus in at least one instance was able to discriminate between false targets and a true one.

The Army, because of recognized Zeus limitations, began studying an advanced Zeus concept called Sprint. At the same time, the Air Force began studies of an antimissile missile that could intercept unfriendly ICBM's in the launch or "coast" phase rather than during re-entry.

Strategic Missiles. *MMRBM.*—The Defense Department's search for a mobile medium-range ballistic missile (MMRBM) seemingly ended in 1962 when the Air Force obtained congressional approval to proceed with the missile's development. Air Force officials testified that development of the MMRBM was well within United States technical capacity, and that it could be built mostly with easily available components, thereby saving much time and money. The new missile would have a range of about 1,500 nautical miles, filling the gap between the 400-nautical-mile Pershing and the ICBM's. It could be transported on secondary as well as primary roads and readied for firing in a few minutes. Unlike the Pershing, it would not need a presurveyed site; unlike the cancelled railroad-borne Minuteman ICBM, it would not be confined to routes along railway tracks.

The Navy agreed to take part in the program to develop a version that could be mounted on warships, merchant ships, and barges. One MMRBM design called for a two-stage, solid-propellant rocket about four feet in diameter and roughly one half to one third the length of existing IRBM's.

The MMRBM concept was supported by Gen. Lauris Norstad, North Atlantic Treaty Organization (NATO) commander (retired effective Jan. 2, 1963), who said that it had to be developed shortly if NATO was to retain a powerful, up-to-date missile deterrent.

By the end of 1962, MMRBM development had fallen many months behind the original Defense Department schedule. One reason was the Pentagon's difficulty in making final decisions about requirements. Another was NATO's apparent disinclination to share an estimated cost of at least $2 billion for research, development, and deployment of an undetermined number of missiles. Unless the NATO nations helped pay for developing the MMRBM, the United States said, the weapons system would be used solely for unilateral development.

Polaris.—The long lead of the United States over the Soviet Union in missile-carrying submarines increased even further in 1962 when the Defense Department revealed plans to increase the Navy's Polaris-armed fleet from 29 craft to 41.

Fired from underground silos, the Air Force's Minuteman missile, seen in flight (*center*), became operational December 11. (*Top*) Two-man launch crew works 70 feet underground. (*Bottom*) An Air Force technician emerges from deep silo.

WIDE WORLD; "THE AIRMAN," USAF; UPI

By November 1962, six of the nuclear submarines —each carrying 16 Polaris missiles tipped with thermonuclear warheads—had been deployed in the North Atlantic, and three others were in commission awaiting assignments.

To give the Polaris fleet added power, the Navy announced late in 1962 that it would establish a base on Guam to service nuclear submarines on long patrols in the Pacific. The strategic location of the base would help the missile submarines maintain constant surveillance of the coasts of mainland China and Siberia. It would also put nearly all of China and the eastern third of the Soviet Union within reach of the 1,500-nautical-mile Polaris A-2 missile, which was placed in service in 1962. In mid-1964, when the 2,500-nautical-mile Polaris A-3 will become operational, no part of these countries would be out of range very long, particularly when navigation under the North Pole becomes routine. (The Polaris A-3 exploded in a test flight in the Atlantic Ocean on December 6, its sixth misfire in six test flights.)

The versatility of the Polaris submarines was ensured not only by the combination of the planned base on Guam, a similar operating one at Holy Loch, Scotland, and several others on both ocean coasts of the United States, but also by a projected supporting fleet of five tenders and six resupply ships, plus a number of floating drydocks and other support ships. The first tender specifically designed to serve Polaris submarines, the U.S.S. *Hunley,* was commissioned in the summer of 1962; effectively a floating missile base, it had 52 repair shops, room for about 1,400 officers and men, and sufficient stores and spare parts to fill a supply center.

The United States on May 6, 1962, fired its first missile-carried nuclear warhead when a Polaris was launched on a test flight from the nuclear submarine *Ethan Allen.* Although few details were announced, the missile reportedly was launched while the submarine was submerged; it was propelled to the target area 1,400 nautical miles away, and the warhead was detonated high over the Pacific.

Minuteman.—The Minuteman, the United States' first solid-fueled second-generation ICBM, was successfully launched on a short flight from Vandenberg AFB late in 1962 in the first test of the complete weapons system, including ground-support equipment. In October the Air Force disclosed some details of an advanced Minuteman, purportedly a vastly improved model scheduled for operation in 1965 or 1966.

The new Minuteman was described as a "quantum jump" better than the old one—not merely a slight improvement. Most of the improvements would be in the second stage; the missile would have higher specific impulse, a lighter motor case, and increased diameter. The changes were designed to build more range and payload into the Minuteman so that it could be dispersed almost anywhere and still be able to hit targets as distant as those in the Soviet Union. The original Minuteman designs were not optimum because military conditions at the time called for relatively inexpensive ICBM's, highly invulnerable and quickly operational. The advanced version was expected to cost about the same as the older one—$3.5 million.

In April 1962 the Minuteman assembly plant at Ogden, Utah, began turning out the first production missiles of the early design for test flights at Vandenberg AFB and for installation in underground silos at Malmstrom AFB, Mont.

Congress approved the Defense Department's recommendations for the fiscal year 1963 to increase the number of Minuteman units from 600 to 800. During the appropriation hearings, Gen. Curtis LeMay, Air Force chief of staff, said that in operational squadrons the Minuteman missile can react in about 30 seconds. On another occasion, Gen. Thomas S. Power, commander of the Strategic Air Command (SAC), pointed out that Minuteman units are extremely difficult to destroy; when emplaced in silos, it would take separate bomb blasts, even of 50-megaton weapons, to destroy each Minuteman unit.

The first Minuteman site went operational on Dec. 11, 1962, at Malmstrom AFB. Containing 10 missiles, the complex was the first of a full-strength total of 15 similar sites scheduled to be operational at Malmstrom by late spring or early summer of 1963.

Titan.—Titan II, the most powerful ICBM under United States development, on its first flight (March 16, 1962) roared 5,000 miles down the Atlantic Missile Range. This remarkably long maiden trip gave the United States a missile able to send nuclear warheads nearly halfway around the world, and a new booster vehicle for military and civilian spacecraft.

Deployed in hardened underground silos, this 103-foot, 430,000-pound-thrust missile can fire within a minute after the command is given. The first Titan II squadron was scheduled to be operational in 1963.

Titan II's first space mission—also starting in 1963—is to boost Gemini spacecraft into orbit to test men and equipment for the Apollo lunar program.

Titan III—Titan II with two strapped-on 1-million-pound-thrust solid rockets—will be built for civilian space missions and to launch the Air Force's Dyna-Soar (X-20) manned orbital spacecraft, which was scheduled to be operational in 1965.

SAC took delivery of the first operational Titan I squadron of nine missiles at Lowry AFB, Colo., on April 18, 1962, and of the second squadron, also at Lowry, on May 8, 1962. The completed base will hold six squadrons of this liquid-fueled missile in combat readiness. Titan II uses storable, hypergolic fuel—propellants that ignite on contact and produce a glowing hot-gas exhaust instead of flame.

Atlas.—The first squadron of 9,000-nautical-mile Atlas F's, the latest and most powerful version of the Atlas series, was turned over to SAC at Schilling AFB, Kans., on Sept. 13, 1962. A SAC crew at Vandenberg AFB had fired an Atlas F on its first launch from an operational prototype silo on Aug. 1, 1962; the missile was raised to the surface and sent on a 5,000-nautical-mile flight.

The United States arsenal of Atlas ICBM's reached full planned strength on Dec. 19, 1962, when SAC took over a 12-missile squadron of Atlas F's at Plattsburgh AFB, N.Y. This gave the nation a total of 13 squadrons of D, E, and F Atlas ICBM's dispersed at 11 bases, each holding between six and 12 missiles, and making up a total force of 126 operational Atlases.

To guard against the accidental firing of an Atlas missile, the Air Force set up a control requiring each of two persons to perform separate operations within three seconds of the other before an Atlas F could be launched.

Skybolt.—The cancellation by President Kennedy of plans to produce Skybolt—a 1,000-nautical-mile, air-launched ballistic missile—was announced on Dec. 21, 1962, in a joint communiqué issued at the end of a four-day meeting between the president and British Prime Minister Macmillan

at Nassau, the Bahamas. The reasons given for the cancellation were excessive costs and technical difficulties. By scrapping the program the United States stood to save about $2.5 billion, according to administration estimates. The Skybolt's job, it was said, could be done more efficiently by other proved missiles now in operation, particularly the Polaris and Minuteman.

Several congressmen, however, maintained that the president was endangering the country by putting "all of our eggs in the long-range missile basket." Many British critics, too, were bitter with the administration for ending a program on which Great Britain had based her nuclear deterrence. The nuclear-tipped Skybolt had been planned to be operational in 1964, but Secretary of Defense McNamara and a few military scientists said it could not be ready before late 1966. The B-52G and H were expected to carry four of the missiles in addition to a normal bomb load; British Vulcan bombers were to carry two. In effect, then, Skybolt had been intended to extend the useful life of the bomber fleets of both the United States and Great Britain.

Tactical Missiles.—The first tactical firing of the Sergeant missile by U.S. Army artillerymen on Oct. 24, 1962, at Ft. Sill, Okla., opened the way for the missile's deployment in Europe early in 1963. The Sergeant was to replace the cumbersome and slower-acting Corporal, which is liquid-fueled and radio-controlled. The newer missile uses solid fuel and has all-inertial guidance, and it can be transported by air.

Operationally, the Sergeant lies between the short-range Honest John or Lacrosse and the longer-range Redstone and Pershing. The 34-foot missile will be used to support a field army corps, and will be able to deliver a nuclear, chemical, or biological warhead 75 nautical miles away. West Germany bought the system late in 1962, and other nations were expected to follow; the nuclear warheads, however, will remain under United States control.

The Davy Crockett, a jeep-mounted nuclear-tipped missile for close support of combat troops, reportedly was sent to units of the United States Seventh Army in Germany in 1962. The Army said that the weapon, which has a fractional nuclear yield and negligible radiation, could be used against targets such as pillboxes, artillery positions, bunkers, troop and armor concentrations, command posts, and supply dumps. Its effective blast radius is believed to be from 200 to 500 yards. Other military units in Germany, and perhaps some in Korea, were due to receive Davy Crocketts; their nuclear warheads, for security reasons, will be kept at ordnance depots.

The Army's Nike-Zeus antimissile missile, shown on test flight from Pt. Mugu, Calif., twice intercepted missiles over the Pacific Ocean in 1962 test firings.

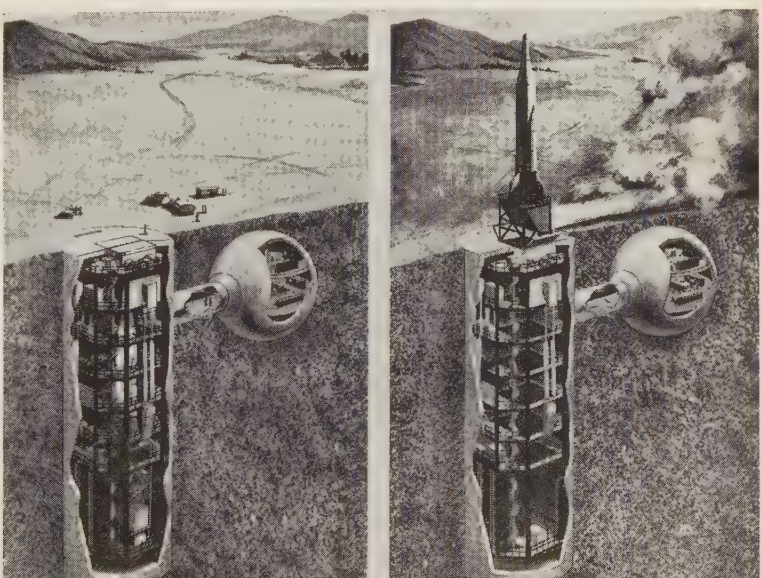
UPI

A Navy Sparrow III air-to-air missile fired from an F4H Phantom II jet fighter hit a Regulus II target missile head-on and destroyed it in a test over the Pacific in August 1962. Both missiles were flying at supersonic speeds. Described as the first time that an air-launched missile had made such an intercept of a surface-launched missile, the event was particularly significant because it showed the high accuracy of Sparrow III's semi-active radar homing device.

The Army in 1962 contracted for studies of a new tactical weapons system at first called "Missile B" and then "Lance" to replace the shorter-range Honest John and Lacrosse. Intended to significantly increase both nuclear and non-nuclear supporting fire on the battlefield, Lance is to be highly mobile, rugged, and reliable. Possibly jeep-mounted, the weapon will mark the Army's first use of a prepackaged liquid propellant.

Missile Technology.—Most of the missile research in 1962, as in previous years, was concentrated on the development of high-temperature materials to withstand the stress of the rocket environment, and of high-energy propellants which would permit a reduction in rocket sizes.

The National Aeronautics and Space Administration (NASA) disclosed that it was considering



Artist's conception of an underground silo for the Atlas ICBM shows (*left*) the missile being checked and fueled for a flight and (*right*) the Atlas raised and ready for firing. Control room is housed in spherical structure to the right of the silo itself.

U.S. AIR FORCE

supporting development of a fluorine-hydrogen upper-stage rocket engine. NASA and the Air Force said that they had been working with the potent mixture for a decade and that the basic engine design was already nearly complete. The first experimental engine was expected to take at least three years to produce.

The Navy reported that it had successfully tested a hybrid propulsion system in free flight, using a combination liquid and solid propellant in a single motor.

Illustrating how long prepackaged liquid propellants could be stored, Thiokol Chemical Corp. successfully fired two packaged liquid-fuel rocket engines after they had been stored for three years.

The Air Force, Aerojet-General, and United Technology Corp. reported highly promising methods for steering large solid-propellant rockets. The system involves injecting a gas or liquid into the rocket exhaust to create a shock wave which deflects the exhaust in the desired direction. The method was also successfully used in 1961 by the Lockheed Aircraft Corp. on test-flight versions of the Polaris. (See also CHEMISTRY.)

Missile Developments in Other Countries. *Soviet Missiles in Cuba.*—The United States probably learned more about strategic Soviet missiles during the Cuban crisis than through earlier intelligence efforts. United States photographic reconnaissance planes flying over Cuba in late October 1962 obtained evidence of more than 30 operational Soviet medium-range ballistic missiles (MRBM's) and of fixed-site bases for IRBM's. Military experts tried unsuccessfully to identify these missiles with known ones (such as those the Soviet had demonstrated at May Day parades) or as derivatives of known ones. Defense Department photo interpreters described the MRBM's as mobile, apparently liquid-fueled, and with a range of 1,000 nautical miles. Secretary of Defense McNamara said they were "planned to have a capability to be deactivated, moved, reactivated on a new site, and ready for operations within a period of about six days." Other observers set this figure at less than a day.

The United States in 1962 had no missile comparable to these Soviet MRBM's, although Congress had appropriated money for development of the MMRBM—a missile presumably far superior to the Soviet model. The United States did have the Pershing mobile missile, which was nearing the end of its flight-test program, however; but the weapon would not be operational until the close of 1963, and its range was only about 400 nautical miles.

In discussing warheads for the Soviet strategic missiles on Cuban soil, Secretary McNamara said that it was extremely difficult to specifically identify nuclear warheads. But, he added, it was fair to assume that such warheads were on the island. He added that the missiles could carry medium-size nuclear warheads. (By this the military usually means the warhead yield is somewhere between 20,000 and 1 million tons of TNT.)

No IRBM's appeared in the reconnaissance photographs released by the Defense Department, although sites for the missiles were seen in various stages of construction. Judging from the IRBM sites, and possibly other information, defense officials said the missiles to be fired from these sites would have a range of 2,200 nautical miles and would probably be liquid-fueled.

Two other types of missiles were delivered by the Soviet Union to Cuba: surface-to-air missiles for air defense, and sea surface-to-surface missiles mounted on patrol boats and used for coastal defense against naval attack. The naval missiles, a Defense Department spokesman said, were ship-directed short-range missiles, of the type that would not be used against a land target under anything but the most extreme circumstances. Mounted on Komar motor patrol boats, these missiles carried non-nuclear warheads.

By November 10, United States surveillance operations reported that all of the 42 offensive missiles which the Soviet Union had said were on the island had been dismantled and were on ships outward bound from Cuba.

Great Britain.—In a sweeping economy drive in August 1962, Great Britain canceled development of its Blue Water surface-to-surface tactical missile and announced that all long-range missile bases would be closed down by the end of 1963. The end of the Blue Water program would leave the Royal Artillery without direct control over a tactical nuclear weapon in the field; the United States nuclear-tipped Corporal and Honest John were to go out of British service in 1966. This meant that more emphasis would be placed on improving the mobility and conventional firepower of the army so that it could more effectively fight limited wars—a position that the United States had long urged Great Britain to take. The Royal Air Force, however, had won a clear-cut victory over the army; its spokesmen had been insisting that tactical missiles should be air-launched.

Britain in 1958 had signed a five-year agreement with the United States to build long-range missile bases in England; these were eventually filled with sixty 1,500-nautical-mile Thors. The arrangement could be terminated by either party, however, on six months' notice—which England gave, effective by the end of 1963. The most important reason for this termination was that maintenance of the bases is expensive. Thors are also highly vulnerable to enemy attack, since they are deployed above ground, and, moreover, they have been regarded only as interim weapons. Finally, the bases were vigorously opposed by pacifist groups, an important faction in England.

Nevertheless, Britain expected to arm itself with United States Skybolts mounted on Vulcan bombers. These missiles were to provide a strategic weapon as well as the nuclear prerogative for the British, who were to design and produce their own nuclear warheads for Skybolts. Thus Britain's cry of anguish was profound when in December 1962 the country learned that Skybolt had been cancelled.

The prime result of the Kennedy-Macmillan conference in mid-December was the Pact of Nassau, which laid the groundwork for a NATO nuclear force equipped with British-built Polaris submarines. Instead of Skybolts, the United States agreed to provide Polaris missiles (less their warheads) for British submarines. Britain, in turn, would develop the warheads and the underseas craft for integration into what would then become a "multilateral NATO nuclear force." The British, however, do not expect to have Polaris submarines operational until 1969 or 1970.

UAR.—The United Arab Republic publicly fired its first missiles—four single-stage rockets—on July 21, 1962. UAR President Gamal Nasser said they could reach "a little south of Beirut"—or Israel. Although he did not admit having foreign technical advisers, it was assumed that Dr. Eugen Saenger, a German rocket scientist who had been discharged as director of the Stuttgart Institute of Jet Propulsion Techniques, was the scientific leader of the Arab effort. (West German authorities reportedly dismissed Saenger because of his role in the UAR's rocket work.) Nasser maintained these were not the first UAR-launched rockets; he said that others had been fired in May 1961, two months before Israel had sent its "weather rocket" 50 miles into the sky.

Israel.—The Kennedy administration in September 1962 agreed to send Hawk ground-to-air missiles to Israel to correct a growing imbalance in the Middle East caused by the Soviet Union's furnishing missiles and jet military aircraft to Israel's enemies, the UAR and Iraq. The Hawks were described as purely defensive, short-range weapons to be used to protect key Israeli installations.

(For additional and related information, see AIR FORCE, U.S.; ARMY OF THE UNITED STATES; NAVY, U.S.; SPACE FLIGHT; and the Index entry, *Missiles.*)

WILLIAM BELLER,
Senior Editor, "Missiles and Rockets."

MISSISSIPPI

A South Central state of the United States, Mississippi ranks 32d among the states in area (land, 47,223 square miles; inland water, 493) and 28th in population (2,248,000 on July 1, 1962, a 3.2% increase from the 1960 census figure of 2,178,141). Urban places with populations above 15,000 in 1960:

Biloxi	44,053	Jackson (*capital*)	144,422
Clarksdale	21,105	Laurel	27,889
Columbus	24,771	Meridian	49,374
Greenville	41,502	Natchez	23,791
Greenwood	20,436	Pascagoula	17,155
Gulfport	30,204	Tupelo	17,221
Hattiesburg	34,989	Vicksburg	29,143

Government.—Chief executive and judicial officers in 1962 included Ross R. Barnett (Democrat), governor, serving a four-year term; Paul B. Johnson, lieutenant governor; Heber A. Ladner, secretary of state; E. Evelyn Gandy, treasurer; William D. Neal, auditor; Joseph T. Patterson, attorney general; Jackson M. Tubb, superintendent of public education; and E. Harvey McGehee, chief justice of the 9-member Supreme Court.

The Mississippi Legislature, which convenes in even-numbered years, comprised a 49-member Senate in 1962 (all Democrats) and a 140-member House of Representatives (all Democrats).

Legislation, 1962.—The Legislature held one regular and two special sessions during the year. Among the more important measures enacted at the regular session (January 2–June 2) was the congressional redistricting law which reduced the number of districts from six to five by combining the 2d and 3d districts.

General fund appropriations for the 1962–64 biennium amounted to $289,065,545, an increase of $20,461,973 over the previous biennium. Of the appropriations, $180,316,614 was for schools, colleges, and other educational

activities. Revenue laws to provide additional funds of approximately $18 million to offset the increase included higher taxes on tobacco products, liquor sales, ginning of cotton, and contractors.

An important reform in state administration was effected by a law abolishing the office of state tax collector, whose duties were transferred to the State Tax Commission. A board was created to provide state supervision of savings and loan institutions; an additional circuit court district was created; and the name of Mississippi Southern College was changed to University of Southern Mississippi. Another law implemented the 1960 constitutional amendment making "good moral character" a qualification for voting by requiring county voter registrars to determine whether applicants are qualified after publishing their names in the county newspaper and permitting challenges as to moral character by affidavit of any qualified elector.

The two special sessions (September 18–October 6 and November 13–December 21) were concerned largely with plans for reapportionment of the Legislature. Reapportionment had been ordered on a basis of population in both houses by a state chancery court in Hinds County on June 7, but the order was held in abeyance until November 24 (later extended to December 19) pending reapportionment efforts by the Legislature.

A legislative reapportionment measure enacted on October 6 was defeated by the voters in November. The second special session thereupon proposed another constitutional amendment which would lessen rural control by rearranging seats and reducing membership of the House from 140 to 122 while increasing that of the Senate from 49 to 52. The new plan was to be voted on at a special election scheduled for Feb. 5, 1963. The second session also appropriated an additional $4,750,000 for raising teachers' salaries and $1,000,000 for increasing welfare payments. (See also below, *Events, 1962.*)

Finance.—In the 1961 fiscal year, revenue of $334,455,078 included $187,413,259 from state taxes and $106,335,452 in federal funds. Chief tax yields were the 3% general sales tax ($71,727,000) and taxes on corporate incomes ($12,518,000) and motor fuels ($46,822,000). Spending of $355,107,689 included $90,970,685 for education, $69,545,700 for health, welfare, and safety, and $78,771,945 for highways.

Education.—In the 1961–62 school year, public elementary schools staffed by 11,085 teachers enrolled 358,430 pupils; junior-senior high schools with 7,521 teachers enrolled 227,077; and private and parochial schools with 932 teachers enrolled 19,050. College enrollment totaled 41,480 in 47 institutions, including 30 junior colleges and 17 senior colleges and universities.

Estimated public school spending in the 1961–62 school year totaled $148,522,000, including current expenditures of $110,500,000 ($220 per pupil) and capital outlays of $30 million. Revenue of $144 million was drawn chiefly from state funds ($87.5 million) and local districts ($35.5 million). The state reported teachers' salaries as averaging $3,531.58 (high school, $3,745.72; elementary, $3,386.28). Actual spending for higher education (1961 fiscal year) amounted to $41,042,000.

Public Assistance.—In the 1962 fiscal year, public assistance payments to a monthly average of 160,434 persons totaled $48,503,950. This amount included $32,415,281 for the aged and $8,838,908 for dependent children.

Transportation and Communications.—A total of 313 miles of highway construction and reconstruction were completed in the 1962 fiscal year. *Highways and roads* on Dec. 31, 1961, totaled 63,993 miles (18,055 surfaced). These served 823,305 *motor vehicles* (as registered on Oct. 31, 1961), including 583,868 automobiles. Operating in the state were (1961) 18 *railroads* (using 3,668 line miles of track); (1962) 3 regularly scheduled *airlines;* and 51 public *airfields.*

Communications media included (1962) 76 AM and 2 FM *radio stations;* 6 VHF *television stations;* 18 daily *newspapers* (1961 circulation, 266,010) and 120 other newspapers; and (January 1) 126,100 business and 354,900 residential *telephones.*

Labor Force.—The state's labor force on July 15, 1962, included 208,180 agricultural workers. Nonagricultural employment totaled 419,200, compared with 405,800 a year earlier and an average of 415,950 for the 12 intervening months. Of nonfarm employees, 30.5% were in manufacturing, 20.9% in government services, and 20.3% in trade. Unemployment on July 15, 1962, was down to 34,500 from 55,700 a year earlier.

Manufacturing.—Manufacturing engaged 108,728 workers in 1960, including 90,961 in production, and provided a payroll of $357,893,000. Adjusted value added by manufacture totaled $702,318,000.

LEADING MISSISSIPPI MANUFACTURES, 1960

Industry group	Total employees	Total payroll (in thousands)	Adjusted value added by mfr.[1]
Food and kindred products	14,480	$46,224	$102,406
Paper and allied products	8,067	41,348	88,290
Apparel and related products	23,499	53,683	75,439
Lumber and wood products	18,621	46,056	74,989
Chemicals and allied products	3,890	17,846	67,645
Transportation equipment	7,625	39,735	49,281
Fabricated metals	3,124	11,209	20,424

[1] For definition, see footnote 1 in the article *Industrial Production.* (Source: *1960 Annual Survey of Manufactures.*)

Mining.—Mississippi ranked 21st among the states in the value of its minerals in 1961, with 1.16% of the national total. The value, up 7% from 1960, showed an increase for the 10th consecutive year. Mineral fuels constituted 90% of the total.

MISSISSIPPI MINERAL PRODUCTION, 1961
(In short tons, except as noted)

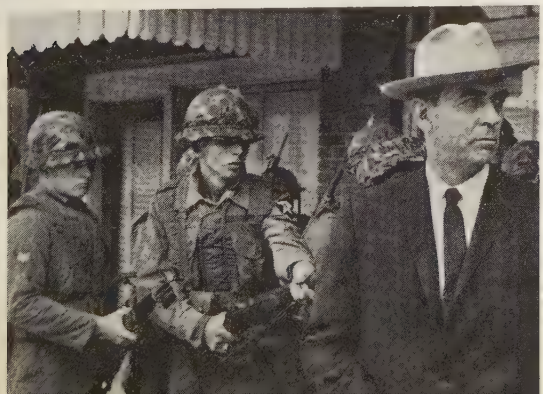
Mineral	Quantity	Value
Clays	1,104,000	$ 5,034,000
Natural gas (1,000 cu. ft.)	172,543,000	32,093,000
Natural gasoline (1,000 gal.)	25,135	1,625,000
Petroleum (1,000 bbl.)	54,492[1]	153,667,000[1]
Petroleum gases (1,000 gal.)	15,510	700,000
Sand and gravel	5,920,000	5,903,000
Stone	913,000	1,044,000
Other minerals	...	11,070,000
Total	...	$210,242,000[2]

[1] Preliminary. [2] Total adjusted to avoid duplication in value of raw materials used in manufacturing cement or lime. (Source: U.S. Bureau of Mines.)

Agriculture.—Cash farm income for the first nine months of 1962 (excluding government payments) totaled $371,635,000, compared with $284,452,000 for the corresponding period of 1961. For the full year 1961, income comprised $267,313,000 from livestock, $401,050,000 from crops, and $16,910,000 in government payments. Prin-

Two aspects of the disturbances at the University of Mississippi on October 1 over the admission of Negro student James Meredith: (*left*) Edwin Walker, former U.S. Army general, is apprehended at the courthouse at Oxford, Miss., for allegedly inciting opposition to integration; (*right*) Jeep-borne troops leave the university's main gate after patroling the campus.

UPI - WIDE WORLD



cipal income sources in 1961 were cotton lint, $274,448,000; cattle, $97,246,000; broilers, $57,806,000; and soybeans, $51,224,000.

The state's 138,000 farms in 1959 had an acreage of 18,630,000 (4,565,000 in harvested cropland). Livestock on farms on Jan. 1, 1962, included 2,107,000 cattle, 553,000 hogs, and 8,981,000 chickens, and (1961) 135,683,000 broilers. An average of 182,000 family and 64,000 hired workers engaged in farming in 1961.

MISSISSIPPI CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Corn for grain (1,000 bu.)	34,234	34,515	20,628
Cotton lint (1,000 bales)	1,600	1,625	1,700
Cottonseed (1,000 tons)	655	671	707
Oats (1,000 bu.)	9,059	7,697	5,148
Pecans (1,000 lb.)	10,965	25,500	8,000
Rice (1,000 bags)	1,219[1]	1,452[1]	1,568[1]
Soybeans (1,000 bu.)	11,824	23,490	22,560
Tung nuts (tons)	29,000	62,200	11,000

[1] Short-time average. (Source: U.S. Department of Agriculture.)

Events, 1962.—The year's major story concerned the admission of James H. Meredith, a Negro, to the University of Mississippi, thus breaking the color barrier in public education in the state. The case provoked a bitter clash between state and federal authorities—a struggle which finally erupted in violence—and attracted keen interest throughout the nation and the world.

Meredith, a resident of Kosciusko, first applied for admission in January 1961. Denied entrance by the university, he brought suit in the federal district court, beginning a series of legal actions which were brought to a climax on Sept. 10, 1962, when Justice Hugo L. Black of the U.S. Supreme Court, after consultation with his colleagues, refused to review a lower court decision favorable to Meredith. The district court then issued an injunction on September 14 designed to protect Meredith's admission.

On his appearance at the university on September 20, however, Meredith was refused admission by Gov. Ross R. Barnett, acting as admissions officer by authorization of the governing board of the institution. After the U.S. Court of Appeals issued an injunction on September 25 restraining the governor, lieutenant governor, and other state officials from interference, Meredith was again rejected by Barnett in Jackson that day and by Lt. Gov. Paul B. Johnson in Oxford the following day. Meanwhile, officials of the university and members of the governing board had appeared before the district and appellate courts on contempt charges and had been acquitted after agreeing to admit Meredith.

On Sunday afternoon, September 30, Meredith, accompanied by federal marshals, was escorted onto the campus by Mississippi highway patrolmen. About 8 P.M. a riot broke out between federal officers and a large crowd of students and others, many of whom were not residents of the state. Later, state highway patrolmen were withdrawn from the campus, but the arrival of National Guard troops around midnight alleviated the situation. The subsequent arrival of Army units brought the rioting to an end on the university campus just before dawn and in the town of Oxford by noon on October 1. The night's fighting resulted in the deaths of a French newspaperman and a local citizen, and caused scores of injuries.

Meredith was enrolled on October 1, and began attending classes under protection of federal officers. A large number of troops in Oxford and vicinity maintained a modified type of martial law for several days, but this force was gradually reduced to approximately 500 by November. By December, Meredith was leading a relatively normal student life, though living in a dormitory under military guard and protected by a small contingent of federal marshals.

Following the activities connected with Meredith's admission, both Barnett and Johnson were found guilty of civil contempt by the Court of Appeals, though sentence was delayed. On November 15 the court ordered their prosecution for criminal contempt. (See also EDUCATION.)

During the early months of the year considerable interest was shown in the investigative activities of the Legislature, particularly those involving the state penitentiary where there were charges of corruption and mismanagement. Four bills designed to effect penitentiary reforms eventually were passed, but all were vetoed by the governor.

The chief political contest was the Democratic primary on June 5 in the new 2d Congressional District, where, because of the state's loss of one House seat, two veteran congressmen, Frank E. Smith and Jamie L. Whitten, ran in opposition. Whitten won by polling about 60 percent of the 57,000 votes cast. At the same election the voters approved a constitutional amendment authorizing the Legislature to separate the office of county sheriff and tax collector.

At the general election on November 6 no Democratic candidates were opposed. A constitutional amendment allowing the Legislature to prescribe additional qualifications for public officers was approved. The voters rejected an amendment which provided for an appointive State Board of Education. Voters also refused to ratify an amendment which would have reapportioned the Legislature by enlarging the Senate to 82 members and the House to 142, with some rearrangement of seats. (See also above, *Legislature, 1962.*)

A world-famed Mississippian, novelist William Faulkner (q.v.), died at Oxford on July 6.

"Legislation" and "Events" by:
CHARLES N. FORTENBERRY,
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MISSOURI

A Central state of the United States, Missouri ranks 19th among the states in area (land, 69,138 square miles; inland water, 548) and 13th in population (4,346,000 on July 1, 1962, an 0.6% increase from the 1960 census figure of 4,319,813). Urban places with populations above 15,000 in 1960:

Berkeley	18,676	Kirkwood	29,421
Cape Girardeau	24,947	Overland	22,763
Clayton	15,245	Poplar Bluff	15,926
Columbia	36,650	Raytown	17,083
Ferguson	22,149	Richmond Heights	15,622
Florissant	38,166	St. Charles	21,189
Hannibal	20,028	St. Joseph	79,673
Independence	62,328	St. Louis	750,026
Jefferson City (*capital*)	28,228	Sedalia	23,874
Jennings	19,965	Springfield	95,865
Joplin	38,958	University City	51,249
Kansas City	475,539	Webster Groves	28,990

Government.—Chief executive and judicial officers in 1962 included John M. Dalton (Democrat), governor, serving a four-year term; Hilary A. Bush, lieutenant governor; Warren E. Hearnes, secretary of state; Milton Carpenter, treasurer; Haskell Holman, auditor; Thomas F. Eagleton, attorney general; Hubert Wheeler, superintendent of education; and Laurance M. Hyde, chief justice of the 7-member Supreme Court.

The Missouri General Assembly, which convenes in odd-numbered years, comprised 28 Democrats and 6 Republicans in the Senate in 1962 and 100 Democrats and 57 Republicans in the House of Representatives.

Finance.—In the 1962 fiscal year, revenue of $607,388,062 included $395,190,646 from state taxes and $195,614,174 in federal funds. Chief tax yields were the 2% general sales tax ($126,719,393) and taxes on individual and corporate incomes ($77,385,347) and motor

fuels ($67,963,097). Spending of $593,638,600 included $165,803,064 for education, $178,724,045 for health, welfare, and safety, and $171,594,066 for highways.

Education.—In the 1961–62 school year, public elementary schools staffed by 19,969 teachers enrolled 639,000 pupils; secondary schools with 10,866 teachers enrolled 213,000; and parochial schools with 4,628 teachers enrolled 149,901. College enrollment totaled 88,790.

Estimated public school spending in the 1961–62 school year totaled $349,000,000, including current expenditures of $285,380,000 ($386.17 per pupil) and capital outlays of $50 million. Revenue of $375 million was drawn chiefly from state funds ($117,795,000) and local districts ($203,832,000). The state reported teachers' salaries as averaging $5,019 (high school, $5,243; elementary, $4,908). Actual spending for higher education (1961 fiscal year) totaled $44,395,000.

Public Assistance.—In the 1962 fiscal year, public assistance payments to a monthly average of 246,148 persons totaled $131,132,340. This amount included $79,222,358 for the aged and $29,534,494 for dependent children.

Transportation and Communications.—A total of 1,799 miles of highway construction and reconstruction was completed in the 1960 fiscal year. *Highways and roads* on Jan. 1, 1961, totaled 111,872 miles (101,071 surfaced). These served 1,763,000 *motor vehicles* (as registered in 1960), including 1,415,000 automobiles. Operating in the state were (1962) 37 *railroads* (using, on Jan. 1, 1961, 5,194 line miles of track); (1961) 9 regularly scheduled *airlines;* and 106 commercial and municipal *airports.*

Communications media included (1961) 77 AM and 9 FM *radio stations;* 16 *television stations;* 54 daily *newspapers* (circulation, 1,826,492); and (Jan. 1, 1962) 484,500 business and 1,334,700 residential *telephones.*

Labor Force.—The state's labor force in June 1962 included 255,316 agricultural workers. Nonagricultural employment totaled 1,348,000, compared with 1,333,500 a year earlier and an average of 1,322,600 for the 12 intervening months. Of nonfarm employees, 29% were in manufacturing, 22.6% in trade, and 15% in government services. Unemployment in June 1962 stood at 98,800, compared with 118,700 a year earlier.

Manufacturing.—Manufacturing engaged 391,912 workers in 1960, including 279,659 in production, and provided a payroll of $1,966,805,000. Adjusted value added by manufacture totaled $3,877,863,000.

LEADING MISSOURI MANUFACTURES, 1960

Industry group	Total employees	Total payroll	Adjusted value added by mfr.[1]
		(in thousands)	
Transportation equipment	56,435	$353,927	$898,383
Food and kindred products	51,527	267,815	625,708
Chemicals and products	18,801	108,653	325,243
Printing and publishing	27,526	144,459	262,708
Nonelectrical machinery	24,839	128,584	240,163
Fabricated metals	24,777	134,714	235,625
Electrical machinery	23,100	114,491	201,324
Leather and products	34,772	104,417	197,754
Apparel and related products	33,402	99,575	171,849
Stone, clay, glass products	13,618	74,895	171,341

[1] For definition, see footnote 1 in the article *Industrial Production.*
(Source: *1960 Annual Survey of Manufactures.*)

Mining.—In 1961, Missouri ranked 27th among the states in the value of its mineral output, with 0.80% of the national total. It was first in output of lead (54th successive year); second in barite, cobalt, and nickel; and third in lime. Accounting for over half of the total value of $145,365,000 were stone ($36,577,000), lead ($20,350,000), lime ($13,873,000), and coal ($12,567,000).

Agriculture.—Cash farm income for the first nine months of 1962 (excluding government payments) totaled $706,785,000, compared with $718,233,000 for the corresponding period of 1961. For the full year 1961, income comprised $733,925,000 from livestock, $394,826,000 from crops, and $96,131,000 in government payments. Principal income sources in 1961 were cattle, $286,747,000; hogs, $226,868,000; soybeans, $143,621,000; and wholesale milk, $122,622,000.

The state's 169,000 farms in 1959 had an acreage of 33,153,000 (12,178,000 in harvested cropland). Livestock on farms on Jan. 1, 1962, included 4,304,000 cattle, 3,932,000 hogs, and 11,013,000 chickens. An average of 232,000 family and 37,000 hired workers engaged in farming in 1961.

MISSOURI CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Apples (1,000 bu.)	933	1,400	1,250
Corn for grain (1,000 bu.)	153,228	182,900	176,204
Cotton lint (1,000 bales)	389	377	465
Cottonseed (1,000 tons)	166	160	198
Hay (1,000 tons)	4,158	4,949	4,286
Peaches (1,000 bu.)	420	500	350
Sorghum grain (1,000 bu.)	10,242	9,776	7,965
Soybeans (1,000 bu.)	37,254	62,448	62,640
Wheat (1,000 bu.)	38,475	41,907	26,352

(Source: U.S. Department of Agriculture.)

Events, 1962.—Gov. John M. Dalton, who in 1961 concentrated attention on the need to attract more industries to Missouri, used his position in 1962 to focus public opinion on the need for expanding higher education facilities in the state. He urged the 1963 legislature to establish branches of the state university in Kansas City and St. Louis, and received backing from a report issued in November by a special legislative interim committee. A gift to the state university of a large warehouse building in St. Louis by J. C. Penney was expected to stimulate action on the governor's recommendations. Additional college facilities were made available when the voters of the city of St. Louis and St. Louis County approved the creation of a public junior college district. The district enrolled its first classes in December.

The 1962 off-year elections again demonstrated the dominance of the Democratic Party in the state. In the most significant contest, U.S. Sen. Edward V. Long, Democrat, defeated Crosby Kemper, his Republican opponent. Only two Republicans (Durward G. Hall of Springfield and Thomas B. Curtis of St. Louis) were successful in the ten congressional district races. In the only contest for a major state office, State Auditor Haskell Holman, Democrat, was easily reelected. Substantial Democratic majorities were returned to both houses of the state legislature.

Dissatisfaction with prices of livestock and grain in the Middle West prompted the National Farmers Organization to mount an effort to keep livestock off the market, beginning September 1. Considerable activity and some violence occurred in Missouri, since the large markets at St. Louis, Kansas City, and St. Joseph were affected.

The state was host to President Kennedy and Secretary of the Interior Stewart L. Udall in August when they visited the site of Oahe Dam in southeastern Missouri (see also DAMS) and the McDonnell Aircraft Corporation, where the Mercury space capsules are produced and where work on the Gemini two-man space vehicle is in progress.

Efforts to make significant changes in Missouri's 17-year-old constitution failed when the voters rejected a proposition to call a constitutional convention to revise the document. Four proposed amendments also were defeated.

(See also SAINT LOUIS.)

"Events" by: CARL A. MCCANDLESS,
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MOHAMMEDANISM. See the Index entry, *Islam.*
MOHOLE, Project. See GEOLOGY.
MOLYBDENUM. See MINERAL PRODUCTION.

MONACO

An enclave in France on the Mediterranean Sea, the Principality of Monaco has an area of 368 acres, and a population (1961 est.) of 22,000, of

whom about 2,500 are citizens. Monaco is ruled by Prince Rainier III (b. 1923; acceded 1949), assisted by an elected 18-member National Council. Government revenue for 1962 was estimated at 80,950,570 francs; expenditure, 80,850,815. The principality is under the protection of France.

Relations between Monaco and France in 1962 were greatly strained over the question of foreign corporations registered in Monaco. France contended that such corporations were in a competitive position which was unfair to companies registered in France, due to the fact that Monaco does not levy income taxes on foreign corporations having headquarters in the principality. France in April renounced several conventions with Monaco relating to postal services, telecommunications, road transport, and banking. In October, France instituted custom checks at the border, an act of harassment that threatened to damage Monaco's economy. Negotiations between the two countries failed to resolve the dispute.

In an apparent effort to rally popular support, Prince Rainier on March 28 restored the constitution which he had suspended in January 1959, and on December 17 he announced a new constitution which granted additional rights to all citizens. A major article of the new constitution stated that it can be suspended or altered only by the approval of both the ruler and the National Council.

MONETARY FUND, International. See INTERNATIONAL MONETARY FUND.

MONEY. See Index entry.

MONGOLIAN PEOPLE'S REPUBLIC

The Mongolian People's Republic (Outer Mongolia) is a Communist state situated in east-central Asia, between Soviet Siberia and China. The vast, sparsely populated country has an estimated area of 600,000 square miles. The population of 998,000 (mid-1962 est.) consists chiefly of Khalkhas, with some Mongols, Kazakhs, and other groups. The capital and principal city is Ulan Bator (est. 160,000).

Government.—The republic's third constitution of 1960 provided for a Great People's Khural, or People's Assembly, elected by universal suffrage to a three-year term. In single-list elections on June 19, 1960, 267 government-sponsored delegates were elected to the Assembly, which elects its own 7-member Presidium. The chairman of the Presidium, Zhamsarangin Sambu, is the titular head of the state. A ministry is responsible to the Assembly, and is headed by Premier Yumzhagiyn Tsedenbal, who is also first secretary of the ruling People's Revolutionary Party (Communist).

Soviet influence has been predominant in the country since the 1920's, although Communist China's role in recent years has been important (see below, *Events, 1962*). The Soviet Union has agreed to provide the equivalent of $350 million for Outer Mongolia's five-year economic plan (1961–65), and China has agreed to contribute $50 million. Outer Mongolia was admitted to the United Nations on Oct. 27, 1961.

Education and Religion.—The Communist regime claims that illiteracy has been eliminated. Compulsory schooling for 7 years is planned for all school-age children by the year 1965. School enrollment, 1961: 124,200, including 15,500 secondary students. National Choi-Balsan University at Ulan Bator enrolled 2,500 students in 1959. Buddhism is the principal religion, but the government closely restricts the formerly powerful clerical elements.

Finance.—The state budget for 1961 estimated revenue at 1,222.9 million tughrik; expenditure, 1,217.8 million. The tughrik is officially valued at 4.55 tughrik to the U.S. dollar, and is equivalent in value to the Soviet ruble.

Economy.— Most of the population are nomadic stock raisers who have been organized by the Communist regime into producers' cooperatives and state farms. The country's vast herds of sheep, goats, cattle, and other livestock number about 25 million head. Grain production totaled 256,000 metric tons in 1960, but declined drastically in 1961 because of drought. Under the successive economic plans, some 1.5 million acres of virgin grassland were converted to agricultural production. New industrial plants built since 1960 include a tanning plant, shoe factory, textile plant, flour mill, metalworking plant, cement works, glass factory, printing plant, and electric power generators. Chief manufactures are meat and dairy products, leather goods, sheepskin coats, woolen garments, and felt. Minerals include gold, tungsten, uranium, coal, and petroleum. About 75% of foreign trade is with the Soviet Union; most of the remainder is with Communist China. Chief exports are animal products; imports are mainly equipment and other manufactures.

Transportation.—Railways (totaling 857 miles in 1961) include the important Trans-Mongolian Railway connecting the Trans-Siberian Railroad in the USSR with Peking, China, via Ulan Bator. Motor roads aggregated about 5,350 miles in 1960. A Mongolian and a Soviet airline provide services to the Soviet Union and Communist China.

Events, 1962.—Outer Mongolia's Communist government, which previously had displayed a conciliatory or neutral attitude on questions of difference between the Soviet Union and Communist China, officially approved Soviet ideological policy early in the year. The Central Committee of the Mongolian People's Revolutionary Party ended a four-day meeting on January 29 by adopting a resolution calling for "decisive measures" to abolish all remaining manifestations of the "cult of personality" fostered by the late Mongolian Communist leader Khorloin Choibalsan (1895–1952).

At the same meeting Premier Tsedenbal declared his disagreement with the Chinese Communists for having defended Albania's ideological differences with the Soviet Union. The successful efforts of the Soviet Union in obtaining United Nations membership for Outer Mongolia in 1961 was probably a principal factor in causing the Mongolian Communists to espouse Soviet de-Stalinization and peaceful coexistence policies.

It was announced on June 9, 1962, that Outer Mongolia had joined the Soviet-bloc Council for Mutual Economic Assistance.

A treaty demarcating the previously undefined border between Outer Mongolia and Communist China was signed by Tsedenbal and Premier Chou En-lai in Peking on December 26. The announcement of the new border alignment aroused speculation that Mongolian Communist leaders may be trying to play an intermediary role in the Sino-Soviet ideological conflict, and that Communist China was attempting to influence India to negotiate their own border dispute.

W. R. F.

MONROE, Marilyn

U.S. film star: b. Los Angeles, Calif., June 1, 1926; d. (apparent suicide from an overdose of sleeping pills) Aug. 5, 1962.

She was filmdom's reigning beauty queen—the "sheer sex symbolization" of her time. She was the star of motion pictures that grossed millions and made her the idol of countless fans, both men and women. She was a token of the "rags to riches" American dream. She was also, according to director Joshua Logan, "one of the most unappreciated people in the world."

Marilyn Monroe's life reads like a Hollywood script—pathetic childhood, early professional struggle, lightning-fast success, and inevitable decline. She was born out of wedlock, and variously used her father's surname, Mortenson, and her mother's, Baker. Her original given name was Norma Jean. Most of her childhood was spent in foster homes and, for a time, in an orphanage. (Her mother suffered from mental illness and was frequently confined to institutions.) At 16 she was married to James Dougherty, an aircraft worker, but they soon separated, and were divorced in 1946. She worked as a photographer's model for a while, and had bit parts in several motion pictures. It was not, however, until she appeared in a minor role in *The*

Asphalt Jungle (1950) that her value as a glamorous star was fully realized.

By 1952, after other small roles, notably in *All About Eve* (1950), her public image was firmly established. She subsequently starred in a number of films, including *Gentlemen Prefer Blondes* (1953), *How to Marry a Millionaire* (1953), *The Seven-Year Itch* (1955), *The Prince and the Show Girl* (with Sir Laurence Olivier, 1957), and *Let's Make Love* (with Yves Montand, 1960). Beneath the sensual veneer of her typical "dumb blonde" roles, a certain, if limited, acting talent was discernible. In *Bus Stop* (1956) she showed herself capable of genuine pathos; in *Some Like It Hot* (1959) she proved to be a fine comedienne. In her last-released picture, *The Misfits* (with Clark Gable, 1961), there was evidence that she might develop into an actress of some ability.

Marilyn Monroe's private life was as public as her career. Her later marriages—in 1954 to former baseball player Joe Dimaggio, from whom she was divorced that same year, and in 1956 to playwright

Marilyn Monroe (1926–1962)

WIDE WORLD

Arthur Miller, from whom she was divorced in 1960—were the subject of endless publicity.

After her last divorce it became apparent that the world's most talked-of actress was treading a downhill path. Her chronic lateness and general professional instability were more pronounced. In 1961 she was twice admitted to hospitals for psychiatric observation, and finally was under constant psychiatric care. At last, in 1962, because of continued absences from the studio, she was suspended from the cast of *Something's Got to Give*. According to a team of psychiatrists investigating the star's death, as reported by the *Medical Tribune* (Sept. 17, 1962), she was a long-time sufferer from "psychiatric disturbances," who "experienced severe fears and frequent depressions." Her "probable suicide" (the coroner's verdict) was but one of several attempts to take her own life.

MONTANA

A Northwestern state of the United States, Montana ranks 4th among the states in area (land, 145,736 square miles; inland water, 1,402) and 41st in population (709,000 on July 1, 1962, a 5.1% increase from the 1960 census figure of 674,767). Urban places with populations above 7,500 in 1960:

Anaconda	12,054	Helena (*capital*)	20,227
Billings	52,851	Kalispell	10,151
Bozeman	13,361	Livingston	8,229
Butte	27,877	Miles City	9,665
Great Falls	55,357	Missoula	27,090
Havre	10,740		

Government.—Chief executive and judicial officers in 1962 were Tim M. Babcock (Republican), governor; Frank Murray, secretary of state; Edna J. Hinman, treasurer; E. V. Omholt, auditor; Forrest H. Anderson, attorney general; Harriet Miller, superintendent of public instruction; and James T. Harrison, chief justice of the 5-member Supreme Court. (See also below, *Events, 1962.*)

The Montana Legislative Assembly, which convenes in odd-numbered years, comprised 38 Democrats, 17 Republicans, and 1 Independent in the Senate in 1962 and 54 Republicans and 40 Democrats in the House of Representatives.

Finance.—In the 1962 fiscal year, revenue of $196,538,419 included $69,709,449 from state taxes and $55,973,951 in federal funds. Chief tax yields were from individual incomes ($13,354,007) and motor fuels ($20,808,949). Spending of $164,602,546 included $40,551,068 for education, $13,343,030 for health, welfare, and safety, and $52,735,173 for highways.

Education.—In the 1961–62 school year it was estimated that public elementary schools staffed by 4,800 teachers enrolled 102,500 pupils; public secondary schools with 2,175 teachers enrolled 48,600; and parochial schools with 627 teachers enrolled 18,445. College enrollment totaled 13,869.

Estimated public school spending in the 1961–62 school year totaled $75,025,000, including current expenditures of $61,500,000 ($445 per pupil) and capital outlays of $10,700,000. Revenue of $88,900,000 was drawn chiefly from state funds ($20,500,000) and local districts ($53,000,000). Teachers' salaries averaged $4,760 (high school, $5,360; elementary, $4,490). Actual spending for higher education (1961 fiscal year) amounted to $22,230,000.

Public Assistance.—In the 1962 fiscal year, public assistance payments to a monthly average of 20,288 persons totaled $10,343,473. This amount included $4,935,759 for the aged and $2,981,567 for dependent children.

Transportation and Communications.—With 392 miles of highway construction and reconstruction completed in 1961, *highways and roads* on Dec. 31, 1961, totaled 75,309 miles (30,140 surfaced). These served 423,881 *motor vehicles* (as registered on Dec. 31, 1961), including 265,537 *automobiles*. Operating in the state were (1961) 9 *railroads* (using 4,940 line miles of track); (1962) 4 regularly scheduled *airlines;* and 113 commercial and municipal *airports*.

Communications media included (1962) 36 AM *radio stations;* 8 VHF *television stations;* (1961) 16 daily *newspapers* (circulation, 169,511); and (Jan. 1, 1962) 72,300 business and 188,300 residential *telephones*.

Labor Force.—In July 1962 there were 176,600 employees in nonagricultural establishments, compared with 175,200 a year earlier and an average of 166,200 during 1961. Of nonfarm workers, 23.2% were in government services, 23.1% in trade, and 14% in service industries. The state paid $11,292,650 in unemployment compensation during 1961.

Manufacturing.—Manufacturing engaged 19,826 workers in 1960, including 15,915 in production, and provided a payroll of $97,250,000. Adjusted value added by manufacture totaled $203,894,000.

In 1960 the two leading industries in the state were lumber and wood products (7,040 workers; $31,855,000 in wages; and $52,810,000 in adjusted value added by manufacture) and petroleum and coal products (1,012; $7,216,000; $28,432,000).

Mining.—In 1961, Montana ranked 24th among the states in the value of its mineral output, with 1.01% of the national total. It was first in output of chromite (sole producer) and vermiculite, second in manganese ore, and third in copper, production of which was the largest since 1944.

MONTANA MINERAL PRODUCTION, 1961
(In short tons, except as noted)

Mineral	Quantity	Value
Chromite[1]	82,000	$ 2,939,000
Coal	371,000	1,207,000
Copper (recoverable content of ores)	104,000	62,400,000
Gold (fine ounces)	35,377	1,238,000
Lead (recoverable content of ores)	2,643	544,000
Lime	118,000	986,000
Manganese (35% and over)	17,515	1,412,000
Natural gas (1,000 cu. ft.)	33,901,000	2,509,000
Petroleum, crude (1,000 bbl.)	30,907[2]	74,795,000[2]
Sand and gravel	14,702,000	13,506,000
Silver (fine ounces)	3,490,000	3,227,000
Stone	1,512,000	1,849,000
Zinc (recoverable content of ores)	10,262	2,360,000
Other minerals	...	15,294,000
Total	...	$183,354,000[3]

[1] Excludes quantity consumed by American Chrome Co. [2] Preliminary figure. [3] Total adjusted to eliminate duplication in value of raw materials used in manufacturing cement and lime. (Source: U.S. Bureau of Mines.)

Agriculture.—Cash farm income for the first nine months of 1962 (excluding government payments) totaled $286,751,000, compared with $238,101,000 for the corresponding period of 1961. For the full year 1961 income comprised $215,215,000 from livestock, $150,079,000 from crops, and $17,041,000 in government payments. Principal income sources in 1961 were cattle, $166,048,000, and wheat, $103,615,000.

MONTANA CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Barley (1,000 bu.)	33,338	26,370	54,961
Beans, dry edible (1,000 bags)	197	222	225
Cherries (tons)	1,704	2,570	2,440
Corn for Grain (1,000 bu.)	192	174	200
Flaxseed (1,000 bu.)	347	36	210
Hay (1,000 tons)	2,898	2,528	3,488
Oats (1,000 bu.)	8,452	5,032	10,783
Potatoes (1,000 cwt.)	1,222	1,440	1,248
Rye (1,000 bu.)	262	555	666
Sugar beets (1,000 short tons)	720	893	843
Wheat (1,000 bu.)	91,566	54,048	78,297

(Source: U.S. Department of Agriculture.)

The state's 29,000 farms in 1959 had an acreage of 64,081,000 (8,159,000 in harvested cropland). Livestock on farms on Jan. 1, 1962, included 2,112,000 cattle, 1,576,000 sheep, and 1,163,000 chickens. An average of 37,000 family and 11,000 hired workers engaged in farming in 1961.

Events, 1962.—The state was shocked on January 25 by the death of Gov. Donald G. Nutter, 46, in an airplane accident near Helena. Five other men lost their lives in the crash, including state Agriculture Commissioner Edward C. Wren. Lt. Gov. Tim M. Babcock succeeded Nutter, who was entering the second year of a four-year term. On May 12, death came also to state Auditor John J. Holmes, who had held the office continuously since 1932.

Politically, the elections of the year produced few changes. Incumbents Arnold Olsen, Democrat, of the 1st District, and James F. Battin, Republican, 2d District, were returned to Congress. A turn-out of 76% of the registered voters returned a Democratic majority to the state Senate, 35 (a decrease of 3) to 21, and a Republican majority of 56 (an increase of 2) to 38 to the House. A constitutional amendment extending the term of county attorneys from two to four years was approved. The election centered chiefly on personalities, but ill-focused issues included: financing a balanced budget; the difficult conditions at the State Training School at Boulder, reportedly caused by conservative appropriations; and federal aid, particularly to water and power development, such as the proposed Knowles Dam on the Flathead River, a tributary of the Clark Fork of the Columbia.

Montreal's Place Ville Marie, climaxed by the 42-story Royal Bank of Canada Building, was finished in September 1962.

DWIGHT E. DOLAN

An uncertain economic climate prevailed in 1962, despite favorable weather conditions and considerable construction activity, including the erection of a $7.5 million ferrochrome plant in Butte, work on the Big Horn Dam (see DAMS), completion of the Minuteman missile sites near Great Falls, expansion of air facilities at Great Falls and Glasgow, and continuation of important state and interstate highway construction.

A prolonged strike in the Butte mining complex contributed to the bankruptcy of Silver Bow County finances. Loans from state agencies covered current payrolls until the county could collect some of its $3.5 million in delinquent taxes, curb welfare expenditures, and trim costs of its hospital for the aged and the Butte Civic Center.

The office of bishop of the Diocese of Helena, left vacant by the death in April of Bishop Joseph M. Gilmore, was filled on August 30 by the consecration of Msgr. Raymond G. Hunthausen, president of Carroll College.

The derailment of a speeding Northern Pacific train on June 10 near Missoula killed 1 person and injured 243 others.

"Events" by: M. G. BURLINGAME,
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MONTREAL

The largest city in Canada, and the world's largest inland port, Montreal is located on the St. Lawrence River in the Province of Quebec. Montreal's population, according to the 1961 census, was 1,191,062, a slight increase from the 1956 census total of 1,109,439. The city is the center of a metropolitan area that increased in total population from 1,745,001 in 1956 to 2,109,509 in 1961. This metropolitan area population growth is concentrated in some 50 suburban municipalities, which now have a total population of more than 900,000.

Approximately 70% of the residents of the city are Canadians whose native language is French. Montreal is the largest French-speaking city in the world after Paris. It supports two English-language daily newspapers and three French language dailies. A fourth French-language daily, which commenced operations in September 1961, ceased publication in the summer of 1962. The city supports four television stations and 10 radio broadcasting stations. Two television and three radio stations conduct their broadcasting schedules entirely in French.

In civic elections, held on October 28, the Civic Party captured 41 of the 45 seats in the City Council. In the previous administration, it held 44 out of 66 seats (reduced to 45 by an amendment to the city charter). Jean Drapeau was returned to another term as mayor by an overwhelming majority. Voters also approved the extension of the term of office of the City Council from two years to four years, and the issuing of identity cards to all citizens eligible to vote.

Like most metropolitan areas in North America, Montreal is confronted with the problem of finding a satisfactory method of coordinating intermunicipal planning and other governmental activities on a metropolitan basis. In 1958 the Montreal Metropolitan Corporation was established with very limited authority. The question of an expanded role for the Metropolitan Corporation became the subject of considerable public debate early in 1962 when the City of Montreal bill was considered by the Provincial Legislature. No action was taken to expand the powers of the corporation, however, and its role in the intermunicipal affairs of the Montreal area remained relatively small.

Construction of a 20.8-mile underground transit system to meet the city's desperate need for adequate mass transportation facilities commenced in the spring of 1962.

The city's skyline underwent a drastic change with the completion of four major projects on Dorchester Boulevard. Of particular interest among

these projects, which were officially opened during the summer of 1962, were the 42-story cruciform-style skyscraper complex known as Place Ville Marie and the 42-story office building of the Canadian Imperial Bank of Commerce.

Pressure for additional university facilities in the city continued. McGill University announced a long-term capital building program to make major additions to its main campus facilities in Montreal, as well as important extensions to its Macdonald College campus near St. Anne de Bellevue. Sir George Williams University, which caters primarily to evening students, also announced plans for a major building expansion program.

Inmates of St. Vincent de Paul Penitentiary rioted on June 17 and set fires causing destruction estimated as high as $3 million. One convict was killed and 30 convicts and guards were injured in the rioting.

Champlain Bridge, Montreal's fourth span over the St. Lawrence River, was opened in July.

THOMAS J. PLUNKETT,
Municipal Affairs Consultant, Montreal.

MONTSERRAT. See WEST INDIES FEDERATION.
MONUMENTS, National. See NATIONAL PARKS AND MONUMENTS.
MOON RESEARCH. See ASTRONOMY; SPACE FLIGHT.
MORMONS. See CHURCH OF JESUS CHRIST OF LATTER-DAY SAINTS.

MOROCCO

The Kingdom of Morocco is situated in northwestern Africa, with coastlines on both the Atlantic Ocean and the Mediterranean Sea. The area of 171,305 square miles comprises coastal plains and plateaus, the central Atlas Mountains system, and part of the Sahara Desert in the east and south. The population of 11,626,470 (1960 census) consists mainly of Berbers and Arabs, and includes about 400,000 Europeans (mainly French and Spanish) and 200,000 native Jews. Arabic is the official language; French is widely used in commerce, education, and other spheres. Principal cities: Rabat (est. pop., 225,000), the capital; Casablanca (965,277); Marrakech (243,134); Fez (216,000), and Tangier (142,000).

Government.—Morocco attained independence in 1956, after being formerly divided into the French and Spanish protectorate zones and the Tangier International Zone. King Hassan II, who acceded on Feb. 26, 1961, to the throne held by his late father, Mohamed V, appoints the ministry and also serves as premier (since June 2, 1961). There is an advisory National Consultative Assembly, whose 76 members are appointed by the king. A Fundamental Law sealed by the king on June 7, 1961, declared Morocco to be progressing toward a "constitutional monarchy." The only elections which have taken place thus far were those of May 29, 1960, for the local councils of the country's 798 communes.

Education and Religion.—Over three fourths of the population is illiterate. The government has begun a program to expand education on all levels, but only 21% of the school-age population attended school in 1960. School enrollment, 1960: primary, 795,893; secondary, 58,978; technical, 25,973; higher, 4,665. The chief higher institutions are the University of Rabat (3,218 students in 1960) and Qarawiyyin University in Fez (3,500). The majority of Moroccans are Sunni Muslims of the Malikite rite. The Europeans are mostly Roman Catholics under the archbishop of Rabat.

Finance.—Morocco's ordinary budget for 1962 was estimated at DH1,823 million, or 12% above that for 1961 (the dirham has a par value of DH5.06 to the U.S. dollar). Expenditure under the country's third five-year development plan (1961–65) was estimated at DH505.6 million in 1962 (DH451.1 million in 1961). United States economic aid totaled about $40 million in 1961, or nearly half of Morocco's development budget. Foreign exchange holdings: DH1,017 million in October 1961 (DH1,295 million a year earlier).

Transportation and Communications.—Transport networks (miles, 1961): railways, 1,093; surfaced roads, 6,835; other roads, 23,000. Moroccan ports handled 19,015 vessels, aggregating 26.6 million net tons, in 1960. Royal Air Maroc and international airlines operating mainly out of Casablanca flew 2,738,000 route miles in 1960. Other data for 1960: passenger cars, 124,900; commercial vehicles, 47,000; telephones, 128,704; radio receiver licenses, 532,000. Morocco's first television station began operations in early 1962.

Agriculture.—Most of the population is engaged in agriculture and stock raising. In 1960 the government instituted a program to improve the low agricultural productivity by introducing modern farm equipment and techniques, and initiating irrigation and reclamation projects to reclaim unused desert land. The important cereal crop (chiefly wheat, barley, and corn) amounted to only 1.2 million tons in 1961 because of drought (2.6 million tons in 1960). Other agricultural products and estimated 1961 output: grapes, 250,000 metric tons (1961–62); olive oil, 18,000 short tons (1961–62); oranges, 14,220,000 boxes (70 pounds each); flaxseed, 169,000 bushels; leaf tobacco, 5,290,000 pounds; soybean oil, 13,500 metric tons (exported); almonds, 4,000 short tons. Herds of sheep and goats yield meat, wool, hides, and milk products.

Manufactures and Minerals.—In 1960 some 90,000 persons were engaged in manufacturing, which provides less than one fifth of the gross domestic product. Another 45,000 persons were employed in mining; mineral production in 1960 was valued at 82.6 billion French francs. Chief industrial products (metric tons, 1961): iron ore, 1,464,000 (down 7% from 1960); crude petroleum, 800,000 (down 13%); cement, 630,000 (up 8%); manganese ore (Mn content), 174,600 (1960); lead, 24,500 (down 20%); electricity, 1,030 million kw.-hr. (up 4%). Other manufactures include foodstuffs, textiles, chemicals, metallurgical products, footwear, carpets, and leather goods.

Foreign Trade.—Total exports, 1961: DH1,734 million (up 3% from 1960); imports: DH2,288 million (up 8%). Chief exports and values (in million dirhams): phosphates, 411; other raw materials, 824; and foods and beverages, 748. Chief imports are sugar and other foodstuffs, fuels, textiles, machinery, vehicles, and other manufactures. France and other countries in the franc zone took 47% of Morocco's total exports in 1961, and supplied 52% of total imports. Other main trading partners are the United States, West Germany, Great Britain, and Italy.

Events, 1962.—King Hassan II completed his first year as reigning monarch on February 26 after having consolidated his powers as absolute ruler of the kingdom. The young king, in a speech from the throne on March 3, pledged that his government would progress toward a "representative regime" and would nationalize certain vital economic sectors, specifically electric power and railways, while continuing to uphold the principles of democracy, social justice, economic progress, and a policy of nonalignment in foreign affairs. Following criticism by leftist opposition groups to the effect that King Hassan had failed to take significant steps to establish democratic government at the expense of lessening his autocratic powers, the government ordered that a constitutional referendum be held by the end of 1962.

The referendum was held on December 7 and resulted in a victory for King Hassan. The voters largely defied demands by the political opposition to boycott the balloting, and a substantial majority approved the draft constitution that had been prepared by the government. The new constitution establishes a popularly elected Chamber of Deputies, which is to be formed from five to ten months after promulgation of the constitution. It also includes a bill of rights and measures that reinforce the executive authority of the king, who is empowered to submit any bill rejected by the Chamber to a national referendum.

The king paid a private visit to France on May 10–11, and discussed with President Charles de Gaulle possible measures to strengthen cooperation between their two nations. Further negotiations resulted in the economic and cultural agreements of July 7 that provided for French financial assistance (estimated at $70 million) for Morocco's economic development, and for an increase in the number of French technicians and teachers working in the kingdom.

Morocco also concluded similar agreements with Italy, following the visit of Premier Amintore Fanfani to Morocco on January 8–12. At that time King Hassan officially opened the oil refinery at

Mohommedia which had been built with technical and financial help from Italy.

In foreign affairs King Hassan continued to press for Arab unity. He announced on January 23 that a commission of Moroccan and Algerian ministers had been established to create the political structure for a United Arab Maghrib (North Africa). The proposed political union between Morocco and Algeria would also be open to membership for Libya and Tunisia at a later date. Hassan declared that economic union between Algeria and Morocco was a first step, and that the commission would draft a charter for "progressive union on all planes." A treaty of friendship and cooperation was concluded with Libya in early November.

Despite official protestations concerning Arab unity, however, Morocco continued to engage in territorial disputes with neighboring Arab states. In early July, after Algeria had attained independence from France, the Moroccan and Algerian governments exchanged protests over alleged territorial violations by each other's armed forces. Morocco charged that Algerian troops had occupied three Moroccan military outposts in the Sahara, and Algeria protested that Moroccan troops had seized an Algerian outpost in the same region. Neither nation removed their alleged occupying forces from the disputed border areas, and further border clashes occurred late in the year. Algerian rebel troops and refugees who had lived in Morocco during the Algerian rebellion returned to Algeria in the latter half of the year.

Morocco continued to press her claims to independent Mauritania, which the Moroccan government describes as its "southern province." It was reported on April 7 that Moroccans supporting Mauritania's unification with Morocco had attacked a French military post at Nema in southwest Mauritania. In May a Moroccan minister claimed that a "general rebellion" by pro-Moroccan forces had broken out in Mauritania, but the claim was apparently exaggerated and was not confirmed.

Spanish possessions on the Moroccan coast are also claimed by Morocco as an "integral part" of her kingdom, and in May the government initiated economic pressures against the enclaves. Persons working in Morocco were prohibited from living in the Spanish free port of Melilla, and increased efforts were made to stop the smuggling of contraband goods into Morocco from Melilla and Ceuta. Spain reacted to the economic pressure by building up its military defenses in the enclaves. As Spanish troops stationed in the two ports reportedly outnumber the Moroccan 35,000-man army, Morocco was apparently reluctant to attempt to seize the Spanish possessions by the use of force. It was announced on October 28 that the two countries had agreed to negotiate their territorial differences.

Morocco's armed forces were strengthened by further shipments of MIG jet fighters and other military equipment from the Soviet Union. Soviet Deputy Premier Anastas I. Mikoyan, during a visit to Morocco in late January, had discussed with King Hassan new Soviet offers of arms aid and economic assistance for the kingdom.

After the government lifted restrictions on travel by Jews from Morocco, effective as of November 1961, about 7,500 Jews left the country for Marseille, France, by March 1962. Although Morocco, as a member of the Arab League, had previously banned Jewish immigration to Israel, a government official stated that Moroccan Jews had the same travel rights as other Moroccan citizens, but that they would not be allowed to return if they emigrated to Israel.

The economy continued to suffer from the effects of the devastating drought in 1961. The poor crop harvest of that year resulted in a lack of purchasing power that contributed to stagnant economic conditions in the first half of 1962. The lack of new industrial construction was also a factor in keeping the economy relatively dormant. Conditions were improved somewhat by abundant rainfall in March and the resultant improved crop harvest later in the year. Increased imports of grains under the United States aid program had helped to ease serious food shortages, but American aid was reduced by 25% to $30 million for the fiscal year 1962, and the development reportedly caused great concern among Moroccan officials.

Tangier's former status as a free port, which had been ended in 1960, was revived on Feb. 5, 1962, when the city was officially granted "privileged integration" with the kingdom.

W. R. F.

MORTGAGES. See Index entry.
MOSLEMS. See the Index entry, *Islam.*
MOTELS. See HOTELS AND MOTELS.

MOTION PICTURES

When Hollywood and members of the film industry turned out en masse on Aug. 26, 1962, to honor producer Samuel Goldwyn's 80th birthday, they were reminded that Goldwyn's first movie, *The Squaw Man,* was also the first movie made in Hollywood—in 1913. They realized that Hollywood had come—and gone—a long way since then. The studios, no longer all-powerful, made fewer films and were content to finance and distribute the pictures of independent producers. Hollywood had lost much of its glamor and prestige.

The film makers gave a variety of reasons for the decline: the rise of television; the current trend of producers to make films abroad; the many "sick" movies being turned out about neurotic characters—movies that revolted some viewers but continued to attract large audiences and show profits; the financial insecurity of producers who, when production costs rose, were hesitant to gamble several million dollars on films that might or might not come out ahead at the box offices (some estimates showed that only one out of five films was now profitable); the lack of daring and enthusiasm in producers who were afraid to take a chance and make offbeat movies; and the ridiculously high salaries demanded by stars who insisted on exorbitant compensation as well as profit-sharing contracts.

Major Studios.—Whatever the reasons for a waning Hollywood, some of them were not so much an indication of decline as of change. By 1962, all the major studios (except Twentieth Century-Fox) were headed not by movie makers but by businessmen who were more concerned with quotas, taxes, and balance sheets than with artistic productions. Following the lead of United Artists, the only important company that showed increasing profits for ten consecutive years, the big studios left most of the movie making to independents (those producers, directors, writers, or actors who presided over their own companies and usually made only one film at a time). The major studios then distributed the independent productions with their own.

Twentieth Century-Fox, which was closed for most of 1962 and lost $25 million, elected producer Darryl F. Zanuck as president. Its future

depended mainly on two costly films: *The Longest Day,* the $10 million production about D-Day that was released in October 1962; and *Cleopatra,* the problem-ridden motion picture that had cost $35 million but was still not finished by the end of 1962. It was estimated that *Cleopatra* would have to gross $75 million to show a profit; but the studio hoped that this film could be reissued again and again in future years, like *Gone With the Wind,* which has been reissued four times since its original release in 1939 and has grossed more than $75 million.

"Runaway" Films.—During 1962, the rising costs of American films made abroad (such as *Cleopatra* and the $20 million *Mutiny on the Bounty*) gave producers pause. Samuel Goldwyn, the most famous of the independents (and perhaps the only genuine one, because he financed his own films), has long deplored the trend of American producers to make films abroad in order to take advantage of tax dodges, cheap labor, and foreign subsidies. The unions and guilds also have objected to this trend and have even picketed a few of the "runaway" films. Some of these films were made in foreign countries not to save money, but for authenticity of locale: *Light in the Piazza,* with its beautiful shots of Florence; *Romè Adventure; Tarzan Goes to India;* and *Hatari!,* with its stunning scenes of hunting in Tanganyika.

The unions, having cause to be concerned about the decrease in Hollywood production, granted concessions to producer George Stevens, who consequently started making his $10 million production of *The Greatest Story Ever Told* in the United States instead of abroad as planned. It was hoped this action would set a pattern for other producers. But several of the independents, annoyed at the high costs and inefficiency of foreign production, were already returning to Hollywood's superior technical facilities. The Screen Actors Guild helped the situation by announcing that it would not seek a wage increase for motion picture actors.

Television.—Although there was some increase in unemployment in 1962 in the motion picture industry, many of the craftsmen turned to television for work. Eric Johnston, president of the Motion Picture Association of America, succinctly summed up the association's attitude toward television, once considered a competitor: "We are no longer a feature motion picture industry. We are a television *and* movies industry." Many artists moved back and forth in the two mediums, and some audiences who watched both mediums did not distinguish between them.

During 1962, motion pictures played an increasingly important role on TV programs. All the movie studios, except Universal and Paramount, had sold or leased some of their post-1948 films to TV stations. In New York City alone, 25% of the broadcasting hours were devoted to replays of old movies. Some of these were very mediocre; and the stations were often forced to buy packages of films, taking the bad to get the good. (The U.S. Supreme Court ruled against these package sales on November 5.) Some film makers produced movies expressly for TV, and all film makers, concerned with a possible new source of income, watched the experiments in pay-TV with interest and were willing to supply new movies for pay-TV tests, even before these first-run films were shown in theaters.

Theaters.—It was the motion picture theaters in the United States that were most concerned about the TV competition, and especially the likely success of pay-TV, which would bring first-run films into the home. Would theaters then be able to attract audiences? Although many theaters were torn down or converted into supermarkets or bowling alleys during the past ten years, the total number of theaters in the United States has remained about the same (17,000) since 1948, because drive-ins and new small movie houses replaced the outmoded "palaces." The movie makers, although not entirely content with business as it now stands, are anxious to keep theaters going. Most of the major studios buy foreign films, which they release throughout the United States; and most of them reissue their most popular old movies, some of which do well even though they have appeared on television (*Pride and Prejudice, Anna Karenina, Captains Courageous, Rear Window, Pal Joey, North by Northwest*). The studios, exhibitors, and distributors also launched a radio campaign with the jingle, "Go *out* to a movie tonight." But the most successful scheme to help theaters (and themselves) was the companies' saturation booking: Some new films, instead of opening at a single first-run theater, started in many theaters, suburban as well as city, on the same day. Particularly popular among the saturation bookings were *The Manchurian Candidate,* with Frank Sinatra, and *What Ever Happened to Baby Jane?* with Bette Davis and Joan Crawford.

The 1962 Films.—Exhibitors, always pleased to get whatever assistance they could from the studios to satisfy the 44 million people who attend theaters weekly, were glad that the American companies supplemented their own productions with foreign films. Many of these pictures were popular in the United States. Some had sound tracks in English; some used subtitles to translate the foreign language. Many films were produced internationally, with their directors, actors, writers, staffs, and even financial support coming from various countries. This was especially true of the spectacles, such as *Taras Bulba, Barabbas,* and *Damon and Pythias.*

The spectacular film that won most attention, though not the best reviews, was *The Wonderful World of the Brothers Grimm,* which was the first dramatic picture in Cinerama. Although Cinerama, with its wide, curved screen and three projectors, first appeared in 1952 and has been improved continually since then, critics were disappointed that it still had flaws and that *Grimm* told a pallid story hardly worthy of the elaborate production.

The year saw the release of many dramas with frank, adult themes. Some came from abroad: the French *Jules and Jim, The Girl with Golden Eyes,* and *Sundays and Cybèle;* the Swedish *Through a Glass Darkly;* the Mexican *Viridiana;* the Russian *The Lady with the Dog;* the English *Victim, A Kind of Loving,* and *A Taste of Honey;* the Italian *Boccaccio '70,* and *Divorce—Italian Style;* and the international *A View from the Bridge.* Others were Hollywood films: *The Children's Hour, Something Wild, Lolita, Walk on the Wild Side, Sweet Bird of Youth, The Chapman Report,* and *Two Weeks in Another Town.*

Some of the frank films aroused the censors' ire; and Hollywood has always been concerned when movies attracted attention that might lead to censorship. The Production Code, voluntarily set up by the industry in 1930 and administered rather strictly for 25 years, was revised in 1956 to meet the competition of foreign films that had no restrictions—and to meet the interests of audiences who had tired of pat soap operas. As long as producers handled adult subjects intelligently and without sensationalism, the new freedom met with general approval, but when too many pictures appeared with flashy or lurid themes, Hollywood again feared government interference. Some producers labeled their films with "Adults Only" no-

tices. Some theaters rated the movies they showed. Some states and cities had their own censor boards, whose decisions movie makers often successfully challenged in court (as in the case of *The Connection*). By the year's end, the only conclusion reached was that no one wanted complete government censorship.

Among the other dramas released in 1962, *Requiem for a Heavyweight, Long Day's Journey into Night,* and *To Kill a Mockingbird* won praise. Those that were admired more for their aims than for their success in attaining them included *All Fall Down, Tender Is the Night, Adventures of a Young Man,* and *Five Finger Exercise.*

There was no shortage of films featuring popular comedians, or of flashy, slightly risqué comedies, such as *Jessica, Notorious Landlady, Boys' Night Out,* and *That Touch of Mink;* but there were few family comedies like *Mr. Hobbs Takes a Vacation, Gigot,* and *Bon Voyage.* This last was made by Walt Disney's studio, which also turned out such animal pictures as *Big Red* and *The Legend of Lobo,* and the lively adventure movie, *In Search of the Castaways.* The year's only feature-length cartoon was *Gay Purr-ee,* which disappointed admirers of UPA's fine cartoon shorts. While there were no musical comedies of the outstanding calibre of *West Side Story* (1961), which continued to be popular in 1962, audiences enjoyed *The Music Man, Billy Rose's Jumbo,* and the biographical *Gypsy* (about Gypsy Rose Lee and her mother). Other biographical films included *The Reluctant Saint* (St. Joseph of Cupertino), *The Miracle Worker* (Helen Keller and Annie Sullivan), *The Outsider* (Ira Hamilton Hayes), *Birdman of Alcatraz* (Robert Stroud), *Freud,* and the magnificently photographed *Lawrence of Arabia.*

Most of the year's war films were comedies, such as *The Pigeon That Took Rome* and *The Horizontal Lieutenant,* but a few were thoughtful pictures stressing bravery and the horrors of war: *Hell Is for Heroes, War Hunt, No Man Is an Island, The Counterfeit Traitor,* and *Merrill's Marauders.* The outstanding war film was *The Longest Day.* Sea pictures included the long-awaited and somewhat disappointing remake of *Mutiny on the Bounty; Damn the Defiant;* and the first-rate *Billy Budd.*

Too few films dwelled on timely social themes. *A Majority of One* was a thin racial comedy. *The Intruder, Pressure Point,* and *Flame in the Streets* considered Negro-white conflicts. Politics and ideologies dominated *Advise and Consent* and were mixed with adventure in *The Manchurian Candidate, Guns of Darkness,* and *Escape from East Berlin.*

On the whole, except for the really outstanding films, the 1962 fare of about 200 releases was mediocre. There were the usual Westerns, adventure movies, and mystery thrillers. But there were too few top-notch movies—entirely too few, in fact, to warrant the suggestion made by one producer that a cure for ailing Hollywood should be assistance in the form of government subsidies. Actually the cure for Hollywood and the American movie business is some really good movies.

(See also PRIZES AND AWARDS.)

(Top to Bottom): (1) *The Miracle Worker*, based on the life of Helen Keller, starred Anne Bancroft and Patty Duke. (2) Hardy Kruger and Nicole Courcel in a scene from the French film *Sundays and Cybèle*. (3) Montgomery Clift, seen here with Susannah York, played the title role in *Freud*. (4) In his first motion picture, Peter O'Toole (left) played T. E. Lawrence in *Lawrence of Arabia*. (5) Marcello Mastroiani and Daniela Rocca in the Italian comedy *Divorce, Italian Style*.

UNITED ARTISTS; DAVIS-ROYAL FILMS; UNIVERSAL PICTURES CO., INC.; COLUMBIA PICTURES CORP.; EMBASSY PICTURES CORP.

Motion Pictures of 1962

This selection from the films released in the United States in 1962 represents a cross section of the best, most typical, most popular, and most widely discussed motion pictures produced throughout the world.

Adventures of a Young Man (20th Century-Fox). Producer, Jerry Wald; director, Martin Ritt. From stories by Ernest Hemingway. With Richard Beymer, Arthur Kennedy, Jessica Tandy, Paul Newman, Ricardo Montalban, Eli Wallach, Susan Strasberg.

Advise and Consent (Columbia). Producer-director, Otto Preminger. From the novel by Allen Drury. With Walter Pidgeon, Charles Laughton, Franchot Tone, Don Murray, Henry Fonda, Lew Ayres, Burgess Meredith, Gene Tierney.

All Fall Down (MGM). Producer, John Houseman; director, John Frankenheimer; screenplay by William Inge, from the novel by James Leo Herlihy. With Warren Beatty, Angela Lansbury, Brandon de Wilde, Eva Marie Saint, Karl Malden.

Barabbas (Columbia). Producer, Dino De Laurentiis; director, Richard Fleischer; screenplay by Christopher Fry, from the novel by Pär Lagerkvist. With Anthony Quinn, Vittorio Gassman.

Bell' Antonio (Embassy). Producer, Alfredo Bini; director, Mauro Bolognini. With Marcello Mastroianni, Claudia Cardinale, Pierre Brasseur.

Big Red (Buena Vista). Producer, Walt Disney; director, Norman Tokar. With Walter Pidgeon, Gilles Payant.

Billy Budd (Allied Artists). Producer-director-writer, Peter Ustinov. From the novel by Herman Melville and the play by Robert Chapman and Louis O. Coxe. With Terence Stamp, Peter Ustinov, Robert Ryan.

Billy Rose's Jumbo (MGM). Producer, Joe Pasternak; director, Charles Walters. From the play by Charles MacArthur and Ben Hecht; music and lyrics by Richard Rodgers and Lorenz Hart. With Doris Day, Jimmy Durante, Stephen Boyd, Martha Raye.

Birdman of Alcatraz (United Artists). Producers, Stuart Miller, Guy Trosper; director, John Frankenheimer. With Burt Lancaster.

Boccaccio '70 (Embassy). Producer, Carlo Ponti; directors, Federico Fellini, Luchino Visconti, Vittorio De Sica. With Anita Ekberg, Romy Schneider, Sophia Loren, Peppino De Filippo.

Bon Voyage (Buena Vista). Producer, Walt Disney; director, James Neilson. With Fred MacMurray, Jane Wyman, Michael Callan, Deborah Walley, Tommy Kirk, Kevin Corcoran.

The Cabinet of Caligari (20th Century-Fox). Producer-director, Roger Kay. A remake of the famous 1921 German film. With Glynis Johns, Dan O'Herlihy, Estelle Winwood.

Cape Fear (Universal). Producer, Sy Bartlett; director, J. Lee Thompson. With Gregory Peck, Robert Mitchum, Polly Bergen.

The Chapman Report (Warners). Producer, Richard D. Zanuck; director, George Cukor. From the novel by Irving Wallace. With Efrem Zimbalist, Jr., Shelley Winters, Jane Fonda, Claire Bloom, Glynis Johns.

The Children's Hour (United Artists). Producer-director, William Wyler; screenplay by John Michael Hayes, from the play by Lillian Hellman. With Audrey Hepburn, Shirley MacLaine, James Garner, Miriam Hopkins, Fay Bainter, Karen Balkin.

The Connection (Films Around the World). Producers, Lewis Allen, Shirley Clarke; director, Shirley Clarke; screenplay by Jack Gelber, from his play. With William Redfield, Warren Finnerty, Carl Lee, Jerome Raphel.

The Counterfeit Traitor (Paramount). Producer, William Perlberg; director, George Seaton. With William Holden, Lilli Palmer.

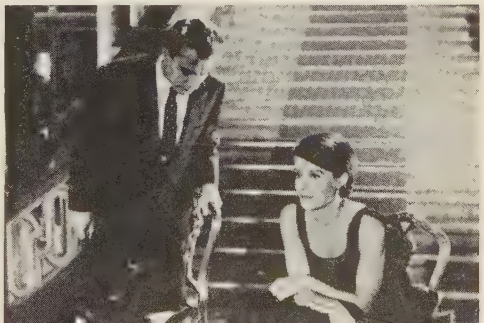
Damn the Defiant! (Columbia). Producer, John Brabourne; director, Lewis Gilbert. With Alec Guinness, Dirk Bogarde, Anthony Quayle.

David and Lisa (Continental). Producer, Paul M. Heller; director, Frank Perry. With Keir Dullea, Janet Margolin, Howard Da Silva.

The Day the Earth Caught Fire (Universal). Producer-director, Val Guest. With Edward Judd, Janet Munro, Arthur Christiansen.

Devi (Harrison). Producer-director-writer, Satyajit Ray. With Sharmila Tagore, Soumitra Chatterjee, Chhabi Biswas.

Divorce—Italian Style (Embassy). Producer, Franco Cristaldi; director, Pietro Germi. With Marcello Mastroianni, Daniela Rocca, Stefania Sandrelli.



(*Top to Bottom*): (1) Jason Robards, Jr., Dean Stockwell, Katharine Hepburn, and Ralph Richardson in the screen version of *Long Day's Journey Into Night*. (2) Robert Preston and Shirley Jones starred in the Hollywood adaptation of *The Music Man*. (3) *A Taste of Honey*, an English film, with Robert Stephens and Rita Tushingham. (4) Allied landing on the coast of France in *The Longest Day*. (5) *Last Year at Marienbad*, with Giorgio Albertazzi and Delphine Seyrig.

EMBASSY PICTURES CORP.; WARNER BROTHERS; CONTINENTAL DISTRIBUTING, INC.; 20TH-CENTURY FOX; ASTOR PICTURES

Eclipse (Times Film). Producers, Robert and Raymond Hakim; director, Michelangelo Antonioni. With Alain Delon, Monica Vitti, Francisco Rabal.

Electra (Lopert). Producer-director, Michael Cacoyannis. From the play by Euripides. With Irene Papas, Yannis Fertis, Aleka Catselli.

Experiment in Terror (Columbia). Producer-director, Blake Edwards. With Glenn Ford, Lee Remick, Ross Martin.

Five Finger Exercise (Columbia). Producer, Frederick Brisson; director, Daniel Mann. From the play by Peter Shaffer. With Rosalind Russell, Jack Hawkins, Maximilian Schell, Richard Beymer, Annette Gorman.

Follow That Dream (United Artists). Producer, David Weisbart; director, Gordon Douglas. With Elvis Presley, Arthur O'Connell, Joanne Moore.

The Four Horsemen of the Apocalypse (MGM). Producer, Julian Blaustein; director, Vincente Minnelli. From the novel by Vicente Blasco Ibáñez. With Charles Boyer, Paul Lukas, Glenn Ford, Ingrid Thulin, Lee J. Cobb, Paul Henreid, Yvette Mimieux, Karl Boehm.

Freud (Universal). Producer, Wolfgang Reinhardt; director, John Huston. With Montgomery Clift, Susannah York, Larry Parks, Susan Kohner, Eileen Herlie, Rosalie Crutchley, Eric Portman.

Gay Purr-ee (Warners). A feature-length animated cartoon produced by UPA; director, Abe Levitow. With the voices of Judy Garland, Robert Goulet, Red Buttons, Hermione Gingold.

Gigot (20th Century-Fox). Producer, Kenneth Hyman; director, Gene Kelly. With Jackie Gleason, Diane Gardner.

Gypsy (Warners). Producer-director, Mervyn LeRoy. From the play by Arthur Laurents; music and lyrics by Jule Styne and Stephen Sondheim. With Rosalind Russell, Natalie Wood, Karl Malden.

Harold Lloyd's World of Comedy (Continental). A compilation of sequences of Harold Lloyd's films from 1923 through 1938.

Hatari! (Paramount). Producer-director, Howard Hawks. With John Wayne, Red Buttons, Elsa Martinelli, Hardy Kruger, Gerard Blain, Michele Girardon, Bruce Cabot.

Hell Is for Heroes (Paramount). Producer, Henry Blanke; director, Don Siegal. With Steve McQueen, Bobby Darin, Fess Parker, Harry Guardino, Bob Newhart.

In Search of the Castaways (Buena Vista). Producer, Walt Disney; director, Robert Stevenson. Based on a story by Jules Verne. With Hayley Mills, Maurice Chevalier, Wilfred Hyde White, George Sanders, Michael Anderson, Jr., Keith Hamshere.

The Interns (Columbia). Producer, Robert Cohn; director, David Swift. With Cliff Robertson, James MacArthur, Michael Callan, Suzy Parker, Nick Adams.

The Intruder (Pathé-America). Producer-director, Roger Corman. With William Shatner, Frank Maxwell, Charles Barnes.

The Island (Zenith). Producers, Kaneto Shindo, Eisaku Matsura; director-writer, Kaneto Shindo. With Taiji Tonoyama, Nobuko Otowa.

It's Only Money (Paramount). Producer, Paul Jones; director, Frank Tashlin. With Jerry Lewis, Zachary Scott, Joan O'Brien.

Joan of the Angels? (Telepix). Producer, Kadr Unit of Film Polski; director, Jerzy Kawalerowicz. With Lucyna Winnicka, Mierczyslaw Voit.

Jules and Jim (Janus). Producer, Les Films du Carosse and S.E.D.I.F.; director, François Truffaut. With Jeanne Moreau, Oskar Werner, Henri Serre.

A Kind of Loving (Governor). Producer, Joseph Janni; director, John Schlesinger. With Alan Bates, June Ritchie, Thora Hird.

The Lady with the Dog (Artkino). Producer-director-writer, Josef Heifitz. From the story by Anton Chekhov. With Iya Savvina, Alexei Batalov.

Last Year at Marienbad (Astor). Director, Alain Resnais; screenplay by Alain Robbe-Grillet. With Delphine Seyrig, Giorgio Albertazzi, Sacha Pitoeff.

Lawrence of Arabia (Columbia). Producer, Sam Spiegel; director, David Lean; screenplay by Robert Bolt. With Peter O'Toole, Alec Guinness, Anthony Quinn, Jack Hawkins, Omar Sharif, Jose Ferrer, Arthur Kennedy, Anthony Quayle.

Light in the Piazza (MGM). Producer, Arthur Freed; director, Guy Green; screenplay by Julius J. Epstein, from the novel by Elizabeth Spencer. With Olivia de Havilland, Rossano Brazzi, Yvette Mimieux, George Hamilton.

Lolita (MGM). Producer, James B. Harris; director, Stanley Kubrick; screenplay by Vladimir Nabokov, from his novel. With James Mason, Shelley Winters, Sue Lyon, Peter Sellers.

The Loneliness of the Long Distance Runner (Continental). Producer-director, Tony Richardson; screenplay by Alan Sillitoe, from his story. With Michael Redgrave, Tom Courtenay, James Bolam, Topsy Jane.

Lonely Are the Brave (Universal). Producer, Edward Lewis; director, David Miller. With Kirk Douglas, Walter Matthau, Gena Rowlands.

The Long Absence (Commercial). Presented by Robert and Raymond Hakim; directed by Henri Colpi; screenplay by Marguerite Duras. With Alida Valli, Georges Wilson.

Long Day's Journey into Night (Embassy). Producer, Ely Landau; director, Sidney Lumet. From the play by Eugene O'Neill. With Katharine Hepburn, Ralph Richardson, Jason Robards, Jr., Dean Stockwell.

The Longest Day (20th Century-Fox). Producer, Darryl F. Zanuck; directors, Ken Annakin, Andrew Marton, Bernhard Wicki. With John Wayne, Robert Mitchum, Red Buttons, Richard Beymer, Robert Ryan, Henry Fonda, Jeffrey Hunter, Stuart Whitman, Richard Burton, Kenneth More, Curt Jurgens, Peter Van Eyck.

Lover, Come Back (Universal). Producers, Stanley Shapiro, Martin Melcher; director, Delbert Mann. With Rock Hudson, Doris Day, Tony Randall.

The Lovers of Teruel (Continental). Director-writer, Raymond Rouleau. With Ludmila Tcherina.

A Majority of One (Warners). Producer-director, Mervyn LeRoy; screenplay by Leonard Spigelgass, from his play. With Rosalind Russell, Alec Guinness, Ray Danton, Madlyn Rhue.

The Manchurian Candidate (United Artists). Producers, George Axelrod, John Frankenheimer; director, John Frankenheimer; screenplay by George Axelrod, from the novel by Richard Condon. With Frank Sinatra, Laurence Harvey, Janet Leigh, Angela Lansbury, James Gregory.

The Man Who Shot Liberty Valance (Paramount). Producer, Willis Goldbeck; director, John Ford. With John Wayne, James Stewart, Vera Miles, Lee Marvin.

Merrill's Marauders (Warners). Producer, Milton Sperling; director, Samuel Fuller. With Jeff Chandler, Ty Hardin.

The Miracle Worker (United Artists). Producer, Fred Coe; director, Arthur Penn; screenplay by William Gibson, from his play. With Anne Bancroft, Patty Duke.

Mr. Hobbs Takes a Vacation (20th Century-Fox). Producer, Jerry Wald; director, Henry Koster. With James Stewart, Maureen O'Hara, Fabian.

Murder, She Said (MGM). Producer, George N. Brown; director, George Pollock. With Margaret Rutherford, Arthur Kennedy, Muriel Pavlow.

The Music Man (Warners). Producer-director, Morton DaCosta; screenplay by Marion Hargrove, based on Meredith Willson's musical comedy. With Robert Preston, Shirley Jones.

Mutiny on the Bounty (MGM). Producer, Aaron Rosenberg; director, Lewis Milestone. Based on the novel by Charles Nordhoff and James Norman Hall. With Marlon Brando, Trevor Howard.

The Night (Lopert). Producer, Emanuele Cassuto; director, Michelangelo Antonioni. With Jeanne Moreau, Marcello Mastroianni, Monica Vitti.

No Exit (Zenith). Producers, Fernando Ayala, Hector Olivera; director, Tad Danielewski; screenplay by George Tabori, from the play by Jean-Paul Sartre. With Viveca Lindfors, Rita Gam, Morgan Sterne, Ben Piazza.

The Notorious Landlady (Columbia). Producer, Fred Kohlmar; director, Richard Quine. With Kim Novak, Jack Lemmon, Fred Astaire, Lionel Jeffries.

The Outsider (Universal). Producer, Sy Bartlett; director, Delbert Mann. With Tony Curtis, James Franciscus.

Period of Adjustment (MGM). Producer, Lawrence Weingarten; director, George Roy Hill; screenplay by Isobel Lennart, from the play by Tennessee Williams. With Tony Franciosa, Jane Fonda, Jim Hutton, Lois Nettleton.

Phaedra (Lopert). Producer-director, Jules Dassin. With Melina Mercouri, Raf Vallone, Anthony Perkins.

The Pigeon That Took Rome (Paramount). Producer-director-writer, Melville Shavelson. With Charlton Heston, Elsa Martinelli, Harry Guardino, Baccaloni.

Pressure Point (United Artists). Producer, Stanley Kramer; director, Hubert Cornfield. With Sidney Poitier, Bobby Darin, Peter Falk.

The Quare Fellow (Astor). Producer, Anthony Havelock-Allan; director-writer, Arthur Dreifuss. Based on the play by Brendan Behan. With Patrick McGoohan, Sylvia Syms.

Requiem for a Heavyweight (Columbia). Producer, David Susskind; director, Ralph Nelson; screenplay by Rod Serling, from his television play. With Anthony Quinn, Jackie Gleason, Mickey Rooney, Julie Harris.

Road to Hong Kong (United Artists). Producer, Melvin Frank; director, Norman Panama. With Bing Crosby, Bob Hope, Joan Collins, Dorothy Lamour, Peter Sellers.

Rome Adventure (Warners). Producer-director-writer, Delmer Daves. With Troy Donahue, Angie Dickinson, Rossano Brazzi, Suzanne Pleshette.

Secrets of the Nazi Criminals (Trans-Lux). Producer-director-editor, Tore Sjoberg. A documentary made up of film clips on the Nazi regime.

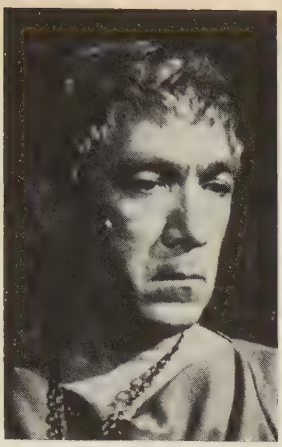
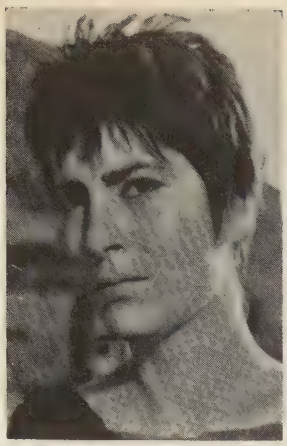
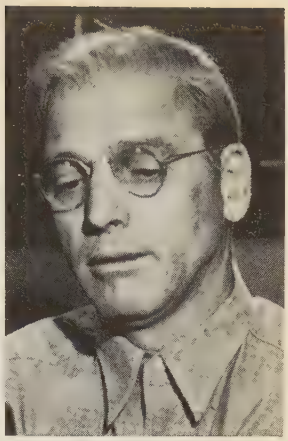
Sergeants Three (United Artists). Producer, Frank Sinatra; director, John Sturges. With Frank Sinatra, Dean Martin, Peter Lawford, Sammy Davis, Jr., Joey Bishop.

Shoot the Piano Player (Astor). Producer, Pierre Braunberger; director-writer, François Truffaut. With Charles Aznavour, Marie Du Bois, Nicole Berger.

The Sky Above—the Mud Below (Embassy). Producers, Arthur Cohn, Rene Lafuite; director-writer, Pierre-Dominique Gaisseau. Documentary film made during a French-Dutch expedition in former Netherlands New Guinea.

The Spiral Road (Universal). Producer, Robert Arthur; director, Robert Mulligan. Based on the novel by Jan de Hartog. With Rock Hudson, Burl Ives, Gena Rowland.

State Fair (20th Century-Fox). Producer, Charles Brackett; director, Jose Ferrer; screenplay by Richard Breen, from

Three memorable performances of 1962 (*l.* to *r.*): Anthony Quinn in *Barabbas;* Irene Papas in *Electra;* and Burt Lancaster in *Bird Man of Alcatraz.*

COLUMBIA PICTURES; LOPERT PICTURES CORP.; UNITED ARTISTS

the novel by Philip Stong; music and lyrics by Richard Rodgers and Oscar Hammerstein, 2d. With Pat Boone, Bobby Darin, Pamela Tiffin, Ann-Margret, Tom Ewell, Alice Faye, Wally Cox.

Stowaway in the Sky (Lopert). Director-writer, Albert Lamorisse; narration by S. N. Behrman, spoken by Jack Lemmon. With Pascal Lamorisse, André Gille, Maurice Baquet.

Sundays and Cybèle (David-Royal). Producer, Romain Pines; director-writer, Serge Bourguignon. With Hardy Kruger, Nicole Courcel, Patricia Gozzi.

Sweet Bird of Youth (MGM). Producer, Pandro S. Berman; director-writer, Richard Brooks, from the play by Tennessee Williams. With Geraldine Page, Paul Newman, Shirley Knight, Ed Begley, Rip Torn.

Taras Bulba (United Artists). Producer, Harold Hecht; director, J. Lee Thompson. Based on the novel by Nikolai Gogol. With Yul Brynner, Tony Curtis, Christine Kaufmann.

Tarzan Goes to India (MGM). Producer, Sy Weintraub; director, John Guillermin. Based on characters created by Edgar Rice Burroughs. With Jock Mahoney, Mark Dana, Simi.

A Taste of Honey (Continental). Producer-director, Tony Richardson. Based on the play by Shelagh Delaney. With Rita Tushingham, Dora Bryan, Murray Melvin, Paul Danquah.

Tender Is the Night (20th Century-Fox). Producer, Henry T. Weinstein; director, Henry King. Based on the novel by F. Scott Fitzgerald. With Jennifer Jones, Jason Robards, Jr., Joan Fontaine, Tom Ewell.

That Touch of Mink (Universal). Producers, Stanley Shapiro, Martin Melcher; director, Delbert Mann. With Cary Grant, Doris Day, Gig Young, Audrey Meadows.

Through a Glass Darkly (Janus). Producer, Svensk Filmindustri; director-writer, Ingmar Bergman. With Harriet Andersson, Gunnar Björnstrand, Max von Sydow, Lars Passgård.

To Kill a Mockingbird (Universal). Producer, Alan J. Pakula; director, Robert Mulligan; screenplay by Horton Foote, from the novel by Harper Lee. With Gregory Peck, Mary Badham, Phillip Alford, Brock Peters, Collin Wilcox.

Tomorrow Is My Turn (Showcorporation). Director, André Cayatte. With Charles Aznavour, Nicole Courcel, Georges Rivière, Cordula Trantow.

Two for the Seesaw (United Artists). Producer, Walter Mirisch; director, Robert Wise; screenplay by Isobel Lennart, from the play by William Gibson. With Robert Mitchum, Shirley MacLaine.

Two Weeks in Another Town (MGM). Producer, John Houseman; director, Vincente Minnelli; screenplay by Charles Schnee, from the novel by Irwin Shaw. With Kirk Douglas, Edward G. Robinson, Cyd Charisse, George Hamilton, Dahlia Lavi, Claire Trevor.

A Very Private Affair (MGM). Producer, Christine Gouze-Renal; director, Louis Malle. With Brigitte Bardot, Marcello Mastroianni.

Victim (Pathé-America). Producer, Michael Relph; director, Basil Dearden. With Dirk Bogarde, Sylvia Syms, Dennis Price.

A View from the Bridge (Continental). Producer, Paul Graetz; director, Sidney Lumet. Based on the play by Arthur Miller. With Raf Vallone, Maureen Stapleton, Carol Lawrence, Jean Sorel, Raymond Pellegrin.

Viridiana (Kingsley International). Producer, Gustavo Alatriste; director-writer, Luis Buñuel. With Fernando Rey, Silvia Pinal, Francisco Rabal.

Walk on the Wild Side (Columbia). Producer, Charles K. Feldman; director, Edward Dmytryk. Based on the novel by Nelson Algren. With Laurence Harvey, Capucine, Barbara Stanwyck, Anne Baxter, Jane Fonda.

Waltz of the Toreadors (Continental). Producer, Peter De Sarigny; director, John Guillermin; screenplay by Wolf Mankowitz, from the Jean Anouilh play. With Peter Sellers, Margaret Leighton, Dany Robin, Cyril Cusak.

War Hunt (United Artists). Producer, Terry Sanders; director, Denis Sanders. With John Saxon, Robert Redford.

What Ever Happened to Baby Jane? (Warners). Producer-director, Robert Aldrich. With Bette Davis, Joan Crawford, Victor Buono.

Whistle Down the Wind (Pathé-America). Producer, Richard Attenborough; director, Bryan Forbes. With Hayley Mills, Alan Bates, Bernard Lee, Alan Barnes.

The Wonderful World of the Brothers Grimm (MGM). Producer, George Pal; directors, Henry Levin, George Pal. With Laurence Harvey, Karl Boehm, Claire Bloom, Walter Slezak, Russ Tamblyn, Yvette Mimieux, Buddy Hackett, Terry-Thomas.

Yojimbo (Seneca International). Producer-director, Akira Kurosawa. With Toshiro Mifune, Takashi Shimura, Isuzu Yamada.

PHILIP T. HARTUNG,
Motion Picture Critic,
"The Commonweal," "Scholastic Magazines."

MOTOR TRANSPORTATION

Motor freight carriers under Interstate Commerce Commission (ICC) regulation registered a recovery of volume and earnings during 1962, following a depressed period in early 1961. Travel on intercity bus lines and in school-bus service increased, while local and suburban bus patronage was steady or slightly declining.

Trucking.—Gross operating revenues for the 16,000 ICC regulated trucking companies reached an estimated $7.9 billion during 1962, or nearly as much as the annual freight revenues of all United States railroads. Additional billions of dollars' worth of service was generated by private and for-hire trucking operations not reporting to the ICC.

Motor freight carriers grossing at least $200,000 annually reported for the first half of 1962 that revenues rose about 12% and tonnage handled rose 10% from the corresponding period of 1961. The recovery of volume was accompanied by improved net earnings. Tonnage surveys conducted by the American Trucking Associations indicated that the volume handled during the second half of 1962 by general freight carriers, which represent about half of the regulated industry, would be a few percentage points ahead of 1961.

Truck registrations reached a record 12 million vehicles, not including government-owned trucks, during 1962. These trucks used about 16 billion gallons of fuel and provided employment for about 7,500,000 persons.

Bus Operations.—There were about 280,000 buses in the United States in 1961, according to registration reports of the U.S. Bureau of Public Roads, and this total was probably increased by 5,000 or more in 1962, largely as a result of further increases in numbers of school buses. More than 20,000 buses were engaged in intercity service, and nearly 50,000 in local and suburban transit service, according to the National Association of Motor Bus Owners and the American Transit Association. The school-bus fleet, as reported by the Office of Edu-

cation of the U.S. Department of Health, Education, and Welfare, consisted of roughly 170,000 buses in 1961, not including about 20,000 station wagons and other small-capacity vehicles used for pupil transportation.

Intercity bus travel in 1962 was expected to total about 22 billion passenger miles, nearly 10% more than the level of several preceding years. Long-distance through-bus service, chartered-bus travel, and express-package transportation continued to increase.

Local and suburban bus lines provided somewhat less than 5 billion rides for revenue passengers in 1962. School vehicles, such as buses and station wagons, carried 13.7 million pupils daily at public expense during the 1961–62 school year, according to estimates of the U.S. Office of Education, or about a half-million more than in 1960–61.

(See also AUTOMOBILES; HIGHWAYS; INTERSTATE COMMERCE COMMISSION; URBAN TRANSIT.)

TED V. RODGERS, III,
Public Relations Department,
American Trucking Associations, Inc.

MOTOR VEHICLES. See AUTOMOBILES.

MOTORBOAT RACING. See SPORTS, GAMES, AND SHOWS.

MOTORCYCLING. See SPORTS, GAMES, AND SHOWS.

MOUNTAIN CLIMBING. See GEOGRAPHY AND EXPLORATION.

MOVIES. See MOTION PICTURES.

MOZAMBIQUE. See PORTUGUESE TERRITORIES.

MUENCH, Aloisius Joseph

U.S. cardinal: b. Milwaukee, Wis., Feb. 18, 1889; d. Rome, Italy, Feb. 15, 1962.

At the time of his death he was one of six cardinals from the United States and, as an advisory member of the Sacred Congregations of Religious, of Rites, and for Extraordinary Ecclesiastical Affairs, the only American ever to serve on the Roman Curia, the governing body of the Roman Catholic Church. (In 1958, Samuel Cardinal Stritch, archbishop of Chicago, was assigned to the Curia, but died that year before assuming his duties.) From 1951, prior to his elevation to the Sacred College in 1959, Cardinal Muench was apostolic nuncio to Germany.

Following studies at the Seminary of St. Francis de Sales in Milwaukee, he was ordained a priest in 1913 and became curate of a parish church in Milwaukee. In 1917 he was assigned to the same post at St. Paul's Chapel at the University of Wisconsin, from which he received his master's degree in economics in 1919. He then went to Europe to study, and was granted a doctorate in social science from the University of Fribourg in 1921. In 1922, after further graduate work, he returned to the United States, first as professor and then as rector (1929) of the Seminary of St. Francis de Sales. He was named papal domestic prelate, with the rank of monsignor, in 1934, and a year later, bishop of Fargo, N.Dak.

Cardinal Muench's long official association with Germany began in 1946 when he was given the duty of liaison officer between the German Roman Catholic hierarchy and the United States occupation authorities. In that year he was also appointed apostolic visitor to Germany and head of the Papal Relief Commission. In 1949 he became regent of the apostolic nunciature in Germany, and in 1951, after his elevation to archbishop in 1950, he was named papal nuncio.

MUNICIPAL PLANNING. See CITY PLANNING.

MUNITIONS. See the Index entry, *Weapons.*

MUSCAT AND OMAN

The sultanate of Muscat and Oman occupies a wide rim along the southeastern coast of the Arabian Peninsula. Its area is about 82,000 square miles, and its population is estimated at 650,000. The capital is Muscat (est. pop., 5,500), but the main market town is Matrah (est. pop. 8,500), three miles to the north. The province of Dhofar is joined to the state only by personal bond with the sultan.

Government.—Sa'id ibn Taymur ibn Faysal (acceded in 1932) governs the sultanate, which has been recognized by the United States, Great Britain, and India, among other countries. Foreign affairs are conducted through British embassies and agents as a courtesy but not as a treaty right. The sultan exercises autocratic internal authority.

Economy.—Since 1939 the Indian rupee has been the official basis of exchange; however, the Maria Theresa thaler is still widely used in the interior. The economy is based on agriculture and fishing, and the country is mostly undeveloped. Dates, pomegranates, limes, and fish are the chief exports; they are sold mainly to Pakistan, India, and Ceylon. The bulk of the imports are foodstuffs. Petroleum Development (Oman) Ltd. holds the petroleum concession, except for the province of Dhofar, where Cities Service Corporation has the rights. No major fields have yet been proved, but prospects are considered good. Since 1961 Great Britain has helped in improving the main harbor and in building modern roads.

Events, 1962.—The Buraimi Oasis is composed of nine small oases, three of which are claimed by the sultan and the other six by the Trucial States sheikhdom of Abu Dhabi. These claims are supported by Great Britain, but Saudi Arabia, backed by American oil companies, especially the Arabian American Oil Company, claims the entire Buraimi Oasis. Troops from the Trucial States led by British officers occupy Buraimi. With the discovery of vast reserves of oil by British companies in Abu Dhabi, Great Britain will not end her support of the sheikhdom lightly. American oil interests, likewise, will not abandon the Saudi Arabian cause without great pressure. No progress in the matter was noted in 1962.

A dispute over Oman arose in 1953 when Ghalib ibn Ali was elected imam of Oman, under terms of the 1920 Treaty of Sib but over the opposition of the sultan of Muscat and Oman. The imam declared the interior areas of Oman independent of the sultan; armed clashes occurred and the imam fled in 1959 to Saudi Arabia and was received openly in most Arab countries as the rightful ruler of Oman. Late in 1961, the Special Political Committee of the UN General Assembly debated the Omani dispute. Saudi Arabia claimed that the British had attacked Omani forces, imposed curfews, conducted mass arrests, and flown in reinforcements to Muscat. This was denied by the sultan's adviser, and the British accused Iraq, Saudi Arabia, and the United Arab Republic of wanton support of Oman independence. With many absences and abstentions, the committee voted to endorse the Omani campaign for independence.

On July 11, 1962, all members of the Arab League except Kuwait asked the United Nations to debate the future of Oman, calling for "withdrawal of foreign forces from Oman" and again accusing Britain of armed aggression. A resolution requesting independence for the sultanate and again demanding that foreign forces evacuate Oman was approved by the General Assembly's Special Political Committee on November 28. The resolution failed to receive the necessary two-thirds majority for approval when the General Assembly voted on the proposal on December 11.

SYDNEY N. FISHER,
Professor of History,
The Ohio State University.

MUSEUMS. See Index entries on specific names of museums.

MUSIC

(This article is concerned chiefly with developments related to the concert and operatic stages, and to new music. For information on the year's activities in recorded music, see RECORDINGS; for music of the legitimate theater and ballet, see THEATER and DANCE, respectively; and for additional information on music in broadcasting, see RADIO AND TELEVISION.)

Because Igor Stravinsky, whom many critics regard as the only living composer of the first rank, celebrated his 80th birthday on June 17, 1962, this was the Stravinsky year throughout the musical world. On Jan. 18, 1962, President and Mrs. John F. Kennedy gave a dinner for the composer and his wife at the White House. On the next day, the Opera Society of Washington presented the composer conducting his opera-oratorio *Œdipus Rex* (on a double bill shared with Maurice Ravel's *L'heure espagnole*). During the rest of 1962, Stravinsky was honored with performances everywhere.

On June 14, 1962, the CBS-TV network televised the world premiere of Stravinsky's ballet-cantata *Noah and the Flood*, sending out a one-hour program marred by lapses in taste and destructive interruptions by commercials. Another new Stravinsky piece, the cantata entitled *A Sermon, a Narrative and a Prayer*, was performed for the first time by the Basel (Switzerland) Chamber Orchestra and Chorus conducted by Paul Sacher, who had commissioned it and to whom it is dedicated. At Santa Fe, N.Mex., the 1962 summer opera season began with a torrid performance of Richard Strauss' *Salome*, but was built about a tribute to the octogenarian Stravinsky. His *Mavra*, *Renard*, and *Le Rossignol* formed one triple bill; a double bill was devoted to his *Œdipus Rex* and *Perséphone;* his only English opera, *The Rake's Progress*, also was performed. The San Francisco Opera Company and the American Opera Society, New York, both announced that their seasons also would include *The Rake's Progress*. In August 1962, Stravinsky set out on an international tour during which he visited his Russian homeland for the first time in more than 40 years, conducting performances of his own music, which had been under a ban there until very recently.

Recording companies poured out new albums of Stravinsky compositions, many of them conducted by the composer, thus adding to the glut on the record market. (The *Schwann Long Playing Record Catalog* added listings of 1,807 new albums during 1961, while deleting only 1,683 discontinued albums; whereas its February 1961 issue had contained 28,442 items, that number had grown by the February 1962 issue to 30,327.)

The musical world signalized other anniversaries during the 1961–62 season: centenaries of the births of Claude Debussy and Frederick Delius; the 80th birthdays of Gian Francesco Malipiero and Zoltán Kodály; the 75th birthdays of the composer Ernst Toch, the tenor Roland Hayes, and the pianist Artur Rubinstein (who gave ten recitals at Carnegie Hall, New York, between Oct. 30 and Dec. 10, 1961); the 65th birthdays of the American composers Henry Cowell, Virgil Thomson, and Howard Hanson (whose retirement, after 40 years, as director of the Eastman School of Music, Rochester, N.Y., was announced for June 1964). The Israel Philharmonic Orchestra and the Louisville (Ky.) Orchestra celebrated 25th anniversaries, the San Francisco Symphony its 50th.

Orchestras.—In Chicago, it was announced that Jean Martinon would succeed Fritz Reiner as music director of the Symphony at the opening of the 1963–64 season. In New York, William Schuman followed Gen. Maxwell D. Taylor as president of the Lincoln Center for the Performing Arts, and it was announced that Peter Mennin was resigning his position as director of the Peabody Conservatory (Baltimore) to succeed Schuman as president of the Juilliard School of Music. Charles Munch served his last year as conductor of the Boston Symphony Orchestra; at the opening of the 1962–63 season he was succeeded by Erich Leinsdorf. In an atmosphere of bitter controversy, Enrique Jorda resigned as conductor of the San Francisco Symphony in May 1962; he is to be succeeded in November 1963 by Josef Krips, conductor since 1954 of the Buffalo (N.Y.) Philharmonic Orchestra. Zubin Mehta was scheduled to be the new conductor of the Los Angeles Philharmonic. The new American Symphony Orchestra, with Leopold Stokowski as conductor, made its debut at Carnegie Hall, New York, on Oct. 15, 1962. After an absence of nearly two decades, Otto Klemperer returned to New York, conducting the Philadelphia Orchestra at Carnegie Hall on Oct. 23, 1962, and at the new Philharmonic Hall on Nov. 6 and 20.

The 1961–62 season of the New York Philharmonic was enlivened by a controversy set off at its concert of April 8, 1962, when the conductor, Leonard Bernstein, told the audience that he assumed no responsibility for the interpretation of the Brahms Piano Concerto No. 1 which it was about to hear, and made clear that the interpretation was that of the soloist, Glenn Gould. The Philharmonic presented its final Carnegie Hall concert on May 20, 1962, and opened the new Philharmonic Hall at Lincoln Center with a gala concert (which was televised nationally) on September 23. This performance initiated a week of benefit concerts during which the Boston, Cleveland, and Philadelphia orchestras also were heard, as were the duo pianists Arthur Fizdale and Robert Gold and a Metropolitan Opera group. The last named, under the baton of Ernest Ansermet, gave the United States premiere of Manuel de Falla's posthumous dramatic cantata *Atlàntida*, so drastically abbreviated as to arouse a newspaper controversy.

Opera.—The Metropolitan Opera opened its 1961–62 season on Oct. 23, 1961, with Puccini's *La fanciulla del West*, but greater interest was generated on November 26, when the Australian soprano Joan Sutherland made her Metropolitan debut in the title role of Donizetti's *Lucia di Lammermoor*. The company's season generally was regarded as a poor one, though it was marked by a new staging of Verdi's *Un ballo in maschera* and by interesting Metropolitan debuts by one tenor (George Shirley) and five sopranos (Phyllis Curtin, Gerda Lammers, Judith Raskin, Teresa Stich-Randall, and Galina Vishnevskaya). End-of-season statistics showed that no opera by a living composer or by an American had been presented; that Verdi's *La Traviata*, Puccini's *Tosca*, and Verdi's *Aida*—in that order—had been sung more often than any other operas; and that the composers heard most were Verdi (56 performances of 6 operas), Puccini (45 of 5), Wagner (21 of 5), Donizetti (16 of 2), Mozart (14 of 2), Offenbach (14 of 2), and Richard Strauss (9 of 2).

The Metropolitan opened its 1962–63 season

In Red Square in Moscow, during a tour of the Soviet Union with his jazz band, Benny Goodman performs alone on June 1.

UPI

on Oct. 15, 1962, with a restaged version of Umberto Giordano's opera *Andrea Chénier,* with Eileen Farrell, Franco Corelli, and Robert Merrill in leading roles. Five other new productions were announced for the season: Bellini's *La Sonnambula* (for Joan Sutherland); Verdi's *Otello;* Wagner's *Die Meistersinger;* Francesco Cilèa's *Adriana Lecouvreur,* for the first time since 1908 (for Renata Tebaldi); and one opera never before staged at the Metropolitan, Richard Strauss' *Ariadne auf Naxos.* Important Metropolitan debuts scheduled included those of the conductors Ernest Ansermet and Lorin Maazel (aged 78 and 32, respectively), that of the French soprano Régine Crespin, and that of the Belgian mezzo-soprano Rita Gorr, who was applauded enthusiastically for her *Aida* Amneris on October 17. Construction of the new Metropolitan Opera House at the Lincoln Center had not yet been started; the uncertain date for its possible inauguration receded farther and farther into the future.

The New York City Opera began its fall 1961 season on October 5 with one of the rare integral performances of Puccini's *Il Trittico,* a triptych of one-act operas (*Il Tabarro, Suor Angelica, Gianni Schicchi*), and presented the premieres of two American operas produced (like *The Harvest* in Chicago and *Blood Moon* in San Francisco) under Ford Foundation sponsorship: Douglas Moore's *The Wings of the Dove* (October 12), with a libretto based on the Henry James novel, and Robert Ward's *The Crucible* (October 26), with a libretto based on Arthur Miller's play. During a spring 1962 season of contemporary opera in English, the company gave the premiere of another Ford Foundation-sponsored opera, Abraham Ellstein's very unsuccessful *The Golem,* as well as performances of Benjamin Britten's *The Turn of the Screw,* its libretto after the Henry James story. The company inaugurated its fall 1962 season on October 4 with a revival of Gustave Charpentier's *Louise;* on October 11, it presented the premiere of its fourth Ford Foundation opera, Carlisle Floyd's *The Passion of Jonathan Wade.*

The Chicago Lyric Opera opened its season on Oct. 14, 1961, with a Joan Sutherland *Lucia di Lammermoor,* later offering a disappointing premiere, that of Vittorio Giannini's *The Harvest.* For its 1962 fall season, the company billed Borodin's *Prince Igor,* with Boris Christoff singing two roles; Saint-Saëns' *Samson et Dalila* (for Giulietta Simionato); and revivals of Puccini's *La Bohème* and *Tosca* (both for Renata Tebaldi), as well as of Verdi's *Rigoletto,* Mozart's *Le nozze di Figaro,* and Donizetti's *L'elisir d'amore.*

The San Francisco Opera—after a 1961–62 season that included the United States debut of Ilva Ligabue in Boito's *Mefistofele* (Oct. 21, 1961), the United States premiere of Benjamin Britten's *A Midsummer Night's Dream* (October 10), and the premiere of Norman Dello Joio's *Blood Moon* (September 18)—announced a 1962–63 season highlighted by two 20th-century operas, Stravinsky's *The Rake's Progress* and Alban Berg's *Wozzeck.*

In Dallas, the Civic Opera season (Nov. 30 to Dec. 15, 1962) was to consist of Verdi's *Otello,* Rossini's *Il barbiere di Siviglia,* Puccini's *Suor Angelica,* and Leoncavallo's *Pagliacci,* unadventurous fare for a company that in six years has presented Rossini's *L'Italiana in Algeri,* Cherubini's *Medea* (with Maria Callas), Handel's *Alcina* (with Joan Sutherland), and Massenet's *Thaïs.*

Concert performances of opera continued to burgeon. In New York alone, the well-established American Opera Society was to be joined during the 1962–63 season by three new organizations, the Concert Opera Association, under the direction of Thomas Scherman, the Friends of French Opera, under that of Robert Lawrence, and the National Music Theatre, conducted by Anthony Amato. These groups announced integral or partial concert performances of Spontini's *La Vestale,* Richard Strauss's *Intermezzo,* Rossini's *Guillaume Tell,* Dukas' *Ariane et Barbe-bleue,* Meyerbeer's *Les Huguenots* (which was splendidly revived in Italian at La Scala, Milan, in June 1962), Massenet's *Don Quichotte* and *La Navarraise,* Stravinsky's *The Rake's Progress,* Rossini's *L'Italiana in Algeri,* Donizetti's *Maria di Rohan,* Bellini's *I Puritani,* and Verdi's *Luisa Miller* and *La battaglia di Legnano.*

Musical Surveys.—*Musical America's* annual survey of orchestras covered 38 symphonic organizations in 26 states. It showed the following composers leading in number of performances in the categories named: "Foreign Standard"—Beethoven (358), Brahms (218), Mozart (206), Tchaikovsky (125), Wagner (117), Richard Strauss (104), Haydn (97), Johann Sebastian Bach (95), Berlioz (85), Ravel (85); "Foreign Modern"—Prokofiev (105), Stravinsky (83), Shostakovich (49), Bartók (47), Hindemith (43); "American"—Samuel Barber (31), Aaron Copland (22), William Schuman (16), Howard Hanson (15), Walter Piston (14), and Virgil Thomson (12).

The American Music Center published a survey of 430 American composers. No income from compositions was reported by 145 of them; 77 reported annual incomes from that source of less than $100; 106 reported incomes between $100 and $1,000; only 17 reported annual incomes of more than $5,000 per year from their compositions. Almost 80 per cent of the 430 composers gave teaching as their primary source of income.

Premieres and Discoveries.—Important first performances not mentioned above but heard during the 1961–62 season included (*W.:* world premiere; *U.S.:* United States premiere; *N.Y.:* New York premiere): Pablo Casals' *El Pesebre* (*U.S.,* San Francisco, April 18, 1962); David Diamond's Symphony No. 7 (*W,* Philadelphia, Jan. 26, 1962) and Symphony No. 8 (*W,* New York, Oct. 26, 1961); Manuel de Falla's *Atlàntida* (*W,* Barcelona, Spain, Nov. 24, 1961); Vittorio Giannini's *Medead* (*N.Y.,* Oct. 31, 1961); Peggy Glanville-Hicks' *Nausicaa,* with libretto by Robert Graves (*W,* Athens, Greece, Aug. 19, 1961); Alexei Haieff's Symphony No. 3 (*N.Y.,* Nov. 15, 1961); Hans Werner Henze's Symphony No. 2 (*N.Y.,* Nov. 21, 1961); Paul Hindemith's *The Long Christmas Dinner,* with libretto by Thornton Wilder (*W,* Mannheim, Germany, Dec. 1961); Zoltán Kodály's Symphony 1961 (*N.Y.,* Feb. 6, 1962); Dmitri Shostakovich's Symphony No. 12 (*W,* Leningrad, USSR, Oct. 1961); Louise Talma's

Alcestiade, with libretto by Thornton Wilder (*W. Frankfurt am Main, Germany, March 1, 1962*); Peter Ilich Tchaikovsky's Symphony No. 7, reconstructed by Semyon Bogatyryev (*N.Y., Feb. 27, 1962*).

An important discovery of musical manuscripts was made when the Soviet government permitted three Italian musicologists to comb operatic archives in Leningrad, largely those of the Kirov (formerly Mariinski) Theater. In addition to the manuscript score of *La forza del destino* which Verdi used for the 1862 world premiere, the find included six operas by Giovanni Paisiello, three operas and a cantata by Domenico Cimarosa, two operas by Catterino Cavos (earlier settings of stories used later by Glinka in *A Life for the Tsar* and by Dargomyzhski in *Rusalka*), and early operatic versions of the stories used in Beethoven's *Fidelio* (Ferdinando Antonolini's *Leonora*) and Mozart's *Don Giovanni* (Vincenzo Righini's *Il convitato di pietra*).

Festivals.—The annual Festival of Two Worlds at Spoleto, Italy (June 21–July 22) had performances of three operas (Prokofiev's *The Love for Three Oranges,* Bizet's *Carmen,* and Rossini's *Le Comte Ory*), the Verdi Requiem, ballets, chamber music, plays, motion pictures, and art exhibitions. In England, the Glyndebourne Festival Opera was in the midst of its annual season (May 21 to Aug. 19, 1962) when its founder, John Christie, died after 28 years of unremitting effort to present opera of the highest category. The works heard at Glyndebourne in 1962 included Debussy's *Pelléas et Mélisande,* Mozart's *Le nozze di Figaro* and *Così fan tutte,* Monteverdi's *L'incoronazione di Poppea,* Richard Strauss's *Ariadne auf Naxos,* and Donizetti's *L'elisir d'amore.*

Music festivals and special series of summer concert and opera now have become so numerous that reporting even a small portion of them here has become impossible. Likewise, the exchange of performing musical organizations and soloists between the United States and the USSR and other Communist countries now has become so constant as to have lost most of its novelty. Psychologists alone might be able to explain why American and "Iron Curtain" audiences appear to be vying to outdo one another in showing appreciation of each other's performers.

Jazz.—Little that really was new developed in the world of jazz in the 1961–62 season, but the hope was that the continuing general climate of experiment might ease the way for the emergence of strong new personalities. Two innovators—both tenor saxophonists—acclaimed as that sort of pathbreaker made news. One, Sonny Rollins, returned after a retirement of several years. He played as well as, or perhaps better than, before, but remained essentially unchanged. The other, Ornette Coleman, carried on his controversial improvisations based on theories of free tonal and harmonic bases, in a recorded experiment for double quartet, *Free Jazz.* It seemed formless, arbitrary, and devoid of both excitement and conviction.

"Funky"—the return to the blues roots—appeared (especially in its piano form) to be settling into clichés shared by virtually all of its exponents, thus differing from its earlier barrelhouse prototype, which had great variety in both personal and regional styles.

Jazz festivals continued to flourish. The pioneering Newport (R.I.) Festival, which had lapsed, was revived under new management. What was potentially the most significant of these festivals—the first International Jazz Festival, presented May 31 to June 3 by the President's Music Committee of the People-to-People Program in Washington, D.C.—proved disappointing. Its program of several days ranged from folk blues and gospel singing through New Orleans marching jazz and Duke Ellington's swing to the latest efforts in the "Third Stream" (this last being the designation of continuing efforts to hybridize jazz and classical music since Paul Whiteman's "symphonic jazz" of 1924). The response of audiences and critics was virtually unanimous: great enthusiasm for the archaic jazz of the Eureka Brass Band of New Orleans, which was organized in 1881; applause for Duke Ellington's orchestra, but reservations about some of his more recent compositions; boredom over the hybrids presented in premieres—the Jazz Ballet and the "Third Stream" compositions of Gunther Schuller of New York and André Hodeir of Paris.

LOUIS MÉLANCON

One of six new productions by the Metropolitan Opera for 1962–63 was Richard Strauss' *Ariadne auf Naxos,* featuring Gianna d'Angelo (center) and Leonie Rysanek (upper right).

HERBERT WEINSTOCK,
Music Writer and Critic; Author of "Music as an Art" and other works.

MUSLIMS. See the Index entry, *Islam.*

MUTUAL SECURITY PROGRAM. See FOREIGN AID PROGRAMS, U.S.

The orchestra and chorus face the opening night audience at Philharmonic Hall, the first unit of the Lincoln Center for the Performing Arts, in New York City, September 23.

WIDE WORLD

N

NATIONAL SECURITY—Polaris-armed submarine *Alexander Hamilton* is launched at Groton, Conn., Aug. 18.

GENERAL DYNAMICS CORP.

NARCOTICS

The 17th Session of the U.N. Commission on Narcotic Drugs met at Geneva, Switzerland, May 14–June 1, 1962.

Illicit Traffic.—Illicit traffic in opium and the opiates, cannabis, and cocaine continued to be excessive. Opium to supply addicts in many countries was produced clandestinely in the Burma-China-Laos-Thailand border areas, the so-called Yunnan region.

Burma, Thailand, Hong Kong, and Singapore reported much illicit traffic in opium. Large quantities of raw opium were seized in the Middle East. Clandestine manufacture of morphine and heroin was reported in Lebanon, Iran, Syria, and Turkey. Six heroin laboratories were found in Hong Kong. Thailand reported increasing heroin traffic since prohibition of opium there in 1959. Mexican authorities destroyed sizable areas of poppy cultivation and intensified efforts with United States authorities to stamp out illicit cultivation and traffic.

Seizures of cannabis exceeded those of 1960, but heavy traffic continued in the Middle East and Latin America. Mexican and United States authorities continued close cooperation to control cannabis abuse.

Cocaine traffic spread through Latin America to other parts of the world, notably Canada, the United States, the Mediterranean area, and Asia. Cocaine seized in the United States originated largely in Bolivia, Colombia, Panama, and Peru.

Single Convention.—The Single Convention as concluded by the Plenipotentiary Conference on March 25, 1961, is unacceptable to the United States because it would weaken international control of narcotic drugs.

Technical Assistance.—In late 1961 the Inter-American Consultative Group on Narcotics Control met in Rio de Janeiro, Brazil, to discuss narcotics problems of Latin America. Also in late 1961, customs and police officials from 13 countries toured seaports and airports in Southeast Asia to study and exchange information on enforcement experiences and to encourage regional and international technical cooperation.

A United States mission to governments in the Middle East visited seven countries between February and April 1962.

Addiction.—Extensive abuse of morphine and heroin was reported, and large-scale abuse of opium continued in the Far East and parts of the Middle East. Cannabis abuse was more widespread geographically than that of any other drug. Cocaleaf chewing presented a serious problem in some South American countries. The World Health Organization and the U.N. Commission on Narcotic Drugs agreed on the importance of an absolute drug-free environment during the withdrawal phase of treatment of addiction.

United States.—A joint statement on narcotic addiction in the United States released May 14, 1962, by the American Medical Association and the National Research Council, and a concurring statement on the same date by the Bureau of Narcotics, emphasized the common objectives of strengthening present efforts to reduce and, if possible, eliminate addiction; providing the best possible treatment and rehabilitation services to addicted persons; and correcting the erroneously held view that federal law considers addiction a crime.

HENRY L. GIORDANO,
U.S. Commissioner of Narcotics.

NASSER, Gamal Abdel. See biographical sketch under UNITED ARAB REPUBLIC.

NATIONAL ACADEMIES AND ASSOCIATIONS. For private organizations whose titles begin with the word National (excepting National Geographic Society, which is reviewed below), see the article SOCIETIES AND ORGANIZATIONS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION. See SPACE FLIGHT.

NATIONAL BUDGET. See TREASURY DEPARTMENT.

NATIONAL BUREAU OF STANDARDS

The National Bureau of Standards (NBS) of the U.S. Department of Commerce, established by act of Congress in 1901, has three major responsibilities: (1) It develops and maintains the national standards of physical measurement, providing means for their utilization. (2) It determines fundamental physical constants and the basic properties of materials. (3) It operates central research and technical service programs for the federal government. In fulfilling these responsibilities, it conducts research and development programs in physics, chemistry, applied mathematics, and some branches of engineering.

In 1962 the total staff numbered about 3,800, most of whom were stationed at the bureau's principal laboratories in Washington, D.C., and Boulder, Colo. Twenty-six field stations were also operated in the United States and abroad.

In April 1962, NBS and the University of Colorado announced the collaborative establishment of the Joint Institute for Laboratory Astrophysics (JILA) on the campus of the university, at Boulder. This unique organization will provide a center for both research and advanced training in areas of physics and astrophysics that are vital to the space program.

Measurement Standards.—A number of advances were made in the field of electrical measurements in 1962. Design of a highly stable, shielded 100-megohm resistor made it possible to measure direct-current voltages up to 100,000 volts to within 20 parts per million. For determining the

voltage ratio and phase angle corrections of instrument voltage transformers, a 1-picofarad, 350,000-volt free-air capacitor was designed and constructed. With this device, an accuracy of 3 parts per hundred thousand was obtained in calibrating instrument transformers for use on 350,000-volt power lines. A rapid, convenient method was developed for calibrating the standard-resistance voltage divider (volt box) at its rate voltage. To aid in setting up standards of dielectric materials, the bureau designed an improved three-terminal dielectric-specimen holder with which high-precision dielectric measurements can be made at room temperature.

In research directed toward the extremely accurate measurement of distances up to a yard or more, a gaseous (helium-neon) laser was constructed and put into operation. Experimental results indicated that it is theoretically possible with this device to make measurements over a distance of 60 miles with a precision of one part in a million.

The accuracy requirements of modern mass production have made necessary the use of master ball bearings, whose sizes are known to a very high degree of accuracy, for size control in manufacturing plants. Methods were developed for measuring the diameters of master ball bearings up to 3 inches in diameter with a certified accuracy of 2 millionths of an inch. An interferometer was also developed for measuring deviations from sphericity of small ball bearings.

During 1962 the national standard neutron source was absolutely calibrated by a new method involving the use of a manganese sulfate bath filled with heavy water. The uncertainty of this measurement was approximately 1%, representing a considerable improvement over previous determinations.

Matter and Materials.—By exposing substances to gamma radiation under high pressure, it was found possible to prepare polymers from monomers, such as carbon disulfide, which do not normally polymerize. This work, which may provide a basis for the production of new types of polymeric materials, was part of a program conducted for the Office of Army Research to increase knowledge of radiation and polymerization processes.

A new value for the atomic weight of chlorine was determined during the year. The atomic weight of this element, together with that of silver, forms a basis for the determination of atomic weights of many of the other elements. The new value is $35.45273\left[\begin{matrix}+0.00092\\-0.00097\end{matrix}\right]^{1}$; it is based on a mass-spectrometric determination of the isotopic abundance ratio of natural chlorine which was carried out by the bureau with the cooperation of the Atomic Energy Commission.

Radio Propagation.—An installation for ground-based explorations of the upper atmosphere and outer space was constructed by the NBS Central Radio Propagation Laboratory and the Instituto Geofisico de Huancayo (Peru) at a site 17 miles east of Lima, Peru. Known as Jicamarca Observatory, this installation makes use of a scatter radar technique developed by NBS in 1959. It employs a 6 million-watt pulse transmitter and a 22-acre antenna to transmit to great heights a very-high-frequency radio wave lasting from 50 to 1,500 millionths of a second. With this equipment, electron densities 4,000 miles above the earth were measured. (See also ATMOSPHERE RESEARCH.)

[1] The quantities in brackets are estimated limits to the uncertainties in the reported value arising from known sources of error, both random and systematic.

Publications.—A review of the bureau's work during the fiscal year is published annually as *Research Highlights of the National Bureau of Standards*, available from the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C. More detailed treatment of scientific results is provided by the bureau's three periodicals (*Journal of Research, Technical News Bulletin,* and *Basic Radio Propagation Predictions*) and a series of nonperiodical publications. Indexed lists of publications (NBS Circular 460 and Supplement, complete through June 1957, $2.75; and NBS Miscellaneous Publication 240, July 1957 to June 1960, $2.25) are available from the Superintendent of Documents.

ALLEN V. ASTIN,
Director, National Bureau of Standards.

NATIONAL DEBT. See TREASURY DEPARTMENT, U.S.
NATIONAL DEFENSE. See CIVIL DEFENSE; NATIONAL SECURITY.
NATIONAL EDUCATION ASSOCIATION. See EDUCATION; SOCIETIES AND ORGANIZATIONS.
NATIONAL FORESTS. See FORESTRY.

NATIONAL GEOGRAPHIC SOCIETY

Founded in 1888 "for the increase and diffusion of geographic knowledge," the society will observe its 75th anniversary in 1963. This nonprofit scientific and educational organization numbered more than 3 million members in 1962. Member dues support its activities, which include far-ranging exploration and research and the publication of the monthly *National Geographic Magazine*, maps, globes, books, news, and school bulletins.

Research, 1962.—Four undersea projects directed by leaders of past National Geographic expeditions were among nearly 30 undertakings aided by society grants. In the Mediterranean, Edwin A. Link tested a new diving chamber as the first stage of his "Man in Sea" project, designed eventually to enable men to live and work under the sea for weeks at depths of hundreds of feet. With similar objectives, Capt. Jacques-Yves Cousteau constructed an "undersea home" for two divers, storing air and other supplies needed for prolonged sea-floor forays. University of Miami marine scientists studied Florida's coral-reef denizens. A University of Pennsylvania Museum team of deep-diving scientists applied precise surface archaeological methods to excavation of ancient shipwrecks in Turkish waters.

The year marked a fourth season on Wetherill Mesa in Mesa Verde National Park, Colorado, where National Geographic-National Park Service archaeologists largely completed restoration and study of five fortresslike cliff dwellings of pre-Columbian Indians, soon to be opened to park visitors.

In Africa, Dr. and Mrs. Louis S. B. Leakey, renowned for their 1959 find of 1,750,000-year-old, tool-making *Zinjanthropus boisei,* unearthed in Kenya the fossil bones of a hominoid primate in strata laid down 14 million years ago.

In southern Asia and Australia, Edward S. Ross, California Academy of Sciences, added 175,000 insect specimens, emphasizing the order Embioptera, to his 20-year collection. In the Yellowstone Park area of the United States, John and Frank Craighead completed a fourth season of field study of grizzly bear ecology.

The society became a major sponsor of the forthcoming (1963) expedition of American climbers and scientists to Mt. Everest and neighboring peaks. It also joined with Lowell Observatory in preparing a photographic study of the brighter planets.

Awards.—The society's Hubbard Medal was presented to Dr. and Mrs. Louis S. B. Leakey jointly on March 23 for their distinguished researches on early man. A second

award was given to astronaut John H. Glenn, Jr., on April 9 "for extraordinary contributions to scientific knowledge of the world and beyond as a pioneer in exploring the ocean of space." A Jane Smith Award honored Vice President Lyndon B. Johnson on June 8 for "contributions to geography through his far-ranging travels and untiring efforts to bring the peoples of the world closer together."

The society commissioned an 8-foot bronze of Rear Adm. Richard E. Byrd, which became the first statue to take position in a planned row of heroic Americans to flank Memorial Avenue in Arlington, Va., between Arlington Cemetery and the Potomac River.

Publications.—The society published in 1962 *America's Historylands* and *Men, Ships, and the Sea.* As a public service it contributed the photography, engravings, and editorial guidance needed to produce the first official guide to the White House, also published in 1962.

National Geographic cartographers produced seven Atlas Series map supplements to the magazine and revised four large wall maps. They also produced a new 16-inch world globe and a revised 12-inch globe in standard and illuminated models.

The School Service introduced color illustrations into its weekly Geographic School Bulletin. The News Service issued 300 bulletins to daily newspapers during the year.

Officers.—Society officers in 1962 were Melville Bell Grosvenor, president and editor; Melvin M. Payne, executive vice president and secretary, succeeding Thomas W. McKnew, who became vice chairman of the Board of Trustees; Robert V. Fleming, vice president and treasurer; Frederick G. Vosburgh, vice president and associate editor; Robert E. Doyle and Thomas M. Beers, vice presidents and associate secretaries; and Gilbert Grosvenor, chairman of the board.

MELVILLE BELL GROSVENOR,
President and Editor.

NATIONAL GUARD

Army and Air National Guard activities in the fiscal year 1962 are reviewed in the following article. (For a discussion of subsequent National Guard developments, see ARMY OF THE UNITED STATES; NATIONAL SECURITY.)

The partial mobilization of the Army and Air National Guard in October 1961 brought to active duty nearly 65,000 Guardsmen to serve their country in a new mission—that of preventing a war. The rapid build-up of the active Army in response to the Berlin crisis included nearly 44,400 officers and enlisted men in 447 company and detachment size units of the Army National Guard. The major elements of this force were the 32d (Red Arrow) Infantry Division of Wisconsin and the 49th (Lone Star) Armored Division of Texas.

The Air National Guard mobilized over 21,000 officers and airmen. The units mobilized consisted of 6 tactical fighter wings, 1 tactical reconnaissance wing, 2 air transport wings, and 3 fighter intercepter squadrons, all with their support units; 1 tactical control group consisting of 1 tactical control squadron, 3 aircraft control and warning squadrons, and 3 aircraft control and warning flights; and 8 separate weather flights (forecasting and observing).

Army National Guard.—On June 30, 1962, exclusive of the personnel in active federal service, the Army National Guard had a federally recognized strength of 360,970, of whom 31,458 were officers and warrant officers and 329,512 were enlisted men. At the end of fiscal year 1962, 37,087 were undergoing training in the Army's six-month training program.

During fiscal 1962, approximately 320,000 Army Guardsmen attended 15 days of annual active duty for training. Army Service and Army Area schools enrolled 9,941 Guardsmen. Fifty accredited Army National Guard State Officer Candidate Schools enrolled 3,478 officer candidates, and Special Officer Candidate Courses for Army National Guard enlisted men, conducted at Fort Benning and Fort Sill, enrolled 480.

Air National Guard.—On June 30, 1962, exclusive of personnel in active federal service, the Air National Guard had a federally recognized strength of 50,319, including 6,278 officers and 44,041 airmen. The number of federally recognized units in the Air National Guard troop basis totaled 626, including the units still in active federal service. The units not on active duty were located at 62 flying fields and 72 nonflying installations, and were organized into 15 wings, 43 groups, and 35 tactical squadrons.

During fiscal 1962, the Air National Guard converted 10 of its squadrons to different types or series of aircraft. On June 30, 1962, the 1,263 aircraft of the Air National Guard were almost all first-line.

As of June 30, 1962, 27 squadrons were participating in the active air defense of the United States by maintaining aircraft and crews on 5-minute runway alert status—26 on a 24-hour-a-day basis and 1 on 14-hour schedules. In addition, 4 aircraft control and warning squadrons were actively participating in round-the-clock air defense operations.

During fiscal 1962, 71,731 Air Guardsmen attended 15 days of annual field training. Air Force schools graduated 45 pilots and navigators and gave technical training to 1,252 officers and airmen of the Air National Guard.

DONALD W. MCGOWAN,
Maj. Gen., NGUS; Chief, National Guard Bureau.

NATIONAL INCOME AND PRODUCT. See INCOME.
NATIONAL INSTITUTES OF HEALTH. See PUBLIC HEALTH.
NATIONAL LABOR RELATIONS BOARD. See LABOR; LAW.

NATIONAL PARKS AND MONUMENTS

The total number of visits to the scenic, historic, and scientific units of the national park system since 1904 passed 1 billion in 1962. In 1904, when records of such visits were first kept, they totaled 120,690; in 1962 they exceeded 80 million.

"Billionth Visitor Day" observances were held on August 22. Visitors entering the various areas at a time predetermined by the National Park Service but unknown to the visitors were given a special welcome and presented with certificates. With more than 190 areas in the park system, it was impossible to pinpoint the billionth visitor.

Scores of new visitor facilities, including campgrounds, minor roads, trails, visitor centers, and lodge and cabin developments, were completed in 1962 under the Mission 66 program. This park conservation and development program envisions a National Park System adequately equipped and staffed by 1966, the National Park Service's 50th anniversary year. The program has been under way since mid-1956.

Significant progress was made in 1962 on the service's program of selecting, while still available, outstanding scenic, historic, and scientific areas of national significance for addition to the National Park System. Many such areas have been surveyed by the Park Service, and detailed studies have been made of 20. Among these, several were specifically named in President Kennedy's conservation message to Congress on March 1, 1962, including Point Reyes National Seashore, California, which was established by an act of Congress approved by the president on Sept. 13, 1962; Padre Island National Seashore Park, Texas (approved by the president on Sept. 28, 1962); and Sagamore Hill National Historic Site, New York. Establishment of this last site to preserve the home of Theodore Roosevelt at Oyster Bay, Long Island, N.Y., and the preservation of Roosevelt's birthplace

Point Reyes, a ruggedly beautiful peninsula north of San Francisco, Calif., became a national seashore area by act of Congress in 1962.

NATIONAL PARK SERVICE

in New York City as a national historic site were authorized by act of Congress on July 25, 1962.

Buck Island Reef, near St. Croix, Virgin Islands, became a national monument late in 1961, thus assuring preservation of one of the finest marine gardens in the Caribbean.

Abraham Lincoln's boyhood home in Lincoln City, Ind., and Alexander Hamilton's home in New York City were established as national memorials by acts of Congress of Feb. 19 and April 27, 1962, respectively.

Areas administered by the National Park Service now total 187 and are classified as follows:

Type of area	Number	Approximate federal land (acres)
National parks	31	13,332,917
National historical parks	9	31,883
National monuments	80	8,926,192
National military parks	11	29,023
National memorial park	1	69,169
National battlefields	4	2,167
National battlefield parks	3	5,848
National battlefield sites	3	208
National historic sites	16	1,990
National memorials	14	4,680
National cemeteries	10	215
National seashore recreational area	1	24,705
National parkways	3	96,673
National capital park[1]	1	34,767
Total, National Park System	187	22,560,437
National recreation areas	4	3,442,775
Total, all areas	191	26,003,212

[1] A system administering 770 units, including Catoctin Mountain Park, Prince William Forest Park, the Baltimore-Washington Parkway, and the Suitland Parkway.

Delegates from some 70 nations attended the First World Conference on National Parks in Seattle, Wash., June 20–July 7. The event was cosponsored by the National Park Service, the International Union for the Conservation of Nature and Natural Resources, and other United Nations and federal agencies.

CONRAD L. WIRTH,
Director, National Park Service.

NATIONAL RESEARCH COUNCIL OF CANADA

An agency of the Canadian government established in 1916 by an act of Parliament to promote scientific and industrial research, the council operates nine laboratory divisions in Ottawa, as well as regional laboratories in Halifax and Saskatoon. The council engages in basic research, long-term applied research as background for development by industry, contract research and testing, and the development and maintenance of Canada's fundamental standards. Of its annual budget of about $42 million, some $11 million is spent for grants-in-aid of research and graduate scholarships in science and engineering in Canadian universities, and a shared-cost industrial research assistance program. Forty associate committees coordinate research efforts on specific problems of national interest.

The council publishes *Canadian Journals of Biochemistry and Physiology, Botany, Chemistry, Microbiology, Physics, and Zoology.* It provides travel grants for Canadian delegations to scientific meetings and conferences, provides scientific attachés to Canadian embassies in London, Washington, and Paris, and represents Canada in the activities of international scientific unions. In addition to its other activities, the council advises manufacturing concerns about technological and industrial engineering problems; it operates a subsidiary, Canadian Patents and Development, Ltd., to handle licensing of inventions from the council, other federal and provincial research organizations, and Canadian universities.

Its staff of 2,600 includes 730 scientists and engineers, of whom 690 are engaged in research. The council consists of a president (B. G. Ballard, acting, at the end of 1962, succeeding Dr. E. W. R. Steacie, president since 1952, who died on August 28), three vice presidents, and 17 members representing universities, industry, and labor. It meets three times yearly in Ottawa. Its publications also include an *Annual Report,* the annual *NRC Review, NRC Research News,* and the *List of Publications 1918–1952* (3d ed.).

R. A. LAY,
Public Relations Office,
National Research Council of Canada.

NATIONAL SCIENCE FOUNDATION

The National Science Foundation (NSF) is an independent agency of the federal government created by Congress in 1950 with the principal functions of promoting basic research, furthering education in the sciences, and facilitating improved dissemination of scientific information. NSF also maintains the National Register of Scientific and Technical Personnel.

During the fiscal year ending June 30, 1962, NSF's appropriation was $263 million, of which $96 million was awarded in the form of 2,572 grants for basic research. The foundation spent $56 million for construction and maintenance of research facilities and national research centers, and $84 million for education programs. NSF awarded 4,791 fellowships for study and advanced training during the year, and supported 911 summer, academic-year, and in-service institutes with a participation of more than 40,000 teachers of science and mathematics. NSF also conducts several national research programs, which include the Antarctic Research Program, the Weather Modification Program, and Project Mohole.

A new program was begun during the past year in response to a great and demonstrated need by colleges and universities for instructional scientific equipment to upgrade and modernize sci-

ence instruction at the undergraduate level. In Project Mohole—an NSF-funded project aimed at boring through the earth's crust into its mantle—plans were being developed for the actual drilling as a result of successful testing in 1961. NSF is also planning and coordinating federal support for United States participation in the International Indian Ocean Expedition in 1963–64.

Major NSF publications in 1962 included: *Federal Funds for Science (X)*, the *NSF Third Annual Weather Modification Report, Long-Range Demands for Scientific and Technical Personnel,* and the *Eleventh NSF Annual Report.*

ALAN T. WATERMAN,
Director, National Science Foundation.

NATIONAL SECURITY—U.S. MILITARY POLICY

The rapid buildup of United States defenses which began in late 1961, following the Soviet Union's threats with relation to the freedom of West Berlin, continued steadily throughout 1962, and planning for future financing and procurement indicated a still higher level of combat potential in 1963. The buildup was both quantitative, as measured in men and material, and qualitative, as measured by superior training and by increases in the power or flexibility of the weapons, and was accompanied by administrative reforms designed to make the defense mechanism more quickly responsive to such diverse possibilities as can be foreseen.

The boldness of some of these reforms, largely initiated by the secretary of defense, Robert S. McNamara, in some instances disturbed the Congress. Veteran members both of the Senate and House opposed parts of the secretary's program, actually blocked much of that affecting the reserve forces, and, in the case of newly designated defense agencies, warned against such further exercises of authority without the prior approval of Congress. Despite such opposition, Secretary McNamara's activities since taking office in January 1961 have resulted in a far greater centralization of real authority. The significance of this development may in time prove to be as important as the improvement in the purely military formations and weaponry.

A major reform, whose promise is large but whose value is not measurable in advance, is the five-year planning concept. Under this concept the Joint Chiefs and their planning staff look far beyond the coming fiscal year, exploring the more distant probabilities in world affairs and the nation's requirements for adjusting to them. Thus a purely tentative and wholly flexible program is devised in which the finite one-year budget is only the recognized first step. The aim is to adopt a more considered approach to each large program—permitting speedup or cutback as soon as desirable—and to establish a continuity of planning free from the alternation of ill-planned extravagances and too-sharp economies which, for lack of such a mechanism, has often characterized national defense administration.

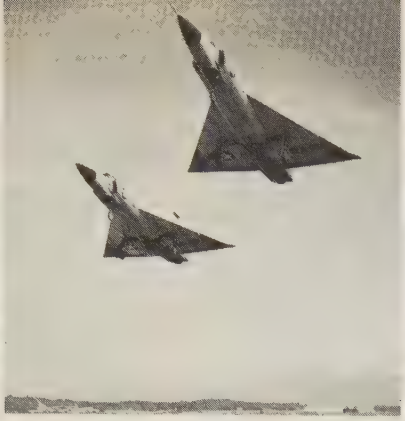
The five new and vigorous defense agencies (National Security, Defense Atomic Support, Defense Communications, Defense Supply, and Defense Intelligence—only the last two created by McNamara) coordinate and largely direct the relevant activities of the three armed services. They are in large measure the necessary tools for any such well-centralized, long-range planning as the secretary's five-year program contemplates.

Ever since the creation of the National Defense Establishment following World War II, there has been an absorption of new powers by the central Defense Department at the cost of the three subdepartments of the Army, Navy, and Air Force. This trend has been most evident, however, under Secretary McNamara. Congressional hostility to a single chief of staff with concentrated powers was restated in two Armed Services Committee reports in 1961, and this issue was expected to reappear in Capitol Hill defense discussions in 1963.

The year 1962 brought into better balance the nation's two arming programs—against nuclear war and against non-nuclear war. The first has long been recognized as essential, but the second was only recently elevated appreciably above its previous level, on the reasoning that, with some degree of nuclear deterrence a strong possibility, there might be more rather than less resort to "small" or "border" or "fringe" wars. Hence the nation granted much larger aid to non-nuclear forces, particularly to those of the Army, whose needs had been urged by successive chiefs of staff. The president's appointment of Gen. Maxwell D. Taylor (former Army chief of staff, who had retired from active duty after unsuccessfully expressing these needs) first as his chief military adviser and then as chairman of the Joint Chiefs (succeeding Gen. Lyman L. Lemnitzer, effective Sept. 30, 1962) was widely regarded as assuring a better non-nuclear force without reduction of nuclear powers.

(*Left*) Gen. Maxwell Taylor is sworn in as chairman of the Joint Chiefs of Staff by Attorney General Robert Kennedy on October 1 as President Kennedy (left) looks on. (*Right*) Taylor's predecessor, Gen. Lyman Lemnitzer (at right) and Defense Secretary Robert McNamara urge Senate Armed Services Committee, September 10, to permit president to call up reserves.

WIDE WORLD



PICTORIAL PARADE; U.S. AIR FORCE; UPI

(*Left*) Dye 3, a Distant Early Warning Line radar tower, went into operation in 1962 in Greenland. (*Center*) Two Air Force F-102 jets from Elmendorf AFB, Alaska, patrol the skies for hostile aircraft. (*Right*) Spherical radomes, two of which are shown under construction in Fylingdales, England, are part of United States–Great Britain ballistic missiles warning system.

The West Berlin crisis continued in 1962, and was met by the United States with a continued state of alert. President Kennedy's decision to strengthen United States military resources had called for the summoning to active duty of reservists from all the armed services. Their full year of such service expiring in the summer and autumn of 1962, the reservists were returned to civilian life; but meanwhile the slower, better-rounded buildup of the regular establishments had been effected, and in 1962 the nation's policy decisions both in Europe and the Far East could be stated more firmly by reason of a more complete military backing. Even so, in September the president asked and received from Congress authorization to call a different lot of 150,000 reservists to active duty should the need for them arise while Congress stood in recess.

More quickly than anticipated, this authority was invoked in late October with the rise of the crisis over the Soviet Union's installation in Cuba of offensive weapons (medium- and intermediate-range missiles, bombers, and related equipment). President Kennedy called up over 14,000 Naval Reservists for sea and air duty associated with the quarantine of Cuba and the subsequent observation of vessels removing the offensive weapons. In addition, 14,200 men of the Air Force Reserve were called up, and discharges of all Navy and Marine Corps personnel were halted. These orders remained in effect until November 21, by which time the crisis had eased.

The armed services' high-command personnel, by reason of retirements and consequent new appointments, automatically became more closely related to the current administration. General Taylor's return to active duty, this time in the top military post, has been mentioned. Gen. Earle G. Wheeler became Army chief of staff on Sept. 30, 1962, replacing Gen. George H. Decker, who retired. Adm. George W. Anderson, Jr. (a Kennedy appointee), Gen. Curtis E. LeMay, and Gen. David M. Shoup remained as heads of the Navy, Air Force, and Marine Corps, respectively. Thus three of the nation's five top military officials were selected by President Kennedy.

Mutual Security.—The action of the United States with regard to the Berlin crisis was obviously linked to the role of the United States within the North Atlantic Treaty Organization (q.v.). This led, in June, to a publicly stated clarification by Defense Secretary McNamara of the nation's views on the proper division of responsibilities among the NATO allies. The policy statement gave new assurance of the United States' firm support of NATO and of its ability to supply all of the alliance's nuclear requirements. It pointedly sought to discourage other allies from building up their own nuclear powers and, rather, suggested plainly that they could more usefully build up their non-nuclear contributions to NATO's total strength.

Related to this policy was an increased effort to reduce the continuing heavy American expenditures overseas in behalf of NATO and individual allies, resulting in a $3 billion annual excess of payments abroad in international dollar movements. The total volume of foreign military and economic aid was a factor in this imbalance, but the pattern has changed radically in the past decade—that is, the stronger European nations need less and less (several of them now get none at all) while some of the weaker nations of Europe and Asia, still far from secure either militarily or economically, need more assistance than formerly by reason of increased pressures both external and internal. The total dollars expended in United States aid in the numerous mutual security programs have declined but by no means ceased. To congressional critics suggesting still deeper cuts in foreign aid, the military professionals have consistently argued that in most cases United States dollars spent overseas on the improvement of indigenous military forces are productive of more security for the United States itself than would result from a like amount spent directly on the United States armed services. (See also FOREIGN AID PROGRAMS, U.S.)

In Southeast Asia, United States aid took on a modified form. The requirements in South Vietnam (and for a time in Thailand) became more acute with an increased flow of Communist armed parties from North Vietnam across Laos up to the borders, and with a dangerous expansion of Communist cells in South Vietnam accompanied by violent local actions. The United States thereupon sent a larger number of the Army's sharply trained Special Forces personnel, as well as U.S. Air Force and Navy personnel, to South Vietnam as instructors of the government forces, plus much larger shipments of supplies, notably of weapons and equipment best suited to counterguerrilla work. Thus aided, the South Vietnam forces during the year undertook restoration of internal order with increased success, but there was no doubt that the elimination of enemy guerrillas would require years of such effort. (See also VIETNAM.)

Beyond this purely military aid, the U.S. Army introduced in the Far East (and to a much lesser degree in Latin America) programs for coping with other forms of Communist activity. Small teams of highly trained specialists in engineering, communications, medicine, sanitation, education, and transport were sent in, partly to

provide their needed help directly to underdeveloped peoples, and chiefly to train community leaders in these arts so that benefits might expand rapidly and with permanent value. The concept is that improvement of the living conditions of underprivileged peoples is a first step in eliminating their discontent and susceptibility to agents of sedition, and in promoting sound self-government which can better resist enemy aggression, thus reducing such nations' need for military assistance. This Army activity is distinct from that of the Peace Corps.

Space and Missiles.—From both the White House and the Pentagon came formal declarations that the United States' present capabilities in nuclear weapons were such that, while maintaining its nonaggressive policy, the United States could absorb a first assault by an aggressor, survive it, and still respond with a retaliatory fire so great as to overwhelm the aggressor nation. The program for the Atlas intercontinental ballistic missile (ICBM) now is complete; that for the later and larger Titan ICBM is nearing completion; and that for the much smaller and cheaper (but highly efficient) Minuteman ICBM is well advanced. It is the latter weapon which in 1963 is expected to greatly swell the nation's total number of ICBM's to 500. As to nuclear weapons of all sizes, the deputy secretary of defense has referred to weapons numbering "in the tens of thousands," this of course including the smaller field weapons now in supply. (See also Missiles.)

Continental Defense.—Divergent views on defense against long-range enemy attacks continued to torment policymakers. One school of opinion held that against the combined effects of blast and persistent radioactivity there is no reasonable defense; the other contended that multiple shelters properly equipped might save the lives of many millions. To the latter end a more vigorous civil defense program was initiated by the Department of Defense, subject to congressional support—which in the past has proved somewhat difficult to obtain.

There was apparent in Congress a fuller acceptance of the deterrence theory—that if the United States could absorb an enemy's first blow with all his ICBM's and still have enough missile power remaining to destroy that enemy, the enemy would not dare initiate a nuclear war. This largely explains Congress' hearty support of the scheduled large-scale production of the Minuteman and Polaris missiles. Even so, the enlarged civil defense program has made headway in its survey of missile shelters in metropolitan centers (see also Civil Defense).

Armed Forces Strength.—The U.S. Army, which a year earlier had 11 combat divisions and 3 purely training divisions, in 1962 attained a strength of 16 combat divisions at high readiness; its recruit training had been taken over by other elements. Of the 16 divisions, 5 were in West Germany (plus a massive number of support elements composing the corps and field army), 2 in Korea, 1 in Hawaii, and 8 in the Strategic Army Corps in the United States. Smaller units garrisoned Alaska, the Caribbean, and Okinawa.

As of the end of the year, the Navy had 9 Polaris-type nuclear submarines (each carrying 16 missiles) at sea and 28 others under construction or authorized; 22 nuclear attack-type submarines at sea and 17 others on the way; 113 conventional submarines; 16 attack-type aircraft carriers and 16 support carriers; 12 cruisers, most of them carrying guided missiles; 62 new-type frigates and destroyers at sea and authorized; 205 older-type destroyers at sea; and 85 destroyer escort-types built and building. The Air Force had 200 ICBM's as of Jan. 1, 1963, and 16,300 planes, comprising 37 strategic and 37 tactical wings (the latter increasing sharply) and 18 air defense wings, plus 132 squadrons of fueling, transport, and miscellaneous types.

Total numbers of armed forces personnel were as follows on June 30, 1961 and 1962, and as planned for June 30, 1963:

	Actual		Planned
	June 30, 1961	June 30, 1962	June 30, 1963
Army	858,622	1,066,404[1]	960,000
Navy	627,089	666,428	665,315
Marines	176,909	190,962	190,000
Air Force	821,151	884,025	868,566
Total, armed forces	2,483,771	2,807,819[1]	2,683,881

[1] The 1962 figures (particularly the Army's) reflect the temporary presence on active duty of 145,000 reservists.

Reserve Forces.—The year 1962 provided a severe test of readiness of Army, Navy, and Air Force reserve systems. Navy and Air Force reservists, both in units and as individuals, moved overseas smoothly. Mobilized Army reservists, however, encountered difficulties because of incomplete records, faulty notification methods, and lack of equipment. The deficiencies were corrected shortly, but they served to strengthen Secretary McNamara's decision to effect major reforms of organization. He proposed to Congress the changing of function of over 1,000 units of the National Guard and Army Reserve, and the elimination of 700 others as unnecessary, reducing personnel from 700,000 to 642,000. Congressional committees forbade the personnel reduction and questioned the timing of other changes, but by year's end had apparently acquiesced in plans for significant reforms in all 37 divisions and some 8,800 units of National Guard and Army Reserves. These included, notably: creation of 8 "priority" divisions (raising them to 85% of battle strength with "fillers" assured at call and all weapons and equipment issued); trimming of 6 existing divisions into brigades plus support units plus skeletonized divisional headquarters for mobilization purposes; raising of remaining 23 divisions' enrolled strength, equipment, and training; elimination or reshaping of most of the 1,000 units mentioned above; and establishing higher standards for recruits. Many of these radical changes were scheduled for 1963.

Defense Budget.—Budget planning in 1961–62 was distorted by unpredictable developments, notably by the Berlin crisis. To a much smaller extent, the call-up of reserves, redeployments, and operations associated with the quarantine of Cuba required added funds. The following table is of appropriations, rather than expenditures or authorizations, as providing a more stable basis for comparison.

	Appropriated, fiscal 1962	Requested, fiscal 1963	Appropriated, fiscal 1963
		(millions of dollars)	
Army	$11,996	$11,654	$11,574
Navy	14,745	15,270	15,128
Air Force	19,358	18,926	19,390
Defense Department	1,555	2,057	2,044
Total	$47,654	$47,907[1]	$48,136[1]

[1] Excludes $2,233 million for military construction.

Administration.—In 1962, Secretary of the Army Elvis J. Stahr, Jr., and Secretary of the Navy John B. Connally resigned, and were replaced, respectively, by Cyrus R. Vance and Fred Korth. The reorganization of the Army, along with comparable new concentrations of authority within the Navy and Air Force and the five powerfully centralized agencies of the Defense Department, constitute the largest administrative changes in the department's 14-year history.

(See also articles on each of the armed services, and the Index entries *Military* and *National Security.*)

Mark S. Watson,
Military Correspondent, "The Baltimore Sun."

NATO. See North Atlantic Treaty Organization.

NATURAL GAS. See Gas; Petroleum.

NATURALIZATION. See Immigration and Naturalization.

NAURU

A United Nations trust territory in the Central Pacific, situated about 2,750 miles southwest of Honolulu, Nauru (area, 8.22 square miles) is administered by Australia on behalf of the joint authority of Australia, Great Britain, and New Zealand. The population (June 30, 1961, est.) is 4,613, including 2,409 Nauruans, 1,077 other Pacific Islanders, 718 Chinese, and 409 Europeans.

The administration of the island is vested in an Australian-appointed administrator (J. Preston White). The Nauruans elect a 9-member council which is responsible

for local government. Government revenue in the fiscal year 1960–61 totaled £A490,233; expenditure, £A486,-214 (the Australian pound equals about U.S.$2.24). Primary and secondary school pupils numbered 1,029 in 1961.

The economy of the island is based on the extraction of phosphate, which is conducted on a nonprofit basis by the British Phosphate Commission, representing the three governments. In 1960–61, 1,338,681 tons of phosphate, valued at £A2,-945,098, were exported, chiefly to Australia and New Zealand. As the phosphate deposits are expected to be depleted in 30 years, the question of a new home for the Nauruans was discussed in July 1962 by the United Nations Trusteeship Council. At that time Hammer de Roburt, the Nauruan head chief, raised the question of Nauruan independence.

NAVIES, World. See articles on major countries.

NAVY, U.S.

The key position of the U.S. Navy in the Cuban crisis of October overshadowed all other naval developments during 1962. Despite the United States' favorable maritime position and her unchallenged naval power, the Soviet Union undertook a thoroughly planned crash program of building a number of medium- and intermediate-range missile sites in Cuba. The discovery of the missiles, however, was met with determination by the American people and quick reaction by their leaders, who decided first to confront the USSR at sea with a "quarantine" of "proscribed" offensive weapons, meaning missiles and bombing aircraft. With this action went a demand for the removal of offensive weapons already in Cuba, and notice that further military action would follow as the situation warranted.

Adm. George W. Anderson, Jr., chief of naval operations, was made executive agent of the Joint Chiefs of Staff for carrying out the operation. Adm. Robert L. Dennison, commander in chief, Atlantic Fleet, designated a force of about 80 ships under Vice Adm. Alfred G. Ward, commander of the Second Fleet, for the specific task. This force (designated Task Force 136) consisted primarily of carrier and destroyer types, supplemented by land-based aircraft. Available also was part of the Fleet Marine Force, then in the Caribbean, embarked in amphibious ships under command of Puerto Rican-born Vice Adm. Horacio Rivero.

The blockading ships were concentrated mostly in the narrow sea approaches to Cuba. Quarantine procedure involved ordering ships bound for Cuba to heave to; using force if not obeyed; sending a party aboard to inspect for proscribed cargo; and requiring the ship to turn away if such cargo were found.

The first indication of Soviet reaction, following President Kennedy's announcement of quarantine on October 22, was the altered course of some of the 20-plus Soviet bloc ships known to be bound for Cuba. A tanker was allowed to proceed without inspection, but a Lebanese-registered, Soviet-chartered ship was boarded on October 26 by parties from the destroyers *Joseph P. Kennedy, Jr.* and *John R. Pierce*. The freighter's crew cooperated and, when she was found to have none of the proscribed material, the vessel was allowed to proceed.

The blockading force was not the only United States naval strength that the Soviet Union had to consider. At least six Polaris submarines, each with 16 missiles, were deployed at sea, their locations secret. (See also CUBA; INTER-AMERICAN AFFAIRS; UNITED STATES—*The United States in 1962.*)

Naval Matériel.—The Cuban assignment was a relatively easy one for the Navy. Its knotty problem still remains ASW (antisubmarine warfare). PERT (Program Evaluation Review Technique), the computer-supported management system that was employed effectively in the Polaris missile development, is now to be applied to antisubmarine warfare. This is expected to result in some major program revisions, including more demanding contract administration and streamlined but more factual reporting.

Increasing numbers of Asroc and Subroc antisubmarine missiles and Dash drone antisubmarine helicopters are reaching the fleet, and a $1 million Asroc trainer has been set up at the Norfolk Naval Base, Va. Experiments are being conducted in a new main propulsion system for ASW ships which will combine the reliability and cruising radius of the conventional plant with a gas turbine for quick response and maneuverability. VTOL (vertical takeoff and landing) aircraft are being developed to replace the helicopter eventually, and better knowledge of oceanography should lead to improved ASW methods.

(*Left*) The U.S. Navy is continuing the development of hydrofoil ships, such as the *Denison*, which attained speeds in excess of 60 knots on Long Island Sound in November. (*Right*) The A3J Vigilante, the U.S. Navy's newest attack bomber, is seen on the deck of the nuclear-powered supercarrier U.S.S. *Enterprise*, the largest ship in the world.

GRUMMAN AIRCRAFT ENG. CORP.; NORTH AMERICAN AVIATION, INC

UPI

In Washington on October 16, Navy Secretary Fred Korth presents astronaut's wings to Walter Schirra, who orbited the earth six times on October 3, as Schirra's wife looks on.

The year 1962 saw a renaissance in the long-neglected amphibious force. Two new types of surface vessels were added—LPD (amphibious transport dock), an 8,000-ton mobile drydock and helicopter platform; and LPH, a specially built, 18,000-ton helicopter carrier, having a conventional warship hull and flight deck without overhang, and with ample living and storage space for 2,000 troops and their equipment.

Three nuclear-powered surface vessels are now part of the fleet—the carrier *Enterprise,* the cruiser *Long Beach,* and the missile destroyer *Bainbridge* (commissioned on October 6). These ships complete the nuclear-powered surface program, but the submarine program continues. The Navy hopes to increase to 49 the number of Polaris submarines authorized (now 41). The Navy's 13th Polaris submarine, the *Alexander Hamilton,* was launched on August 18. *Thresher,* the first of 14 single-screw, highly maneuverable, deep-diving attack submarines, was commissioned in 1962, as was the tender *Hunley* for servicing Polaris submarines.

In space flight, the Navy's contributions include the Transit satellite for precise ocean navigation, a space surveillance system, and the flight suit worn by the astronauts. For policy reasons, the Navy has not been allowed to convert the relatively inexpensive Polaris to space research. Thus far, however, the Navy's major contribution to space flight has been its men. The three astronauts who made orbits in 1962 were Lt. Col. John H. Glenn, Jr., of the Marine Corps and Lt. Cmdr. M. Scott Carpenter and Cmdr. Walter M. Schirra, Jr., of the Navy. (See also SPACE FLIGHT.)

In other naval matériel developments, progress was made in 1962 with the hydrofoil craft; a continuation of the FRAM (Fleet Rehabilitation and Modernization) program for World War II ships; and a marked trend toward conversion rather than new construction. Prominent in the latter category was the modernization of the 1939 T-2 tankers, which increased capacity from 115,000 to 150,000 barrels and, more important, replaced the present cumbersome fueling-at-sea gear (devised in 1917) with a primarily electrohydraulic system.

Photograph released by the Defense Department on November 9 shows U.S. Navy helicopter observing Soviet submarine in waters near Cuba during October quarantine of the island.

UPI

A budget of $15 billion for the fiscal year 1962 sustained the Navy's strength at 862 ships and 7,200 aircraft.

Naval Personnel.—The problem of training and retention of officers and men continued to be acute in 1962. One out of six men have less than two years' service, and enlistments have been reduced to three years. The response of junior officers to nuclear training has been disappointing. Top Navy leaders are concerned over the morale and retention problems created by long family separations. This was solved in the Polaris submarine program by adoption of a "Blue and Gold" system in which two crews alternate.

The 8,000 Naval Reservists called out in 1961 at the time of the Berlin crisis were released in August 1962, and were not recalled for the Cuban crisis.

Fred Korth was sworn in as secretary of the Navy on Jan. 4, 1962, succeeding John B. Connally, Jr. A major command change in 1962 was the relief of Vice Adm. William A. Schoech as commander of the Seventh Fleet by Vice Adm. Thomas H. Moorer. One of the most significant personnel events of the year concerned a civilian. Dr. Waldo K. Lyon of the Naval Electronics Laboratory was one of six persons to receive the President's Distinguished Federal Civilian Service Medal for his research and development work which made possible submarine navigation under the polar icecap. Characteristically, Mrs. Lyon accepted the award for him because he was in the Arctic, participating on August 22 in the rendezvous and surfacing at the North Pole of the nuclear-powered submarines *Skate,* from the Atlantic, and *Seadragon,* from the Pacific.

(See also AERONAUTICS; ATOMIC ENERGY; MISSILES; NATIONAL SECURITY; and the Index entry, *Navy, U.S.*)

JOHN D. HAYES,
Rear Admiral, USN (Ret.).

NEBRASKA

A Central state of the United States, Nebraska ranks 15th among the states in area (land, 76,612 square miles; inland water, 615) and 35th in population (1,484,000 on July 1, 1962, a 5.2% increase from the 1960 census figure of 1,411,330). Urban places with populations above 10,000 in 1960:

Beatrice	12,132	Lincoln (*capital*)	128,521
Columbus	12,476	Norfolk	13,640
Fremont	19,698	North Platte	17,184
Grand Island	25,742	Omaha	301,598
Hastings	21,412	Scottsbluff	13,377
Kearney	14,210		

Government.—Chief executive and judicial officers in 1962 were Frank B. Morrison (Democrat), governor, serving a two-year term; Dwight W. Burney, lieutenant governor; Frank Marsh, secretary of state; Clarence L. E. Swanson, treasurer; Ray C. Johnson, auditor; Clarence A. H. Meyer, attorney general; Floyd A. Miller, commissioner of education; and Robert G. Simmons, chief justice of the 7-member Supreme Court.

The Nebraska Legislature, which convenes in odd-numbered years, is unicameral, consisting of 43 members (nonpartisan) in 1962.

Finance.—In the 1961 fiscal year, revenue of $176,741,571 included $104,932,501 from state taxes and $64,322,453 in federal funds. Chief tax yields were from motor fuels ($43,698,071) and licensing ($8,991,623). Spending of $157,829,204 included $28,662,039 for educa-

tion, $41,238,140 for health, welfare, and safety, and $71,039,512 for highways.

Education.—In the 1961–62 school year, public elementary schools staffed by 8,818 teachers enrolled 192,372 pupils; junior high schools with 1,600 teachers enrolled 31,054; senior high schools with 3,770 teachers enrolled 68,539; and private and parochial schools with 1,970 teachers enrolled 55,455. College enrollment totaled 33,434 in 21 institutions, including 4 junior colleges and 17 senior colleges and universities.

Estimated public school spending in the 1961–62 school year totaled $125,775,000, including current expenditures of $95 million ($355 per pupil) and capital outlays of $26 million. Revenue of $132.5 million was drawn chiefly from state funds ($7 million) and local districts ($102 million). Teachers' salaries averaged $4,160 (high school, $4,950; elementary, $3,750). Actual spending for higher education (1961 fiscal year) amounted to $25,131,000.

Public Assistance.—In the 1962 fiscal year, public assistance payments to a monthly average of 29,342 persons totaled $19,080,100. This amount included $12,136,300 for the aged and $4,740,100 for dependent children.

Transportation and Communications.—With 852 miles of highway construction and reconstruction completed in 1961, *highways and roads* on Dec. 31, 1961, totaled 102,552 miles (10,558 surfaced). These served 845,373 *motor vehicles* (as registered on Jan. 1, 1962), including 578,724 automobiles. Operating in the state were (1961) 5 *railroads* (using 8,007 line miles of track); (1962) 5 regularly scheduled *airlines;* and 87 commercial and municipal and 6 state *airports.*

Communications media included (1962) 39 AM and 8 FM *radio stations;* 11 VHF *television stations;* 22 daily *newspapers* (circulation, 488,618) and 232 other newspapers (377,276); and (January 1) 151,200 business and 456,300 residential *telephones.*

Labor Force.—The state's labor force in August 1962 included 180,000 agricultural workers. Nonagricultural employment totaled 459,300, compared with 453,000 a year earlier and an average of 472,100 for the full year 1961. Of nonfarm employees, 21.1% were in trade, 17.1% in government services, and 15.1% in manufacturing. Unemployment in August 1962 stood at 16,000, compared with 19,000 a year earlier.

Manufacturing.—Manufacturing engaged 61,277 workers in 1960, including 44,488 in production, and provided a payroll of $307,325,000. Adjusted value added by manufacture totaled $616,042,000.

LEADING NEBRASKA MANUFACTURES, 1960

Industry group	Total employees	Total payroll (in thousands)	Adjusted value added by mfr.[1] (in thousands)
Food and kindred products	27,963	$143,983	$285,765
Electrical machinery	5,096	25,371	48,043
Printing and publishing	5,379	26,279	43,387
Chemicals and products	1,905	10,019	36,566
Fabricated metals	3,744	18,839	33,907
Nonelectrical machinery	3,626	16,177	31,543
Transportation equipment	2,004	10,134	18,269

[1] For definition, see footnote 1 in the article *Industrial Production.* (Source: *1960 Annual Survey of Manufactures.*)

Mining.—In 1961, Nebraska ranked 28th among the states in the value of its mineral output, with 0.57% of the national total. Mineral fuels contributed 73% of this value.

NEBRASKA MINERAL PRODUCTION, 1961

(In short tons except as noted)

Mineral	Quantity	Value
Clays	146,000	$ 148,000
Natural gas (thousand cu. ft.)	15,743,000	2,629,000
Natural gasoline (1,000 gal.)	...[1]	...[1]
Petroleum (1,000 bbl.)	24,396[2]	69,529,000[2]
Petroleum gases (1,000 gal.)	...[1]	...[1]
Sand and gravel	10,094,000	8,250,000
Stone	3,622,000	6,324,000
Other minerals	...	18,642,000
Total	...	$103,060,000[3]

[1] Figure withheld to avoid disclosing confidential data from an individual company. [2] Preliminary. [3] Total adjusted to eliminate duplication in value of clays and stone. (Source: U.S. Bureau of Mines.)

Agriculture.—Cash farm income for the first nine months of 1962 (excluding government payments) totaled $857,407,000, compared with $876,985,000 for the corresponding period of 1961. For the full year 1961, income comprised $798,212,000 from livestock, $463,588,000 from crops, and $88,560,000 in government payments. Principal income sources in 1961 were cattle, $526,353,000; corn, $198,471,000; hogs, $153,281,000; and wheat, $148,124,000.

The state's 90,000 farms in 1959 had an acreage of 47,756,000 (18,057,000 in harvested cropland). Livestock on farms on Jan. 1, 1962, included 5,414,000 cattle, 2,648,000 hogs, 733,000 sheep, and 9,708,000 chickens. An average of 132,000 family and 25,000 hired workers engaged in farming in 1961. (See also below, *Events, 1962.*)

NEBRASKA CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Beans, dry edible (1,000 bags)	1,049	1,406	1,012
Corn for grain (1,000 bu.)	216,330	275,392	313,357
Hay (1,000 tons)	6,261	6,018	7,222
Oats (1,000 bu.)	44,860	34,144	32,043
Sorghum grain (1,000 bu.)	34,788	59,842	100,100
Soybeans (1,000 bu.)	3,088	7,446	8,370
Sugar beets (1,000 short tons)	880	1,155	945
Wheat (1,000 bu.)	79,161	78,807	53,820

(Source: U.S. Department of Agriculture.)

Events, 1962.—In the November 6 general elections, the Republicans easily won all major offices except that of governor. Frank B. Morrison, Democrat, seeking a second term as governor, defeated former Secretary of the Interior Fred A. Seaton, 242,669 to 221,885. Reelected to Congress were Glenn Cunningham, David Martin, and Ralph Beerman. Earlier, in the Republican primary, Beerman defeated Congressman Phil Weaver in a contest resulting from the redistricting of the state which was made necessary by the loss of one congressional seat.

In the general elections the voters also approved seven constitutional amendments, providing for: removal of restrictions on participation in national lottery or gift enterprises; a Railway Commission of three to seven members to replace the present commission of three members; permission for the lieutenant governor to run for governor during his term; a 4-year term for governor; a 4-year term for state legislators, with half of the membership to be elected every 2 years; a merit plan for selecting judges; and an arrangement whereby in any reapportionment of the Legislature, consideration is to be given to the land area of a district. (Under this formula, 20% to 30% weight is given to area, the remainder to population.)

Total crop production, 2% above the 1961 output, was the fourth highest on record. The yield of winter wheat, the state's second crop, was down approximately 19% from the 1951–60 average, but the 58-bushel-per-acre yield of corn, the leading crop, was the highest in history, and approximately 60% above the 1951–60 average. Irrigation was of major importance in establishing the record. The yield of sorghum grain, a crop which has rapidly increased in significance since World War II, was also the highest on record. Safflower and castor beans, relatively new crops, continued to gain in importance.

Under the leadership of the State Department of Agriculture and the University of Nebraska's College of Agriculture, the state continued the accelerated program of agricultural research which was activated by the 1959 session of the Legislature. A much-discussed result of this program has been the "Nebraskit" group of survival rations, designed for use in fallout shelters.

A nuclear power facility near Lincoln, the first such reactor to be operated by a consumer-owned

utility, began conventional operations in 1962. The organization of the state's public power system, also unique in the nation, continued as a major political issue, as did the question of broadening the tax base through the adoption of an income tax, a sales tax, or both.

"Events" by: JAMES C. OLSON,
Martin Professor and Chairman, Department of History, University of Nebraska.

NECROLOGY, 1962. A selected list of prominent persons who died in 1962 may be found in the NECROLOGY at the back of this volume, immediately following the Z articles. Separate biographies of many prominent persons appear under their own headings throughout the volume; and the names of those who have been given more expansive treatment in the NECROLOGY listing appear in the general Index to this volume.

NEGROES, American. See Index entry.

NEHRU, Jawaharlal

Prime minister of India: b. Allahabad, United Provinces, India, Nov. 14, 1889.

Communist China's open attack on India had a decisive impact on Nehru's domestic and international political position in 1962.

Nehru was educated in England at Harrow, Cambridge University (M.A., 1910), and the Inner Temple, London, where he qualified as a lawyer in 1912. He entered the struggle for Indian independence in 1918, and soon became one of the chief aides of Mahatma Gandhi. In 1929 he succeeded his father, Motilal Nehru, as president of the Indian National Congress, a position he also held in 1936, 1937, 1946, and 1951–54. For his political activities, Nehru was imprisoned by the British for many years, including 1923–26, 1930–33, 1934–35, and 1942–45. In 1947 he became India's first (and only) prime minister and minister of external affairs. In addition, he has been in charge of the Department of Atomic Energy, and was minister of defense (1953–54), and of finance (1956).

The year began auspiciously for the Indian prime minister as he led the Congress Party to another decisive victory in the parliamentary elections on February 16–25. Nehru himself was returned to Parliament by a plurality of 64,571 votes over his nearest opponent. On April 3, members of Parliament of the majority Congress Party unanimously elected him their leader for the next five years. Asked by the president to continue as prime minister, Nehru announced on April 9 an expanded but otherwise little-changed cabinet to serve with him during his fourth term of office.

The election also produced an impressive personal victory for Nehru's close friend and controversial defense minister, V. K. Krishna Menon. Nehru's reappointment of Menon to the cabinet post apparently indicated his at least tacit support for Menon's policy of leaning toward the Communist world while being highly critical of the West.

Nevertheless, Nehru continued to take a firm stand in India's border dispute with Communist China. Declaring on May 3 that Indian troops would continue to hold positions in the Ladakh area threatened by Communist forces, Nehru told Parliament that India was "prepared to meet any step that the Chinese may take" and that the Chinese might be "rather apprehensive of our growing strength." On August 14, Nehru received Parliament's consent to his request for a free hand in dealing with the Communist Chinese.

Refusing to negotiate without a prior Chinese withdrawal, Nehru attended the Commonwealth prime ministers' conference in London (September 10–17), visited France for meetings with President de Gaulle and other officials (September 20–23), and also conferred with the leaders of Nigeria, the United Arab Republic, and Yemen on his return trip to India. On October 20 the Chinese Communists launched a major offensive against India's borders. Indian reverses were attributed by many to Defense Minister Menon's pro-Communist position, which had led to the resignation or removal of many key army officers, and his inadequate provision of modern equipment for the Indian forces. On October 31, Nehru dismissed Menon and took over the defense ministry himself. The prime minister's direct appeals for aid from the West were met promptly. Despite his continued expressions of hope for Russian support, it became increasingly clear as the year ended that Nehru's policy of balancing carefully between East and West was undergoing severe strains.

(See also CHINA; FAR EAST; INDIA.)

NEPAL

This Himalayan kingdom (area, 56,362 square miles; 1961 prelim. census est., 9,753,378) is bordered on the north by Tibet, which Nepal recognizes as an integral part of Communist China; and on the south (for 537 miles) by India (see below, *Events, 1962*). The principal cities are Katmandu, the capital (1958 pop., 195,260), Patan (135,230), and Bhatgaon (84,240).

Government.—Since 1961, when the 1959 constitution was abrogated and Parliament was dissolved, the government has been directed by King Mahendra Bir Bikram Shah Deva (acceded March 14, 1955). In 1962, a 6-member royal commission promulgated a new constitution providing for "basic democracy" through panchayats (village councils); elections were held on February 18 for 160 such councils. Gen. Subarna Shamser, deputy prime minister in the ousted government (Prime Minister B. P. Koirala remaining under arrest), continued to lead the efforts of exiled Nepalese groups in India to return the Nepali Congress to power (see below, *Events, 1962*).

Education and Religion.—About 9% of the population is literate. Educational expenditure, 1961–62: NRs.5,025,000. In 1958, schools numbered 2,740 (English schools, 2,443). Besides the University of Nepal at Kirtipur, there are 18 smaller colleges. The religion of the bulk of the people is Hinduism; other large numbers are Buddhists.

Finance.—Estimated revenue, 1962–63: NRs.289,300,000; expenditure, NRs.297,800,000 (7.6 Nepalese rupees equal U.S.$1). Additional revenue of NRs.30.6 million was expected to accrue from increased land taxes in the Terai region, import duties on luxury items, an embarkation tax on air passengers, and a 10% tax on hotel residents, making current taxation the highest in Nepal's history. Expenditures include NRs.157 million for economic development.

Foreign aid, 1962–63 est.: NRs.128.2 million. The United States furnished NRs.80.3—the highest annual figure since 1952—for development projects in education, transportation, and forestry, and to provide professional training in the United States for 85 Nepalis. India provided NRs.25.1 million to supply drinking water for 400,000 persons in the Katmandu Valley, a child welfare center, and a 20-mile highway between Katmandu and Dakshim Kali. Foreign aid from the Soviet Union and Communist China totaled NRs.16.8 million, and from the United Kingdom and New Zealand, NRs.6.0 million.

Nepal's second three-year development plan came into operation on July 16, 1962. Its total estimated cost is NRs.670 million, of which NRs.100 million is to be derived from internal revenue, NRs.60 million from an internal loan, and NRs.500 million from foreign aid. The largest item of expenditure (NRs.234.5 million) is for the expansion of transport, communications, and electric power.

Transportation and Communications.—Extending from Dhursing into the Katmandu Valley, an 18-mile ropeway, on which about 60 tons of freight is transported daily, was operated from 1961 as a statutory corporation. In 1962 there were 756 miles of motorable roads, and 62 miles of narrow-gauge railways. The Royal Nepal Airlines has services between Katmandu, Patna, and New Delhi; India Airlines also serves Nepal; in 1961 there were 8 airstrips, and 6 others were under construction.

Production and Trade.—Nearly one third of Nepal is under forest (producing revenue of NRs.14,730,000 in 1961–62). Agricultural acreage (1960): 10,877,000 (rice, 6,584,000). Livestock (1960): 7 million cattle, yaks, and buffaloes; 1.75 million sheep and goats; and 14 million poultry. Manufactured products are chiefly jute, sugar, vegetable oils, electric power (a government enterprise which provided revenues of NRs.740,000 in 1961–62), cigarettes, chemicals, and medicinal herbs.

Foreign trade is chiefly with India under a 1960 treaty exempting from duties all goods imported by either country for domestic use. Nepal's imports from the United Kingdom, 1961: £93,682. Exports are agricultural products; imports are principally textiles, cigarettes, petrol, kerosene, machinery, and manufactured goods.

Events, 1962.—At the invitation of Prime Minister Nehru, King Mahendra paid a state visit to India on April 18–23. Their meeting produced a declaration reaffirming the mutual interest of the two countries. The Nepalese monarch, however, protested alleged rebel activities of former Nepalese leaders now living in India, and India's allegedly unfair criticism of events in Nepal. Increasingly large military forces in Nepal were called on during the year to meet guerrilla thrusts at Thori, Bharatpur, Taplejung, Jhapa, and other towns and villages. Gen. Subarna Shumsher, acting president of the ousted Nepali Congress party, announced on November 8 that he was temporarily suspending the rebel movement in view of the Chinese Communist attack on India and the consequent danger facing Nepal. (Some 40,000 Chinese soldiers were reportedly massed along the northern border.)

In November, India reportedly appealed to King Mahendra for Gurkha mountaineer troops in order to strengthen Indian border defenses against further Chinese incursions.

Over intensified objections from New Delhi, the Nepal government held to its plan to build a road, financed with $10 million in Communist aid, between Katmandu and Lhasa, the Chinese-controlled capital of Tibet.

In June a four-man team (three Americans and one Swiss) led by Professor Woodrow Wilson Sayre, grandson of President Wilson, climbed the 25,910-foot, unconquered Gyachung Kang. Sayre reached a point some 500 feet from the summit. Subsequently, after being lost for several days, the party was rescued at an elevation of 17,000 feet.

DONOVAN ROWSE,
Author and Publicist.

NERVOUS SYSTEM. See Index entry.

NETHERLANDS

The constitutional monarchy of the Netherlands (or Holland) is situated on the northwest coast of Europe. It has an area of 12,259 square miles, about one fourth of which is below sea level, and a population of 11,775,000 (est. Sept. 1, 1962). Principal cities and populations (est. Jan. 1, 1961): Amsterdam, the constitutional capital, 866,342; Rotterdam, 729,744; The Hague, seat of government, 605,876; and Utrecht, 256,332. Dutch is the official language.

Government.—The Netherlands, with Surinam and the Netherlands Antilles, forms a single realm under the House of Orange. The hereditary constitutional monarch is Queen Juliana of Orange and Nassau (b. 1909; acceded 1948). A coalition cabinet of 13 members (formed May 19, 1959) is headed by Premier Jan Eduard de Quay (Catholic People's Party). The bicameral Parliament (States-General) consists of a First Chamber (75 members elected by provincial councils for six-year terms) and a Second Chamber (150 members elected directly every four years). Political parties and number of seats held in Second Chamber (following elections of March 12, 1959): Catholic People's, 49; Labor, 48; Liberal, 19; Anti-Revolutionary, 14; Christian Historical Union, 12; Political Reform, 3; Communist, 3; and Pacifist Socialist, 2. The highest judicial body is the Supreme Court of Justice.

Education and Religion.—School enrollment (1960–61): 2,934,596. Number of schools (with enrollments), 1960–61: 4,400 infant (397,843); 8,039 elementary (1,460,819); 1,780 secondary (455,736); 1,405 technical (474,915); 429 agricultural (27,324); 558 special (54,561); 93 teacher-training colleges (22,813); 11 universities (40,585). Principal religions: Protestant (approximately 45% of the population); Catholic (40%).

Finance.—Government revenue, 1962 est.: 10,963 million guilders (9,880 million in 1961); expenditure, 11,238 million (9,972 million). The guilder equals U.S.$0.276. National debt: 17,887 million guilders at end of June 1962. Gold and foreign exchange holdings of the Netherlands Bank: $1,775 million as of Aug. 31, 1962.

Transportation and Communications.—Transport networks (miles, 1961): state-owned railways, 2,036 (50% electrified); main roads, 2,830; navigable waterways, 4,232. Merchant marine tonnage (July 1, 1961): 4,910,000 gross registered tons. National airline: KLM, serving 80 countries; 1,374 million passenger-miles (1960). Passenger cars, 512,312 (1961); telephones, 1,613,000 (1961); radio receivers, 3,126,000 (1961); television sets, 923,590 (1961). Daily newspapers: 89 (1961).

Economic Indicators.—Gross national product: 42.35 billion guilders in 1960 (up 9.6% from 1959); 44.35 billion estimated for 1961 (up 5% from 1960). Index of industrial production (1958 = 100): 130 in first 6 months of 1962 (125 in 1961). Cost-of-living index (1958 = 100): 108 in first 6 months of 1962 (104 in 1961). Employment index (1958 = 100): 107 in first 3 months of 1962 (106 in 1961). Registered unemployment averaged 34,000 in 1961 (49,000 in 1960); number of unfilled job openings averaged 120,000 in 1961.

Manufactures and Minerals.—Chief industrial products (metric tons, 1961): crude steel, 1,996,000 (1,940,000 in 1960); pig iron, 1,457,313 (1,347,253); phosphatic fertilizers (1960–61), 223,700 (198,500 in 1959–60); nitrogenous fertilizers (1960–61), 417,500 (406,100 in 1959–60); coal, 12,620,968 (12,498,487); crude oil, 2,046,000 (1,919,000); electric power, 17,521 kw.-hr. (16,516); ship construction, 570,837 gross registered tons (566,993).

Agriculture.—Agriculture accounts for about 10% of the gross national product, and engages some 12% of the labor force. Chief crops (metric tons, 1961): wheat, 482,130 (down 18% from 1960); oats, 431,280 (up 11.5%); barley, 385,077 (up 32.3%); rye, 301,069 (down 34.6%); mixed grains, 161,719 (up 19.6%); sugar beets, 3,854,430 (down 17.5%). Dairy production (metric tons, 1961): milk, 6,953,000 (6,838,000 in 1960); cheese, 212,900 (201,600); butter, 96,600 (99,400).

Foreign Trade.—Total exports, 1961: 15,712.3 million guilders (15,305.4 in 1960); imports, 18,651.5 million (17,216.6 in 1960). Principal exports (in million guilders, 1961): mineral fuels and lubricants, 1,478.7 (1,428.4 in 1960); electrical machinery and apparatus, 1,453.6 (1,325.4); nonelectric machinery, 864.1 (784.4); transportation equipment, 793.6 (761.3); textile goods, 1,129.1 (1,111.2); livestock, meat, and meat products, 822.7 (916.9); dairy products, 1,154.9 (1,242.7). Principal imports: electrical machinery and apparatus, 1,520.8 (1,108.0); nonelectrical machinery, 1,824.4 (1,484.1); textile goods, 1,094.6 (939.9); transportation equipment, 1,320.9 (1,171.2); cereals and cereal products, 773.4 (884.4); iron and steel, 1,124.2 (1,186.2). Chief customers, excluding Belgium-Luxembourg (with percentage of total Dutch exports received, 1961): West Germany (23.1%); United Kingdom (9.9%); France (6.2%); United States (5.5%). Principal suppliers, excluding Belgium-Luxembourg (with percentage of total imports provided, 1961): West Germany (23.0%); United States (11.8%); United Kingdom (7.1%).

Events, 1962.—The economic boom in the Netherlands leveled off with very slight increases in industrial production in 1961 and the first six months of 1962, in comparison with the big jump in industrial production in 1960. A shortage of skilled labor, higher labor costs, and sharper competition were contributing factors. Strong domestic demand for goods and services prompted increased imports,

Wilhelmina, the "old queen," who was reigning monarch of the Netherlands for 50 years, is given a white funeral in accordance with her last wish, at The Hague on December 8.

WIDE WORLD

reducing the balance of payments surplus. There have been efforts to attract more foreign and more married women workers, but the severe labor shortage persists. Nevertheless, investments, including foreign investments, are increasing. Anticipation of advantageous trading in the Common Market area has led to business expansion and reorganization into larger and more efficient units.

Late in 1961 the UN General Assembly rejected a Netherlands offer to place Netherlands New Guinea under a UN trusteeship. In January 1962 there were reports of more Indonesian landings on New Guinea, and military activities in the area increased. The Suez Canal was closed to shipments of armaments destined for use in New Guinea. On permission from the United States, a Dutch plane, carrying military replacements in civilian dress and bound for New Guinea, refueled at several American airfields in the Pacific area. Enraged students demonstrated before the American embassy in Jakarta, and shortly thereafter the United States closed its airport facilities "for the time being" to aircraft carrying Dutch military personnel to New Guinea. Japan refused a landing permit to such aircraft.

Yielding on its position of requiring acceptance of the principle of self-determination for the Papuans as a prior condition to talks, the Dutch offered to negotiate a peaceful settlement. Indonesia countered with expressions of willingness to negotiate, provided there be prior agreement to transfer authority over Netherlands New Guinea to Indonesia. UN Acting Secretary General U Thant continued to urge the two parties to negotiate, as did the United States. In the presence of Ellsworth Bunker, a retired United States diplomat, secret preliminary talks began on March 19. After a few meetings the Indonesian representatives were withdrawn and Indonesian military activities were resumed in considerable strength. Alleging that such action would be viewed as taking sides, Secretary General Thant on May 22 rejected a Netherlands appeal that he urge Indonesia to refrain from aggressive action. He also rejected a renewed Netherlands request for United Nations observers in New Guinea.

Encouraged by President Kennedy, Mr. Bunker submitted proposals in May as the basis for a new round of negotiations. It was alleged that there was considerable pressure on the Dutch to accept the Bunker proposals. Talks were resumed in July, and on August 16 an accord was signed. On October 1, Dutch rule over New Guinea (henceforth known as West New Guinea) came to an end as the United Nations assumed jurisdiction. On May 1, 1963, the administration will be transferred to Indonesia; and in 1969 there will be a plebiscite, under United Nations auspices, to give the Papuans an opportunity to choose their future status. Most of the Netherlanders in West New Guinea have returned to the Netherlands. (See also INDONESIA; WEST NEW GUINEA.)

Princess Wilhelmina (q.v.) died on November 28. She had reigned from 1898 until her abdication in 1948.

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NETHERLANDS ANTILLES

Comprising two island groups in the Caribbean, the Netherlands Antilles is an autonomous member of the Kingdom of the Netherlands. The three larger islands—Curaçao (area, 179 sq. mi.; pop., 126,088), Aruba (71 sq. mi.; pop., 57,347), and Bonaire (112 sq. mi.; pop., 5,896)—lie off the coast of Venezuela. The three smaller islands—St. Maarten (of which the northern part, St. Martin, is French), St. Eustatius, and Saba—are situated east of Puerto Rico. The total area is 394 square miles, and the population (Jan. 1, 1962, est.) is 194,316. Dutch is the official language; Spanish and a popular tongue called Papiamento are widely used. Roman Catholicism is the predominant religion of the smaller islands, and Protestantism is dominant in the larger group. Willemstad (pop., 46,000), on Curaçao, is the capital.

Government.—The Netherlands Antilles has full internal autonomy. Matters of common interest are decided together with the Netherlands and Surinam. A Dutch-appointed governor (Nicholas Debrot, appointed in 1962) appoints the Council of Ministers with the approval of the Staten or Legislative Council, whose 22 members are elected by universal suffrage for 4-year terms. Estimated central budget, 1960: revenue, 71.3 million Netherlands Antilles guilders; expenditure, 71.1 million (the NA guilder equals U.S.$0.5305). School enrollment, 1959: primary, 19,616; secondary and vocational, 2,263.

Transportation and Communications.—The Netherlands Antilles in 1960 had about 438 miles of roads; 22,500 motor vehicles, 13,300 telephones, and 39,000 radio receivers. Dr. Albert Plesman Airport on Curaçao and Beatrix Airport on Aruba are the principal airports. A jet airport at Philipsburg, St. Maarten, was under construction in 1962. There is a television station on Curaçao and about 5,000 television sets in the islands.

Production.—The petroleum industry dominates the economy of the islands, employing about 30% of the total labor force. Petroleum is obtained mainly from Venezuela, and is refined at two large refineries on Aruba (owned by an affiliate of the Standard Oil Company of New Jersey) and one refinery on Curaçao (owned by an affiliate of the Royal Dutch Shell Company). Most of the food has to be imported, but some aloes, sorghum, yams, and assorted vegetables are grown. Exports of phosphates from Curaçao totaled about 144,000 metric tons in 1960. Other industries include shipbuilding, tobacco processing, and tourism. Total exports, 1960: 1,241 million NA guilders (mainly to the United States and Great Britain); imports, 1,285 million (mainly from Venezuela).

NETHERLANDS EAST INDIES. See INDONESIA.

NETHERLANDS GUIANA. See SURINAM.

NETHERLANDS NEW GUINEA. See WEST NEW GUINEA.

NETHERLANDS WEST INDIES. See NETHERLANDS ANTILLES.

NEUROLOGY. See the Index entry, *Nervous System.*

NEVADA

A Western state of the United States, Nevada ranks 7th among the states in area (land, 109,788 square miles; inland water, 752) and 49th in population (335,000 on July 1, 1962, a 17.3% increase from the 1960 census figure of 285,278). Urban places with populations above 5,000 in 1960:

Carson City (*capital*)	5,163	North Las Vegas	18,422
Elko	6,298	Reno	51,470
Henderson	12,525	Sparks	16,618
Las Vegas	64,405		

Government.—Chief executive and judicial officers in 1962 included Grant Sawyer (Democrat), governor, serving a four-year term; Maude Frazier, lieutenant governor (appointed on July 13 to complete the term of Rex Bell, who died on July 4); John Koontz, secretary of state; Dan W. Franks, treasurer; Charles E. Springer, attorney general; Byron F. Stetler, superintendent of public instruction; and Milton B. Badt, chief justice of the 3-member Supreme Court.

The Nevada Legislature, which convenes in odd-numbered years, comprised 10 Republicans and 7 Democrats in the Senate in 1962 and 32 Democrats and 15 Republicans in the House of Representatives. (In November 1962, reapportionment legislation reduced the number of Representatives to 37.)

Finance.—In the 1962 fiscal year, revenue of $121,404,669 comprised $95,485,071 from state tax sources and $23,832,916 in federal funds. Chief tax yields were the 2% general sales tax ($15,220,000) motor fuel taxes ($9,773,552), and licensing ($9,107,281). Spending of $125,808,221 included $25,658,902 for education, $12,513,137 for health, welfare, and safety, and $27,178,500 for highways.

Education.—In the 1961–62 school year, public elementary schools staffed by 1,808 teachers enrolled 62,813 pupils; junior-senior high schools with 1,124 teachers enrolled 19,482; and parochial schools with 93 teachers enrolled 2,686. College enrollment totaled 5,235 at the University of Nevada.

Operating expenditures for public elementary and secondary schools in the 1961–62 school year totaled $29,135,851 ($437.50 per pupil) and capital outlays amounted to $1,646,825. Revenue was drawn chiefly from state funds ($18,082,888) and local districts ($10,671,559). Teachers' salaries averaged $6,181 (high school, $6,131; elementary, $5,766). Actual spending for higher education (1961 fiscal year) totaled $7,801,000.

Public Assistance.—In the 1962 fiscal year, public assistance payments to a monthly average of 7,389 persons totaled $4,348,700. This amount included $2,437,716 for the aged and $1,696,700 for dependent children.

Transportation and Communications.—With 115 miles of highway construction and reconstruction completed in the 1962 fiscal year, *highways and roads* on June 30, 1962, totaled 44,602 miles (4,535 surfaced). These served 157,830 *automobiles* (as registered in the 1962 fiscal year). Operating in the state in 1962 were 4 *railroads* (using 1,644 line miles of track); 8 regularly scheduled *airlines;* and 31 commercial and municipal *airports.*

Communications media included (1962) 1 FM and 18 AM *radio stations;* 5 VHF *television stations;* 8 daily *newspapers* (circulation, 96,000) and 22 other newspapers; and (January 1) 59,100 business and 79,800 residential *telephones.*

Labor Force.—The state's labor force in 1961 included 6,900 agricultural workers. Nonagricultural employment averaged 113,500, compared with an average of 110,100 for 1960. Of nonfarm employees, 32.9% were in service industries, 17.8% in government services, and 17.8% in trade. Unemployment during 1961 averaged 8,700, compared with 7,100 for 1960.

Manufacturing.—Manufacturing engaged 5,305 workers in 1960, including 3,742 in production, and provided a payroll of $30,749,000. Adjusted value added by manufacture totaled $71,894,000. The leading industry was stone, clay, and glass products, which employed 1,142 workers, paid $7,166,000 in wages, and provided $18,754,000 in adjusted value added by manufacture.

Mining.—In 1961, Nevada ranked 32d among the states in the value of its mineral output, with 0.44% of the national total. It was first in output of magnesite and manganese ore; and second in diatomite, mercury, perlite, and sulfur ore.

NEVADA MINERAL PRODUCTION, 1961
(In short tons, except as noted)

Mineral	Quantity	Value
Barite	129,524	$ 863,000
Copper (recoverable content of ores)	78,022	46,813,000
Fluorspar	18,129	357,000
Gold (ounces)	54,165	1,896,000
Gypsum	729,000	2,625,000
Iron ore, usable (long tons)	845,000	4,608,000
Lead (recoverable content of ores)	1,791	369,000
Manganese ore	28,573	1,852,000
Mercury (76-pound flasks)	7,486	1,480,000
Perlite	29,544	240,000
Sand and gravel	7,095,000	7,443,000
Silver (ounces)	388,000	359,000
Stone	677,000	1,576,000
Other minerals	...	11,248,000
Total	...	$80,565,000[1]

[1] Total adjusted to avoid duplication in the value of raw materials used in manufacturing cement or lime. (Source: U.S. Bureau of Mines.)

Agriculture.—Cash farm income for the first nine months of 1962 (excluding government payments) totaled $25,939,000, compared with $23,447,000 for the corresponding period of 1961. For the full year 1961, income comprised $36,354,000 from livestock, $5,871,000 from crops, and $922,000 in government payments. Principal income sources in 1961 were cattle, $27,277,000, and wholesale milk, $5,070,000.

The state's 2,000 farms in 1959 had an acreage of 10,943,000 (338,000 in harvested cropland). Livestock on farms on Jan. 1, 1962, included 532,000 cattle, and 297,000 sheep.

NEVADA CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Alfalfa hay (1,000 tons)	351	336	403
Cotton lint (1,000 bales)	3.2	6.1	6.4
Hay (1,000 tons)	606	523	657
Potatoes (1,000 cwt.)	304	231	448
Wheat (1,000 bu.)	509	354	604

(Source: U.S. Department of Agriculture.)

Events, 1962.—The sudden death on July 4 of Lt. Gov. Rex Bell, former movie star and contender for the governorship on the Republican ticket, changed the complexion of the primary elections. Oran K. Gragson, mayor of Las Vegas, became the Republican candidate by defeating H. M. (Hank) Greenspun, Las Vegas newspaper publisher.

In the general elections on November 6, incumbent Gov. Grant Sawyer easily won over Gragson. Sen. Alan Bible and Rep. Walter S. Baring, Democrats, retained their seats in Congress. The lieutenant governorship went to Paul Laxalt, the only Republican to win a major state office; he defeated Berkeley L. Bunker, Democrat, who was attempting a political comeback.

Constitutional amendments were passed providing for a uniform statewide tax rate for motor vehicles and for the bypassing of the governor and the Legislature in the initiation of petitions for amendments to the constitution. Control of the Senate was retained by the Republicans, whose margin was reduced from three seats to one. Democrats continued to control the Assembly, by 25 to 12; (their margin had been 32 to 15 before the number of seats was reduced in November 1962 by the Reapportionment Act of 1961).

A water shortage in portions of western Nevada was averted by heavy rains in the Sierra Nevadas, caused by a typhoon that struck coastal California, Oregon, and Washington in October. An experiment in permanent weather-modification, a five-year cloud-seeding program, was initiated in the Independence Mountains near Elko.

Northern Humboldt County received the first power from Bonneville Dam to flow into Nevada. The Federal Power Commission approved laying of a natural gas pipeline into the northern part of the state.

The first announced hydrogen bomb test explosion within the United States, the greatest nuclear blast ever to take place in the country, was set off underground on July 6 at Yucca Flats, northwest of Las Vegas. The establishment of a new underground test site near Fallon was revealed by the Atomic Energy Commission. Subject to approval by the same body, a contract was signed for disposal of atomic waste in the desert outside Beatty.

In February the Reese River engulfed much of Battle Mountain, which was declared a disaster area. Reno's historic New Golden Hotel was destroyed by fire on April 3, with the loss of several lives. Construction of a 24-story replacement was begun.

The federal District Court for northern Nevada entertained a suit urging legislative reapportionment of both houses of the Nevada Legislature, particularly the Senate. As a result of building financing practices, Nevada apparently reached the limit of debt established by the constitution.

Both of these matters created an air of anxiety and were being carefully watched by political observers in the state.

"Events" by: ARTHUR J. PALMER, JR., *Assistant to the Legislative Counsel.*

NEW BRUNSWICK

One of the four original provinces of Canada, New Brunswick has an area of 28,354 square miles, of which 519 are fresh water, making it the second largest of the four Atlantic provinces. In the 1961 census, the population was 597,936 (est. July 1, 1962, 608,000), of which 378,633 listed their mother tongue as English and 210,530 as French. The largest religious denomination is Roman Catholic with a membership of 310,607. The 1961 census lists 287,329 persons as members of other denominations, including 94,070 Baptists, 85,710 United Church members, 68,165 Anglicans, and 13,546 Presbyterians. Chief cities, with 1961 populations, are Fredericton, the capital, 19,683; Saint John, 55,153; Moncton, 43,840; Lancaster, 13,848; and Edmundston, 12,791.

Government.—The province is represented in the Canadian federal Parliament by 10 senators (appointed for life), and 10 members (elected) in the House of Commons. The province is nominally administered by a lieutenant-governor (J. Leonard O'Brien, appointed June 6, 1958 to a five-year term). He is advised by a cabinet (headed in 1962 by Louis J. Robichaud) which is drawn from and is responsible to a 52-member House of Assembly. In 1962 the Liberals held 31 seats in the Assembly, the Progressive Conservatives 21.

Finance.—Estimated revenue for the fiscal year 1961–62 was $102,478,450; estimated expenditure, $102,463,176. New Brunswick's funded debt (less sinking funds) and other liabilities was $238,110,144 as of March 31, 1962; the increase in net debt during the year was $7,668,860.

Education.—Education of all children aged 6 to 16 is free and compulsory. Estimated public school enrollment in 1961–62 was 150,024, of which 97,610 were in elementary school, 36,785 in secondary and junior high school, and 15,590 in high school (grades 10–12). Full-time enrollment in New Brunswick's six universities and colleges in 1961–62 was approximately 4,500, the largest number attending the provincial nonsectarian University of New Brunswick at Fredericton. (See also below, *Events, 1962.*)

Transportation and Communications.—New Brunswick is served by both the Canadian National and the Canadian Pacific railways (although 1962 marked the end of passenger service by both lines for the capital city, Fredericton) and by Trans-Canada and Maritime Central airlines. There are 13,363 miles of roads (3,549 miles surfaced). The province has 4 daily newspapers, 11 radio stations, and 2 television stations. There is daily ferry service across the Bay of Fundy between Saint John and Digby, Nova Scotia, and between Tormentine and Borden, Prince Edward Island; there is also a winter passenger service to Great Britain from Saint John. A new bridge between Campobello Island and Lubec, Me. and a new Trans-Canada Highway bridge across the Jemseg River were opened in 1962. Of the total projected 382 miles of Trans-Canada Highway, New Brunswick has completed 220 miles.

Agriculture.—Farms and farmlands are decreasing in number and size in New Brunswick, although the value of farm capital in the province rose to $183.3 million in 1961 from $175 million in the previous year, an increase of 9%. Cash income from sales of farm products decreased to $42,164,000 in 1961 from $47,597,000 in 1960. The number of farms in New Brunswick has decreased from 22,116 in 1956 to 15,571 in 1961. Field crops, including cereal grains and potatoes, together with livestock and pulpwood sales, provide a major part of farm income, although small fruits and poultry are also important.

Forestry and Fisheries.—More than 15.5 million acres —80% of the total land area—of New Brunswick is forested land, about half of which is owned by the crown. There are seven pulp or paper-manufacturing establishments in the province. Pulpwood production for the first eight months of 1962 was 716,966 cords, an appreciable increase from the 600,623 cords in the same period of 1961. Fish landings for the first eight months of 1962 were valued at $5.7 million, compared with $4.8 million for the same period of 1961.

Minerals.—Mineral production in 1961 was valued at $17.8 million, compared with $18.1 million in 1959. Coal production and structural materials accounted for about 45% each of the total. Coal production for the first nine months of 1962 was 617,361 tons, compared with 657,202 tons for the same period of 1961. Peat moss production was valued at $820,000 in 1960.

Power Development.—Production of power by the New Brunswick Electric Power Commission's plants increased 15.1% by March 1962 over the previous year to a total of 1,286,953,430 kw.-hr. Construction began on a 60,000-kw. unit at Newcastle Creek on Grand Lake in 1962. A new addition to the commission's generating capacity, this unit is designed to burn coal from the Minto field and is planned for operation in December 1963.

Industry.—Manufacturing is New Brunswick's leading economic activity, the most important segments being the pulp and paper, fish processing and packing, sawmilling, and miscellaneous food industries. Forestry is the principal primary industry, followed by agriculture. The estimated gross value of factory shipments in 1961 was $373.1 million, up 9.3% from 1960; the January–June 1962 value of $163.8 million, however, was 9.5% lower than the comparable 1961 value.

Events, 1962.—In the national elections of June 18, New Brunswick's citizens elected 6 Liberals and 4 Progressive Conservatives to the House of Commons. Previously New Brunswick was represented in the House by 7 Progressive Conservatives and 3 Liberals. In a provincial by-election, held on December 3, two Progressive Conservatives were elected to fill vacant King's County seats.

Following promulgation of the controversial Liquor Act in May 1962 (passed by the provincial legislature in the 1961 session) the legalized sale of liquor by the glass in hotels, cocktail lounges, private clubs and taverns (in the latter case, for men only) became a reality in New Brunswick.

The Royal Commission on Higher Education in New Brunswick, established in 1961, submitted its report in June 1962. From this first full-scale inquiry in more than a century came recommendations for consolidation of the three French-language institutions into one, to be called the University of Moncton; removal of St. Thomas University from Chatham to the University of New Brunswick campus in Fredericton; and establishment of a second University of New Brunswick campus in Saint John. If the recommendations are carried out, the number of institutions of higher learning in the province would be reduced to the following three: the University of New Brunswick, the University of Moncton, and Mount Allison University. The commission estimated that its plan would cost the provincial government about $3,487,000 in 1962–63, increasing in stages to $4,681,000 in 1966–67.

A New Brunswick Symphony Orchestra, the first provincial symphony organized in Canada, made its debut in November under the direction of Janis Kalnins.

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NEW CALEDONIA

A French overseas territory in the western South Pacific, New Caledonia comprises the island of New Caledonia (area, 6,530 square miles) and adjacent island dependencies: the Loyalty Islands (area, 756 square miles), Isle of Pines (52 square miles), Walpole Island, and the Huon, Chesterfield, and Belep islands. The territory's aggregate area is about 7,340 square miles, and the population (1961 est.) totals 78,000. Indigenous Kanakas comprise about 52% of the population; Europeans (mainly French), 34%; Vietnamese, 6%; and Indonesians, 4.5%. Nouméa (est. pop., 23,000) is the capital.

The territory is under a governor (Laurent Péchoux, who is also the high commissioner of the French Republic in the Pacific), assisted by a Government Council and a 30-member Territorial Assembly elected for 5 years by universal suffrage. The government budget for 1960 was balanced at 1,145 million francs CFP; the extraordinary budget totaled 94 million (89.76 francs CFP equal

U.S.$1). There were in 1960 about 18,200 pupils in 123 public and some 100 private schools.

The economy is based on mining and agriculture. Production for export (in metric tons, 1960): nickel ore, 1,013,334; chrome ore, 22,099; nickel matte, 15,521; nickel castings, 46,526; copra, 1,085; green coffee, 1,889; and shell, 160. Exports in 1961 totaled 5,026 million francs CFP (up 9% from 1960); imports, 4,284 million (up 24%). Trade is mainly with France. Nouméa is served by international steamship lines and airlines.

NEW GUINEA. See PAPUA AND NEW GUINEA; WEST NEW GUINEA.

NEW HAMPSHIRE

A New England state of the United States, New Hampshire ranks 45th among the states in area (land, 9,014 square miles; inland water, 290) and 45th in population (632,000 on July 1, 1962, a 4.1% increase from the 1960 census figure of 606,921). Urban places, including towns (T), with populations above 7,000 in 1960:

Berlin	17,821	Laconia	15,288
Claremont	13,563	Lebanon	9,299
Concord (*capital*)	28,991	Manchester	88,282
Dover	19,131	Nashua	39,096
Exeter T.	7,243	Portsmouth	25,833
Goffstown,	7,230	Rochester	15,927
Hanover T.	7,329	Salem T.	9,210
Keene	17,562	Somersworth	8,529

Government.—Chief executive and judicial officers in 1962 included Wesley Powell (Republican), governor, serving a two-year term; Robert L. Stark, secretary of state; Alfred S. Cloues, treasurer; Leonard S. Hill, comptroller; William Maynard, attorney general; Charles F. Ritch, Jr., commissioner of education; and Frank R. Kenison, chief justice of the 5-member Supreme Court.

The New Hampshire General Court, which convenes in odd-numbered years, comprised 18 Republicans and 6 Democrats in the Senate in 1962 and 239 Republicans, 129 Democrats, and 32 others in the House of Representatives.

Finance.—In the 1962 fiscal year, revenue of $158,165,967 included $43,558,061 from state taxes and $29,632,594 in federal funds. Chief state tax yields were from motor fuels ($14,198,000) and licensing ($17,854,464). Spending of $158,402,850 included $66,058,147 from the general fund, $71,303,913 from the highway fund, and $18,177,681 from the special fund.

Education.—In the 1960–61 school year, public elementary schools staffed by 2,751 teachers enrolled 74,930 pupils; junior high schools with 426 teachers enrolled 8,434; senior high schools with 1,410 teachers enrolled 25,738; and private and parochial schools with 1,447 teachers enrolled 34,405. College enrollment totaled 12,141 in 13 institutions, including 1 junior college and 12 senior colleges and universities.

Estimated public school spending in the 1961–62 school year totaled $50,233,000, including current expenditures of $39,434,000 ($386 per pupil) and capital outlays of $9,559,000. Revenue of $50,708,000 was drawn chiefly from state funds ($2,631,000) and local districts ($38,577,000). Teachers' salaries averaged $4,800 (high school, $5,007; elementary, $4,652). Actual spending for higher education (1961 fiscal year) amounted to $11,008,000.

Public Assistance.—In the 1961 fiscal year, public assistance payments to a monthly average of 9,641 persons totaled $8,192,564. This amount included $5,264,537 for the aged and $2,127,904 for dependent children.

Transportation and Communications.—With 65 miles of highway construction and reconstruction completed in 1961, *highways and roads* on Jan. 1, 1962, totaled 14,097 miles (7,800 surfaced). These served 249,615 *motor vehicles* (as registered between April 1 and Sept. 1, 1962), including 215,513 automobiles. Operating in the state were (1961) 6 *railroads* (using 858 line miles of track); (1962) 2 regularly scheduled *airlines;* and 23 commercial and municipal *airports* and 2 heliports.

Communications media included (1961) 19 AM and 5 FM *radio stations;* 1 *television station;* 9 daily *newspapers* (circulation, 127,385); and (Jan. 1, 1962) 61,000 business and 176,700 residential *telephones.*

Labor Force.—The state's labor force in June 1962 included 9,000 agricultural workers. Nonagricultural employment totaled 220,860, compared with 213,350 a year earlier and an average of 211,390 for the 12 intervening months. Of nonfarm employees, 40.4% were in manufacturing, 16.4% in trade, 15.1% in government services, and 15.1% in service industries. Unemployment dropped to 8,100 in June 1962 from the 12,900 reported a year earlier.

Manufacturing.—Manufacturing engaged 84,069 workers in 1960, including 68,977 in production, and provided a payroll of $342,028,000. Adjusted value added by manufacture totaled $599,002,000.

LEADING NEW HAMPSHIRE MANUFACTURES, 1960

Industry group	Total employees	Total payroll	Adjusted value added by mfr.[1]
		(in thousands)	
Leather and products	21,330	$73,610	$109,037
Electrical machinery	9,949	45,917	97,483
Nonelectrical machinery	9,002	46,322	89,312
Textile mill products	12,197	45,557	84,710
Paper and products	5,894	30,303	65,688
Lumber and wood products	5,337	18,032	23,567
Printing and publishing	3,276	14,882	23,130

[1] For definition, see footnote 1 in the article *Industrial Production.*
(Source: *1960 Annual Survey of Manufactures.*)

Mining.—New Hampshire ranked 48th among the states in the value of its mineral production in 1961, with 0.03% of the national total. It was second in output of sheet mica, and fourth in beryllium. Most of the total value of $5,388,000 was accounted for by sand and gravel ($3,627,000).

A new assessment of the thorium reserve in the White Mountains was reported by geologists in late 1962. A "very conservative" estimate of the deposit places it in the tens of millions of tons, revising sharply upward the previous estimates of the supply. Although extraction of the radioactive element is presently uneconomical, and no technology yet exists for the use of thorium in an atomic reactor, the report does assure the United States of a plentiful supply of nuclear fuel into the indefinite future.

Agriculture.—Cash farm income for the first nine months of 1962 (excluding government payments) totaled $40,346,000, compared with $40,285,000 for the corresponding period of 1961. For the full year 1961, income comprised $43,750,000 from livestock, $10,897,000 from crops, and $793,000 in government payments. Principal income sources in 1961 were wholesale milk, $18,596,000, and eggs, $13,325,000.

The state's 7,000 farms in 1959 had an acreage of 1,124,000 (206,000 in harvested cropland). Livestock on farms on Jan. 1, 1962, included 101,000 cattle and 1,930,000 chickens.

NEW HAMPSHIRE CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Apples (1,000 bu.)	1,180	1,450	1,400
Corn, sweet (1,000 cwt.)	111	128	135
Hay (1,000 tons)	318	263	250
Maple sirup (1,000 gal.)	47	45	35
Potatoes (1,000 cwt.)	418	333	340

(Source: U.S. Department of Agriculture.)

Events, 1962.—Weakened by a year of bitter factional strife, New Hampshire's dominant Republican Party suffered unexpectedly sharp reverses in the November 6 elections as a revitalized Democratic organization captured both the governorship and the remaining term (four years) of the U.S. Senate seat once occupied by the late Styles Bridges. Heading the breakthrough was John W. King, minority leader in the state House of Representatives, who became New Hampshire's first Democratic governor-elect in 40 years by defeating John Pillsbury, veteran Republican state legislator and utilities company executive, 135,481 to 94,567. Aided in part by King's large plurality,

John King (left), first Democratic governor of New Hampshire since 1924, shares victory with Thomas J. McIntyre, New Hampshire's first Democratic senator in 24 years.

WIDE WORLD

Thomas J. McIntyre, former mayor of Laconia, defeated Republican Congressman Perkins Bass, 117,612 to 107,999, to become the state's first Democratic senator elected since 1932.

Incumbent Gov. Wesley Powell, whose bid for a third-term nomination had been crushed by Pillsbury in the September 11 Republican primary, contributed to his party's setbacks by openly endorsing and campaigning for the Democratic gubernatorial nominee, King. Less dramatic but equally disastrous Republican dissension also wrecked the aspirations of Congressman Bass, whose narrow victory in the Republican primary for the short-term Senate nomination (by a margin of less than 1,700) was viewed by his three defeated opponents with a noticeable lack of enthusiasm. Doloris Bridges, widow of the late senator and runner-up in the hard-fought contest, subjected Bass to a recount and to a hearing before the state Supreme Court for alleged irregularities in the filing of campaign expenditures. Neither Sen. Maurice J. Murphy, Jr., who ran third in the primary, and whose interim appointment by Governor Powell in December 1961 had sparked the first round of intraparty dispute, nor Rep. Chester E. Merrow, who relinquished 20 years of service in the 1st District to run a poor fourth, openly endorsed Bass, and some of their followers reportedly worked for McIntyre in the postprimary campaign.

New Hampshire's traditional Republicanism was evident, however, in all other contests. U.S. Sen. Norris Cotton coasted to reelection by defeating his Democratic opponent, Alfred J. Catalfo, Jr., 135,035 to 90,444. James C. Cleveland, former state senator, scored in the 2d Congressional District over Democratic Eugene S. Daniell, 56,025 to 41,526. In the 1st District, former state Attorney General Louis C. Wyman defeated Oliver J. Huot, Democratic mayor of Laconia, 65,629 to 57,868. Republicans also retained their usual majorities in both houses of the state legislature and in the Governor's Council.

The turbulence of state politics failed to obscure other headline events in 1962, including the arrival, in July, of a contingent of "reverse Freedom Riders" from Louisiana. In November, a new president was selected for the University of New Hampshire. Chosen to fill the university post vacated by Dr. Eldon L. Johnson in August 1961 was Dr. John W. McConnell, dean of the School of Industrial and Labor Relations, Cornell University.

"Events" by: JOSEPH P. FORD,
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NEW HEBRIDES. See WESTERN PACIFIC ISLANDS, BRITISH.

NEW JERSEY

A Middle Atlantic state of the United States, New Jersey ranks 46th among the states in area (land, 7,521 square miles; inland water, 315) and 8th in population (6,245,000 on July 1, 1962, a 2.9% increase from the 1960 census figure of 6,066,782). Urban places, including urban townships (UT), with populations above 25,000 in 1960:

Atlantic City	59,544	New Brunswick	40,139
Bayonne	74,215	New Hanover (UT)	28,528
Belleville	35,005	Newark	405,220
Bergenfield	27,203	North Bergen (UT)	42,387
Bloomfield	51,867	Nutley	29,513
Camden	117,159	Orange	35,789
Clifton	82,084	Parsippany-Troy Hills (UT)	25,557
Cranford (UT)	26,424	Passaic	53,963
Delaware (UT)	31,522	Paterson	143,663
East Orange	77,259	Pennsauken (UT)	33,771
Edison (UT)	44,799	Perth Amboy	38,007
Elizabeth	107,698	Plainfield	45,330
Englewood	26,057	Rahway	27,699
Ewing (UT)	26,628	Ridgewood	25,391
Fair Lawn	36,421	Teaneck (UT)	42,085
Garfield	29,253	Trenton (*capital*)	114,167
Hackensack	30,521	Union City	52,180
Hamilton (UT)	65,035	Union (UT)	51,499
Hoboken	48,441	Vineland	37,685
Irvington	59,379	Wayne (UT)	29,353
Jersey City	276,101	Westfield	31,447
Kearny	37,472	West New York	35,547
Linden	39,931	West Orange	39,895
Long Branch	26,228	Woodbridge (UT)	78,846
Middletown (UT)	39,675		
Montclair	43,129		

Government.—Chief executive and judicial officers in 1962 included Richard J. Hughes (Democrat), governor, serving a four-year term; Robert J. Burkhardt, secretary of state; John A. Kervick, treasurer; Frank Durand, auditor; Arthur J. Sills, attorney general; Frederick M. Raubinger, commissioner of education; and Joseph Weintraub, chief justice of the 7-member Supreme Court.

The New Jersey Legislature, which convenes annually, comprised 10 Republicans, 10 Democrats, and one vacancy in the Senate in 1962 (see also below, *Events, 1962*) and 38 Democrats and 22 Republicans in the General Assembly.

Legislation, 1962.—The New Jersey Legislature approved a budget of $449,401,711 for the fiscal year ending June 30, 1963. To meet the cost of special appropriations for shore rehabilitation programs (see below, *Events, 1962*), the state's horse racing season was lengthened and the inheritance tax increased. The tax begins at 1% on amounts from $5,000 to $15,000 and increases to 16% on amounts over $3,200,000.

From funds made available by a 1960 bond issue, over $33 million was appropriated for the construction of mental and correctional institutions. The two largest projects authorized were a new 1,000-patient institution for the mentally retarded at Woodbridge and a medium-security prison at Leesburg.

Counties were authorized, either independently or jointly, to establish county colleges whose programs of instruction would be limited to two years beyond high school. Within the limits of available funds, state financial support was authorized to provide 50% of the cost of capital projects and one third of the operational cost or $200 for each full-time student.

The state's civil rights law was amended to prohibit discrimination against the aged. Other significant measures to be approved included: the requirement of a fiscal note indicating the cost of any legislative proposal affecting state revenues or expenditures; an increase (from 15%) to 35% in the proportion of state college scholarships which may be used out of state; the creation of the New Jersey Expressway Authority; authorization of counties and municipalities to enter into regional councils; and ratification of the proposed amendment to the U.S. Constitution outlawing poll taxes as a requirement for voting. The Port of New York Authority was authorized to acquire and expand the Hudson Tubes of the Hudson and Manhattan Railroad as part of a planned New York–New Jersey rapid transit system.

Finance.—In the 1961 fiscal year, revenue of $862,052,000 included $385,666,000 from state taxes and $112,826,000 in federal funds. Chief tax yields were from motor fuels ($100,125,000), licensing ($117,182,000), and corporate incomes ($26,350,000). Spending of $770,244,000 included $165,667,000 for education, $79,684,000 for health, welfare, and correction, and $141,349,000 for highways.

Education.—In the 1961–62 school year, public elementary schools staffed by 28,095 teachers enrolled 748,206 pupils; junior high schools with 5,587 teachers enrolled 84,267; junior-senior high schools with 15,074 teachers enrolled 271,225; and parochial schools with 7,914 teachers enrolled 298,530. College enrollment (as of March 1, 1962) totaled 95,604 in 62 institutions, in-

cluding 9 junior colleges, 28 senior colleges and universities, and 25 other institutions.

Estimated public school spending in the 1961–62 school year totaled $679.2 million, including current expenditures of $535 million ($528 per pupil) and capital outlays of $115 million. Revenue of $728 million was drawn chiefly from state funds ($143 million) and local districts ($470 million). Teachers' salaries averaged $6,104 (high school, $6,310; elementary, $5,990). Actual spending for higher education (1961 fiscal year) comprised $30,160,806 for operations and $11,143,042 for construction and improvements.

Public Assistance.—In the 1961 fiscal year, public assistance payments to a monthly average of 107,357 persons totaled $47,973,000. This amount included $16,337,000 for the aged and $24,451,000 for dependent children.

Transportation and Communications.—With 10 miles of new state highway construction completed in 1961, *highways and roads* on Dec. 31, 1961, totaled 32,330 miles (27,910 surfaced). These served 2,607,453 *motor vehicles* (as registered on July 1, 1961), including 2,212,-441 automobiles. Operating in the state in 1961 were 22 *railroads* (using 1,973 line miles of track); 10 regularly scheduled *airlines;* and 70 commercial and municipal *airports.*

Communications media included (1962) 28 AM and 19 FM *radio stations;* 33 daily *newspapers* (circulation, 2,446,130) and 221 other newspapers (856,701); and (January 1) 808,400 business and 2,311,100 residential *telephones.*

Labor Force.—The state's labor force in August 1962 included 2,087,100 nonagricultural employees, compared with 2,053,300 a year earlier and an average of 2,042,900 for the 12 months ending June 1962. Of nonfarm employees in August 1962, 38.5% were in manufacturing, 18.6% in trade, and 13.8% in service industries. Unemployment in August 1962 stood at 156,000, compared with 173,000 for the previous August.

Manufacturing.—Manufacturing engaged 813,-832 workers in 1960, including 579,082 in production, and provided a payroll of $4,473,910,000. Adjusted value added by manufacture totaled $8,-564,659,000.

LEADING NEW JERSEY MANUFACTURES, 1960

Industry group	Total employees	Total payroll (in thousands)	Adjusted value added by mfr.[1]
Chemicals and products	80,802	$516,581	$1,655,721
Electrical machinery	117,425	674,621	1,086,583
Food and kindred products	54,429	323,753	945,539
Transportation equipment	51,202	331,542	603,389
Fabricated metals	55,673	309,621	571,731
Nonelectrical machinery	56,961	350,771	570,825
Primary metals	37,842	223,097	404,609
Apparel and related products	75,090	234,623	383,966
Printing and publishing	32,915	184,221	340,774
Stone, clay, glass products	33,584	168,578	326,536
Instruments and related products	29,892	190,036	325,660

[1] For definition, see footnote 1 in the article *Industrial Production.*
(Source: *1960 Annual Survey of Manufactures.*)

Fisheries.—The commercial fish and shellfish catch in 1961 totaled 397,223,485 pounds valued at $10,882,682. Leading species were menhaden (329,372,143 pounds valued at $3,643,866) and clams (28,370,635; $2,412,529).

Mining.—In 1961, New Jersey ranked 37th among the states in the value of its mineral production, with 0.33% of the national total. Its 1961 total of $59,208,000 was 5% over that of 1960. Leading minerals were stone (valued at $24,-539,000) and sand and gravel ($20,895,000).

Agriculture.—Cash farm income for the first nine months of 1962 (excluding government payments) totaled $220,541,000, compared with $223,913,000 for the corresponding period of 1961. For the full year 1961, income comprised $156,726,000 from livestock, $130,841,000 from crops, and $3,527,-000 in government payments. Principal income sources in 1961 were eggs, $66,298,000; wholesale milk, $56,372,000; and tomatoes, $15,925,000.

The state's 15,000 farms in 1959 had an acreage of 1,379,000 (658,000 in harvested cropland). Livestock on farms on Jan. 1, 1962, included 196,-000 cattle, 165,000 hogs, and 10,925,000 chickens. An average of 27,000 family and 17,000 hired workers engaged in farming in 1961.

NEW JERSEY CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Apples (1,000 bu.)	2,845	3,000	3,100
Asparagus (1,000 cwt.)	735	685	658
Cabbage (1,000 cwt.)	499	608	576
Corn, sweet (1,000 cwt.)	883	1,012	1,050
Corn for grain (1,000 bu.)	6,718	5,772	5,694
Lettuce (1,000 cwt.)	819	634	753
Peaches (1,000 bu.)	2,044	1,700	2,600
Peppers (1,000 cwt.)	441	480	507
Potatoes (1,000 cwt.)	3,966	4,845	4,335
Strawberries (1,000 lb.)	9,667	14,580	14,000
Sweet potatoes (1,000 cwt.)	1,370	1,350	1,750
Tomatoes (1,000 cwt.)	806	924	825

(Source: U.S. Department of Agriculture.)

Events, 1962.—New Jersey moved a step nearer to the adoption of a broad-based tax with the release in January 1963 of a long-awaited report by the Commission on State Tax Policy. In April, the Legislature had directed the commission to re-examine the entire tax structure with a view to insuring "a fair and equitable distribution of the costs of governmental services." Following a series of public hearings, and after extensive deliberation, the commission recommended enactment of a 3 percent sales tax to apply to all purchases except food and prescription drugs.

Storms and flooding along the shore in early March caused damage estimated at over $80 million. Of this sum, private property damage amounted to $45 million and public property damage to $35 million, including beaches, roads, bridges, and sewers. Homes that had been considered entirely safe from flooding were completely destroyed, often leaving the owner with no tangible evidence of his property other than the continuing payments on his mortgage.

The Army Engineers moved millions of tons of sand to damaged beaches. In August, Governor Hughes reported that the federal Office of Emergency Planning had approved aid amounting to $6.6 million for the purpose of rebuilding public facilities. The state Legislature appropriated $2.5 million for disaster relief to be distributed to counties and municipalities on a 50–50 matching basis. An additional $4 million was appropriated, also on a matching basis, for beach erosion projects.

The election of a senator in Union County attracted statewide attention. Early in the year, by a vote of 11–10, the Republicans had organized the Senate. Shortly afterward, owing to ill health, Sen. Robert C. Crane resigned. Thus, on the election to fill this one vacancy hinged control of one house of the state Legislature. In an especially

Section of the main street of Brigantine, N.J., an island suburb of Atlantic City, is leveled by ocean waves driven inshore during the disastrous Atlantic storm of March 6–8.

WIDE WORLD

spirited contest, Republican Assemblyman Nelson F. Stamler defeated his Democratic opponent, H. Roy Wheeler, former mayor of Linden.

In the congressional elections eight seats were won by Republicans and seven by Democrats. The record off-year turnout of 2,018,321 voters constituted 64 percent of those registered.

Efforts of a House Judiciary subcommittee to compel the production of subpoenaed records of the Port of New York Authority failed when the U.S. Supreme Court refused to review a decision of the Court of Appeals. Austin J. Tobin, executive director of the Port Authority, with the backing of the governors of both New York and New Jersey, had declined to submit internal administrative records requested by the congressional investigating committee. After prolonged litigation, Tobin was convicted of contempt of Congress. In June, the conviction was reversed by the U.S. Court of Appeals, and the case was closed in November when the Supreme Court denied the Justice Department's petition for review.

Milk price controls were suspended by the governor in mid-October following repeated expressions of dissatisfaction by various groups over the prices established by the state's Office of Milk Industry. The drop in prices which occurred after the suspension of controls led to the extensive cancellation of contracts by milk dealers who said they could no longer afford to purchase from New Jersey farmers. In an effort to prevent chaos in the industry, rural legislators persuaded the governor to agree to legislation re-establishing price controls during a 180-day moratorium, during which an analysis of costs would be made and more effective systems of accounting and enforcement established. Pending completion of this study, new lower statewide minimum prices would prevail (effective December 10), and dealers would be required to maintain their contracts.

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NEW MEXICO

A Southwestern state of the United States, New Mexico ranks 5th among the states in area (land, 121,510 square miles; inland water, 156) and 36th in population (1,020,000 on July 1, 1962, a 7.2% increase from the 1960 census figure of 951,023). Urban places with populations above 15,000 in 1960:

Alamogordo	21,723	Hobbs	26,275
Albuquerque	201,189	Las Cruces	29,367
Carlsbad	25,541	Roswell	39,593
Clovis	23,713	Santa Fe (*capital*)	33,394
Farmington	23,786		

Government.—Chief executive and judicial officers in 1962 included Edwin L. Mechem (Republican), governor, serving a two-year term (see below, *Events, 1962*); Tom Bolack, lieutenant governor; Betty Fiorina, secretary of state; Joe Callaway, treasurer; Robert D. Castner, auditor; Earl E. Hartley, attorney general; Tom Wiley, superintendent of public instruction; and James C. Compton, chief justice of the 5-member Supreme Court.

The New Mexico Legislature, which convenes in odd-numbered years, comprised 28 Democrats and 4 Republicans in the Senate in 1962 and 59 Democrats and 7 Republicans in the House of Representatives.

Legislation, 1962.—The certainty of a sizable school fund deficit caused Governor Mechem to call the Legislature into special session on February 12–24. The lawmakers were presented with two proposals for school aid: the "Mort Plan" of the State Department of Education for state and local support on a partnership basis; and the administration "Gott Plan" for a comprehensive overhaul of school finances, mandatory consolidation of small districts, and legislative control over educational procedures.

A compromise omnibus bill was adopted. A total budget of $91,500,000, with the state's share set at $80,640,000, provided for a support level of $270 per student based on weighted average daily membership. Mandatory consolidation of county school systems having 1,500 pupils or less with adjacent municipal units was included, but not legislative control over curriculum or educational procedures. Relations between the Republican governor and the Democratic Legislature were harmonious until the governor's final message—received on the closing day of the session—sharply criticized the revenue measures as inadequate and demanded a temporary 50% increase in the sales tax. Continued advocacy of the sales tax increase was a major factor in the defeat of Mechem on November 6 (see below, *Events, 1962*).

Other legislation included: authority to transport underground water outside the state; appropriation for a study of capitol expansion; and provision for quarterly rather than monthly payments of some taxes. Defects in acts passed in 1961 were remedied, including the allocation of increased cigarette taxes to the general fund and the withholding of income tax from nonresidents.

Finance.—In the 1961 fiscal year, revenue of $337,091,897 included $87,722,594 from state taxes and $58,373,547 in federal funds. Chief tax yields were the 2% general sales tax ($38,433,171), motor fuel taxes ($25,840,300), and licensing ($16,019,310). Spending of $332,536,103 included $48,531,242 for education, $30,011,279 for health, welfare, and safety, and $56,730,963 for highways.

Education.—In the 1961–62 school year it was estimated that public elementary schools staffed by 5,220 teachers enrolled 150,439 pupils; secondary schools with 3,646 teachers enrolled 100,305; and parochial schools with 824 teachers enrolled 23,641. College enrollment totaled 19,253 in 9 institutions, including 1 junior college and 8 senior colleges and universities.

Estimated public school spending in the 1961–62 school year totaled $92.1 million, including current expenditures of $80 million ($361 per pupil) and capital outlays of $10 million. Revenue of $104,582,000 was drawn chiefly from state funds ($71,947,000) and local districts ($12,135,000). Teachers' salaries averaged $5,650 (high school, $5,790; elementary, $5,500). Actual spending for higher education (1961 fiscal year) totaled $32,061,000.

Public Assistance.—In the 1962 fiscal year, public assistance payments to a monthly average of 283,000 persons totaled $23,225,000. This amount included $11,158,000 for dependent children and $9,103,000 for the aged.

Transportation and Communications.—An aggregate of 245 miles of highway construction and reconstruction were completed in the 1962 fiscal year. *Highways and roads* on Jan. 1, 1962, totaled 63,510 miles (9,772 surfaced). These served 439,929 *motor vehicles* (as registered on June 30, 1962), including 305,287 automobiles. Operating in the state were: (1962) 6 *railroads* (with a 2,500-mile right of way); (1961) 3 regularly scheduled *airlines;* and 57 commercial and municipal *airports.*

Communications media included (1961) 1 FM and 44 AM *radio stations;* 7 *television stations;* 19 daily *newspapers* (circulation, 188,072) and 43 other newspapers; and (Jan. 1, 1962) 116,600 business and 198,700 residential *telephones.*

Labor Force.—The state's labor force on Dec. 31, 1961, included 158,230 nonagricultural workers, compared with 155,792 a year earlier and an average of 157,690 for the 12 intervening months. Of nonfarm employees, 31% were in trade, 19% in service industries, and 13% in mining and quarrying. Unemployment on Dec. 15, 1961, totaled 7,900, compared with 8,668 a year earlier.

Manufacturing.—In 1961 an average of 16,200 persons were employed in manufacturing establishments, receiving a total payroll of $83,669,073. The 1960 average was 13,672 workers, including 9,326 in production; the total payroll amounted to $65,820,000; and adjusted value added by manufacture totaled $122,856,000.

Leading industries in 1960 were food and kindred products (3,687 workers, receiving $14,666,000 in wages, and adding $31,678,000 in adjusted value by manufacture) and stone, clay, and glass products (1,367; $6,853,000; $14,703,000).

Mining.—New Mexico ranked sixth among the states in the value of its mineral output in 1961, with 3.80% of the national total. It was first in output of carbon dioxide, perlite, potassium salts, and uranium; second in manganiferous ore; and third in beryllium, helium, and pumice.

Agriculture.—Cash farm income for the first nine months of 1962 (excluding government payments) totaled $110,446,000, compared with $100,093,000 for the corresponding period of 1961. For the full year 1961, income comprised $151,290,000 from livestock, $89,151,000 from crops,

NEW MEXICO MINERAL PRODUCTION, 1961
(In short tons, except as noted)

Mineral	Quantity	Value
Coal	412,000	$ 2,477,000
Copper (recoverable content of ores)	79,606	47,764,000
Gypsum	105,000	386,000
Helium (1,000 cu. ft.)	42,224	762,000
Lead (recoverable content of ores)	2,332	480,000
Lime	25,000	350,000
Natural gas (1,000 cu. ft.)	789,662,000	86,073,000
Natural-gas liquids (1,000 gal.)	958,155	42,773,000
Perlite	245,654	2,159,000
Petroleum (1,000 bbl.)	112,083[1]	320,784,000[1]
Potash (K_2O equivalent)	2,523,000	96,380,000
Pumice	339,000	879,000
Salt	33,000	284,000
Sand and gravel	12,523,000	10,049,000
Silver (fine ounces)	283,000	261,000
Stone	1,853,000	2,206,000
Uranium ore	3,631,036	62,482,000
Zinc (recoverable content of ores)	22,900	5,267,000
Other minerals	...	7,739,000
Total	...	$688,908,000[2]

[1] Preliminary. [2] Total adjusted to eliminate duplication in the value of raw materials used in the manufacture of cement and lime. (Source: U.S. Bureau of Mines.)

and $14,120,000 in government payments. Principal income sources in 1961 were cattle, $121,279,000; cotton lint, $39,660,000; wholesale milk, $11,554,000; and wheat, $11,515,000.

The state's 16,000 farms in 1959 had an acreage of 46,293,000 (1,077,000 in harvested cropland). Livestock on farms on Jan. 1, 1962, included 1,221,000 cattle, 1,191,000 sheep, and 942,000 chickens.

NEW MEXICO CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Apples (1,000 bu.)	564	370	380
Cotton lint (1,000 bales)	296	300	275
Cottonseed (1,000 tons)	122	124	114
Hay (1,000 tons)	542	723	796
Onions (1,000 cwt.)	367	603	532
Pecans (1,000 lb.)	4,228	4,650	7,500
Sorghum grain (1,000 bu.)	4,998	9,310	10,152
Wheat (1,000 bu.)	2,089	8,004	4,200

(Source: U.S. Department of Agriculture.)

Events, 1962.—Jack M. Campbell, Roswell attorney and former speaker of the state House of Representatives, won 53% of the vote for governor to defeat Republican incumbent Edwin L. Mechem in the November elections. Democratic U.S. Representatives Joseph M. Montoya and Thomas G. Morris also won, as Democrats captured all state and most county posts. Voters also passed a constitutional amendment providing for future elections of governor and lieutenant governor from the same party.

Mechem resigned as governor on November 30 in favor of Lt. Gov. Tom Bolack, and was immediately appointed by Bolack to fill the unexpired term of senior U.S. Sen. Dennis Chavez, who had died suddenly on November 18. Chavez, fourth-ranking member of the Senate, was chairman of the Public Works Committee and member of both the Appropriations and the Military Affairs committees.

Economic conditions, especially in the depressed northern counties, were eased somewhat by federal funds to improve recreation facilities in national forests, by the completion of several dams in the Santa Cruz Watershed Project, and by the creation of the Pojoaque Watershed District. The Northern New Mexico Resources Development Association was organized to plan resource utilization. The $42 million Navajo Dam on the San Juan River, the first major unit of the Colorado River Storage Project, was dedicated on September 15 (see also DAMS).

A cold dry spring, summer drought, and hail throughout much of the state caused a sharp decline in agricultural production, except for pecans and peanuts. Fall precipitation, however, improved grazing lands, and stock production was nearly normal. An outbreak of anthrax among Taos Indian Pueblo stock in November necessitated a quarantine of all Taos County livestock. Uranium and potash production declined, the latter partly because of a crippling two-month summer strike.

Restrictions on federal highway funds (resulting from the 1961 Blatnik subcommittee's unfavorable report of political influence and construction malpractices) were lifted after reforms were effected.

The Legislature met in a special February session to deal with the crisis in school financing (see above, *Legislation, 1962*).

The mounting school population aggravated the already acute problem of educational finance. Pueblo Indian leaders sharply criticized the Bureau of Indian Affairs for transforming the Santa Fe Indian School into a special Institute of American Art for gifted students when basic educational facilities for Indian children were still inadequate. The successful training of 85 students for Peace Corps service in Latin America prompted the University of New Mexico to expand the program, and the Pueblo of Acoma requested that impoverished Indian reservations be included in the Peace Corps program.

The Atomic Energy Commission was authorized, on September 29, to dispose of all government property not directly involved in atomic energy projects in the federal city of Los Alamos. Present occupants will be given priority in purchasing homes and stores, and municipal facilities will be donated to the new city government. On November 21 a $3,500,000 Air Force Nuclear Effects Research Laboratory was dedicated at Kirtland Air Force Base, Albuquerque.

"Legislation" and "Events" by:
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NEW ORLEANS

The state's principal city, New Orleans, La., covers a land area of 198.8 square miles and a water area of 164.7. Its 1960 population of 627,525 ranked New Orleans 15th in the United States and 5th in the South. The metropolitan area (1,769.5 sq. mi., of which 1,118 is land) had a 1960 population of 868,480, including 240,955 residents of St. Bernard and Jefferson parishes.

The city has a strong mayor-council government. Mayor Victor H. Schiro, a Democrat, is serving his first four-year term, having been inaugurated on May 7, 1962. A chief administrative officer, serving at the mayor's pleasure, is delegated much administrative authority. The City Council is composed of seven members serving four-year terms, five of whom are elected from districts and two elected at-large.

City financial data (1962): operating budget, $34,148,380; capital budget, $12,597,197; long-term general obligation bonded debt, $90,532,000; water revenue bonded debt, $7,584,000; and a special 2-mill tax bonded debt for sewerage, water, and drainage, $4,000,000. A 34.5 mill tax is collected, of which the city receives 9.5 mills on a base of 85% of assessed value, and the public school system receives 13 mills on a 100% base.

Economic data (1961): employment, 317,000; unemployment, 21,950; metropolitan retail sales, $1,044 million; value of building permits, $70,017,475.

Across its more than 62 miles of wharves, the Port of New Orleans in 1961 handled foreign trade totaling 13 million tons, valued at $1.79 billion. Exports were up 15% in tonnage and 4% in dollar value; imports were down 17% in tonnage and 3% in value. A total of 4,738 deep-draft vessels called at the port. Almost 210 million bushels of grain were exported, making New Orleans one of the world's leading grain ports. During 1961 more export railroad cars (125,874) of cargo were unloaded than at any other port in the nation.

WIDE WORLD

Women cheer as white parents withdraw their children from a newly desegregated school in New Orleans, September 6.

Because of its outstanding contribution to United States export expansion, the Port of New Orleans, on May 4, 1962, became the first in the nation to receive the President's "E" Certificate of Service. At the dedication of a new $10 million wharf marking the occasion, President Kennedy delivered a major foreign trade policy speech.

By mid-1962, dredging work on the Mississippi River-Gulf outlet was about half completed and plants were locating along its route. (See also CANALS.)

The National Aeronautics and Space Administration and the prime contractors, Boeing and Chrysler, were vigorously preparing for production of the first stage of the Saturn rocket, as well as larger rocket boosters to be produced and assembled at the Michoud Ordnance plant, located in eastern New Orleans. A static testing area will be located in nearby Mississippi.

In accordance with the grade-a-year desegregation program ordered by a federal court two years ago, 106 Negroes were enrolled in New Orleans public schools by the fall of 1962. The Roman Catholic Archdiocese of New Orleans desegregated its primary and secondary schools for the first time during the year. (Since no record of race is kept in the Catholic schools, Negro enrollment there was not reported.) Within the city, growing acceptance of desegregation was the rule, and calm prevailed. Desegregation of chain-store lunch counters in the fall of 1962 also occurred peacefully.

Mayor Victor H. Schiro, appointed to the office the previous year, won election in his own right in 1962. He easily defeated State Sen. Adrian G. Duplantier in a run-off Democratic primary on March 3 and Republican E. Ross Buckley in the election of April 3.

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NEW YORK

A Middle Atlantic state of the United States, New York ranks 30th among the states in area (land, 47,939 square miles; inland water, 1,637) and first in population (17,402,000 on July 1, 1962, a 3.7% increase from the 1960 census figure of 16,782,304). Cities, villages, and unincorporated places (U) with populations above 25,000 in 1960:

Albany (*capital*)	129,726	Elmont (U)	30,138
Amsterdam	28,772	Franklin Square (U)	32,483
Auburn	35,249	Freeport	34,419
Baldwin (U)	30,204	Hempstead	34,641
Binghamton	75,941	Hicksville (U)	50,405
Buffalo	532,759	Ithaca	28,799
Cheektowaga-Northwest (U)	52,362	Jamestown	41,818
East Meadow (U)	46,036	Kingston	29,260
Eggertsville (U)	44,807	Lackawanna	29,564
Elmira	46,517	Levittown (U)	65,276
		Lockport	26,443
Long Beach	26,473	Rockville Centre	26,355
Massapequa (U)	32,900	Rome	51,646
Mount Vernon	76,010	Schenectady	81,682
Newburgh	30,979	Syracuse	216,038
New Rochelle	76,812	Tonawanda (U)	83,771
New York City	7,781,984	Troy	67,492
Niagara Falls	102,394	Utica	100,410
North Tonawanda	34,757	Valley Stream	38,629
Oceanside (U)	30,448	Wantagh (U)	34,172
Plainview (U)	27,710	Watertown	33,306
Poughkeepsie	38,330	White Plains	50,485
Rochester	318,611	Yonkers	190,634

Government.—Chief executive and judicial officers in 1962 included Nelson A. Rockefeller (Republican), governor, serving a four-year term; Malcolm A. Wilson, lieutenant governor; Mrs. Caroline K. Simon, secretary of state; Arthur Levitt, comptroller; Louis J. Lefkowitz, attorney general; James E. Allen, Jr., commissioner of education; and Charles S. Desmond, chief judge of the 7-member Court of Appeals.

The New York Legislature, which convenes annually, comprised 33 Republicans and 25 Democrats in the Senate in 1962 and 84 Republicans and 66 Democrats in the Assembly.

Legislation, 1962.—The Legislature passed 1,278 bills during its regular session (January 3–March 31) out of a record total of 9,159 bills introduced (322 more than in 1961). Of these, the governor vetoed 265. The major enactments included the following:

Budget and Taxation.—Approved the spending of $2,591,000,000 for the fiscal year 1962–63, plus $78,000,000 in supplemental budgets. Abandoned the 10% state income tax rebate authorized in 1961. Accelerated collection dates of corporation franchise and bank taxes to produce $90,000,000 more revenue in 1963. Authorized New York State residents working out of state to deduct from their New York State income tax indebtedness any payments made in the state in which they work; revised nonresident income tax laws to prohibit out-of-state residents working in New York from deducting taxes paid their home state from their New York obligation.

Education.—Revised the formula for allocation of state funds to local school districts, thus increasing state aid for the school year 1962–63 by $121 million, of which sum the City of New York received $48 million. Established a construction fund for the State University of New York. Increased the minimum salary for teachers from the existing $4,200–$6,200 range to $4,500–$6,800.

New York City.—Approved the transfer of residential rent control from the state to the city. Empowered the city to acquire the Fifth Avenue Coach Company bus lines by condemnation and to operate their routes through a subsidiary of the Transit Authority. Approved advance in payment dates of gross receipts taxes to produce an estimated $50 million in additional revenue for the 1962–63 fiscal year. Authorized the city to build a World Trade Center in Manhattan and to acquire and rehabilitate the Hudson and Manhattan Railroad.

Housing and Rents.—Established a broad program to increase substantially the number of apartments available for middle- and low-income families. Retained jurisdiction of rent control by the state in areas outside of New York City. Empowered welfare departments to withhold rent payments on behalf of rent clients in tenements with building violations.

Health and Welfare.—Adopted a program for expanding and improving the treatment of the mentally ill. Provided increased aid to narcotic addicts and medical assistance for the aged. Repealed a law that banned localities from requiring the dating of milk.

Court System.—Adopted a new Civil Practice Law and Rules. Approved 22 bills implementing the new judiciary article in the state constitution (approved by the voters in the November 1961 election) which established a unified court system, effective Sept. 1, 1962. Increased salaries of various judges and increased the number of Supreme Court justices and Court of Claims judges. Established in New York City new Civil, Criminal, and Family courts.

Labor and Industry.—Increased the state minimum wage to $1.15 effective Oct. 15, 1962, and to $1.25 effective Oct. 15, 1964. Raised maximum cash payments due under workmen's compensation from $50 to $55 weekly for on-the-job injuries and deaths. Granted a 5% increase to all state employees, except elected officials. Established the State Atomic Research and Development Authority to promote new jobs and industrial opportunities.

Civil Rights.—Reorganized the State Commission against Discrimination, including a change of name to the State Commission for Human Rights. Outlawed racially restrictive covenants in mortgages, leases, deeds, or other transfers of property. Included motels, swimming pools, and other public accommodations in the ban against discrimination.

Miscellaneous.—Appropriated $20 million to buy property in downtown Albany for a new state government center. Authorized a new $25 million bond issue to purchase park and recreational land (approved by the voters on November 6).

Finance.—In the 1961 fiscal year, revenue of $3,477,213,000 included $2,086,817,000 from state taxes and $414,586,000 in federal funds. Chief tax yields were from

individual incomes ($803,739,000), corporate incomes ($279,057,000), motor fuels ($221,897,000), and licensing ($203,654,000). Spending of $3,551,297,000 included $947,712,000 for education, $420,701,000 for health, welfare, and correction, and $474,683,000 for highways.

Education.—In the 1961–62 school year, public elementary schools staffed by 65,824 teachers enrolled 1,660,910 pupils; junior-senior high schools with 65,210 teachers enrolled 1,196,095; and parochial schools with 21,389 teachers enrolled 757,207. College enrollment totaled 445,000 in 192 institutions, including 50 junior colleges and 142 senior colleges and universities.

Estimated public school spending in the 1961–62 school year totaled $2,062,500,000, including current expenditures of $1,593,000,000 ($615 per pupil) and capital outlays of $365 million. Revenue of $2,359 million was drawn chiefly from state funds ($800 million) and local districts ($1,100 million). Teachers' salaries averaged $6,700 (high school, $6,985; elementary, $6,450). Actual spending for higher education (1961 fiscal year) comprised $75,719,587 for operations and $4,814,829 for construction and improvements.

Public Assistance.—In 1960, public assistance payments to a monthly average of 540,163 persons totaled $328,228,818. This amount included $164,831,346 for dependent children and $72,168,311 for the aged.

Transportation and Communications.—Contracts for 1,670 miles of highway construction and reconstruction were let during the 1962–63 fiscal year. *Highways and roads* on Jan. 1, 1962, totaled 106,000 miles (74,000 surfaced). These served 5,397,951 *motor vehicles* (as registered on Dec. 31, 1961), including 4,597,827 automobiles. Operating in the state in 1961 were 7 switching and 32 main-line *railroads* (the latter using 6,394 line miles of track); (1962) 38 regularly scheduled *airlines;* and 113 commercial and municipal *airports,* 30 seaplane bases, and 9 heliports.

Communications media included (1962) 140 AM and 57 FM *radio stations;* 22 VHF and 2 UHF *television stations;* (1961) 88 daily *newspapers* (circulation, 8,744,964); and (Jan. 1, 1962) 2,814,000 business and 6,290,000 residential *telephones.*

Labor Force.—The state's labor force in July 1962 included 6,207,000 wage and salary employees in nonagricultural establishments, compared with 6,140,000 a year earlier and an average of 6,205,572 for the 12 intervening months. Of nonfarm employees, 29.3% were in manufacturing, 19.8% in trade, and 16.4% in service and miscellaneous industries. Unemployment in July 1962 totaled 465,000, compared with 555,000 a year earlier.

Manufacturing.—Manufacturing engaged 1,957,065 workers in 1960, including 1,333,018 in production, and provided a payroll of $10,453,603,000. Adjusted value added by manufacture amounted to $18,013,494,000.

LEADING NEW YORK MANUFACTURES, 1960

Industry group	Total employees	Total payroll	Adjusted value added by mfr.[1]
		(in thousands)	
Printing and publishing	180,845	$1,098,373	$2,325,495
Apparel and related products	342,925	1,261,994	2,260,880
Food and kindred products	146,434	760,076	1,849,305
Electrical machinery	158,097	891,696	1,509,380
Nonelectrical machinery	140,771	857,627	1,425,863
Chemicals and products	66,475	392,057	1,281,686
Instruments and products	94,362	612,751	1,184,139
Transportation equipment	101,002	671,193	1,129,388
Primary metals	74,714	443,805	801,425
Fabricated metals	89,410	448,636	758,530
Paper and products	69,006	344,605	629,530

[1] For definition, see footnote 1 in the article *Industrial Production.* (Source: *1960 Annual Survey of Manufactures.*)

Mining.—In 1961, New York ranked 18th among the states in the value of its mineral output, with 1.26% of the national total. Production declined 10% from the 1960 record. The state was first in output of emery (sole producer), abrasive garnet, talc, soapstone and pyrophyllite, titanium, and wollastonite; and third in salt and zinc.

Agriculture.—Cash farm income for the first nine months of 1962 (excluding government payments) totaled $628,281,000, compared with $645,679,000 for the corresponding period of 1961. For the full year 1961, income comprised $608,953,000 from livestock, $253,329,000 from crops, and $19,793,000 in government payments. Principal income sources in 1961 were wholesale milk, $442,156,000; cattle, $62,956,000; eggs, $57,143,000; and greenhouse and nursery products, $47,597,000.

NEW YORK MINERAL PRODUCTION, 1961
(In short tons, except as noted)

Mineral	Quantity	Value
Clays	1,037,000	$ 1,373,000
Coke	...[1]	...[1,2]
Ferroalloys	86,286	20,118,000[2]
Gypsum	663,000	3,441,000
Iron ore, usable (long tons)	1,973,000	25,548,000
Iron, pig	3,828,189	229,890,000[2]
Lead (recoverable content of ores)	879	181,000
Natural gas (1,000 cu. ft.)	5,742,000	1,694,000
Petroleum (bbl.)	1,715,000[3]	8,163,000[3]
Salt, common	4,149,000	30,761,000
Sand and gravel	28,043,000	30,471,000
Stone	26,951,000	43,734,000
Zinc (recoverable content of ores)	54,763	12,595,000
Other minerals	...	76,495,000
Total	...	$228,983,000[2,4]

[1] Figures withheld to protect individual company's confidential data. [2] Values for processed materials are not included in the total. [3] Preliminary. [4] Total adjusted to eliminate duplication in the value of clays and stone. (Source: U.S. Bureau of Mines.)

The state's 82,000 farms in 1959 had an acreage of 13,490,000 (5,033,000 in harvested cropland). Livestock on farms on Jan. 1, 1962, included 2,174,000 cattle and 9,894,000 chickens. An average of 105,000 family and 55,000 hired workers engaged in farming in 1961.

NEW YORK CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Apples (1,000 bu.)	17,405	24,100	20,000
Beans, dry edible (1,000 bags)	1,252	1,331	1,274
Beans, snap (1,000 cwt.)	536	440	382
Cherries (tons)	26,220	36,200	13,000
Grapes (tons)	85,870	124,000	99,000
Hay (1,000 tons)	5,539	5,978	4,620
Maple sirup (1,000 gal.)	408	470	519
Onions (1,000 cwt.)	4,419	4,371	4,964
Potatoes (1,000 cwt.)	19,118	21,178	20,708
Wheat (1,000 bu.)	10,071	8,174	6,831

(Source: U.S. Department of Agriculture.)

Events, 1962.—Early in the year public attention was centered on the state Legislature. Charges of conflict of interest involving the state's shelter-building program were brought against Assembly Speaker Joseph F. Carlino (Republican, Nassau County) by Assemblyman Mark Lane (Democrat, Manhattan). Following weeks of bitter argument and wide publicity, the Assembly voted on February 21 to fully exonerate Carlino of all charges. The sole vote in favor of censure was cast by Lane. The furor did not appear to have any consequence in the November election; Carlino was reelected and Lane did not run.

The work of the Legislature, which met from January 3 to March 31, brought praise from Republicans who stressed the gains made in the social and economic fields. Democrats criticized the Legislature particularly in its failure to provide sufficient financial relief for localities and to redistrict the state to give urban areas fairer representation in the legislative body.

The necessity for increased services continued to be met by public and private programs. A record $410,679,000 for highway construction was allocated for the 1962–63 fiscal year beginning April 1, approximately 45% of which will be paid by the federal government. On June 15, a 345,000-volt "Thruway of Power" was completed, providing electric transmission from New York City to the Niagara region.

The decision of the U.S. Supreme Court on June 25, holding that the recitation in public schools of the nondenominational prayer written by

UPI

Celebrating their November 6 re-election victories early the next morning are four prominent New York Republicans (l. to r.): U.S. Senator Jacob K. Javits; Governor Nelson A. Rockefeller; Lieutenant Governor Malcolm Wilson; and New York State Attorney General Louis J. Lefkowitz.

the New York State Board of Regents violates the Constitution, was followed by intense public debate. When school opened in September, the State Education Department made a ruling in effect excluding all spiritual observances in public schools. Most schools now observe a period of silence, rather than prayer. (See also EDUCATION; LAW.)

In mid-September, Republican and Democratic state conventions were held. The Democrats nominated Robert M. Morgenthau and Republicans named the incumbent Nelson A. Rockefeller to run for governor. The Democratic slate included John J. Burns for lieutenant governor, James B. Donovan for United States senator, Edwin R. Dudley for attorney general, and the incumbent Arthur B. Levitt for comptroller. For these offices, respectively, the Republicans named the incumbents Malcolm A. Wilson, Jacob K. Javits, Louis J. Lefkowitz, and John P. Lomenzo. The Liberal Party endorsed the Democratic nominations.

Election day, November 6, brought little change in the political balance, despite an animated campaign. Governor Rockefeller was reelected by a margin of 518,218 votes, compared with 573,034 in 1958. Although upstate voters gave the governor the usual Republican majority, they did not give him the overwhelming support which he had received in 1958. (It was speculated that the divorce obtained by Mrs. Rockefeller on March 16 may have been a contributing factor.) Interestingly, Senator Javits led his ticket to victory, defeating his opponent by 971,877. All major Republican nominees were reelected, except Lomenzo, who was defeated by the incumbent Levitt, and Marcus G. Christ, who was defeated by John F. Scileppi for justice of the Court of Appeals. The election was marked by an exceptionally large number of split ballots.

The electorate defeated a proposition, supported by the governor, which would have increased state subsidies for housing to admit low-income families into middle-income housing, but approved a proposition authorizing a $25,000,000 bond issue for the purchase of park and recreational land. They also approved three amendments to the state constitution which trimmed about 4,000 words from the basic law, but which made no substantive changes.

The economy of New York State continued to show signs of vigor during 1962. Total employment as of mid-September rose to an estimated 7,430,000 persons, an increase of 15,000 over the same period last year. Total unemployment decreased to 350,000, from 410,000 in 1961.

On November 30, 74-year-old Robert Moses announced that he would resign his five state posts (including the chairmanship of the State Power Authority) because, he alleged, Governor Rockefeller had asked him to give up his position as chairman of the State Council of Parks in favor of the governor's brother. Laurance S. Rockefeller had been associated with the park system since 1939 and was vice chairman of the council.

The State Liquor Authority was subjected to an investigation by a New York County grand jury, directed by District Attorney Frank S. Hogan, and by the State Investigation Commission. Martin C. Epstein, the 70-year-old Republican chairman of the Liquor Authority, was removed from his post by Governor Rockefeller on November 26 for refusing to testify before the grand jury without waiving immunity from prosecution. Other officials were also dismissed as the investigation continued.

The state suffered a severe drought from May through July. U.S. Secretary of Agriculture Orville L. Freeman on July 25 announced that farmers in 39 New York counties would be eligible for federal emergency loans.

(See also NEW YORK CITY.)

"Legislation" and "Events" by: LEO HERSHKOWITZ, *Department of History, Queens College.*

NEW YORK CITY

This gateway to the United States, center of culture and finance, the most populous city in the nation, covers an area of 319.8 square miles, exclusive of inland waterways, and has a population of 7,781,984 (1960 census), divided among its five boroughs: the Bronx (43.1 sq.mi.; pop., 1,424,815), Brooklyn (78.5 sq.mi.; pop., 2,627,319), Manhattan (22.6 sq.mi.; pop., 1,698,281), Queens (114.7 sq.mi.; pop., 1,809,578), and Richmond (60.9 sq.mi.; pop., 221,991). About one half of the city's population is either foreign-born or born of immigrant parents.

The city government consists of a mayor (Robert F. Wagner, Democrat, elected for a third four-year term in 1961); a 25-member City Council, chief legislative body, elected for a two-year term; and a Board of Estimate, the fiscal and administrative agency of the city, composed of the mayor, the president of the City Council, the comptroller, and the five borough presidents.

A record expense budget of $2,784,731,222 for the fiscal year beginning July 1962, adopted by the City Council on May 29, was $237,276,485 higher than the 1961–62 budget. Education receives the largest proportion of the budget, 20%; welfare accounts for 11%; hospitals, 7%; police, 7%; fire, 4%; and sanitation, 3%.

To help pay for this increase the basic real estate tax was raised for the fiscal year 1962–63 from $4.10 per $100 of assessed value to $4.16. Value of real estate for this period was assessed at a record $27,236,319,115. The funded debt increased by $125,081,985, to $4,301,124,126. The Board of Estimate's capital budget of $1,084,755,351 for the 18 months beginning Jan. 1, 1963, was approved by the City Council on December 20.

For the most part, the city's economy showed improvement during 1962. At midyear, employment was higher than it had been 12 months earlier (up 21,000 to 4,061,200). In the same period, unemployment declined 17.6%, department store sales increased, and wages of production workers rose to $89.89 for 37.8 hours of work (from $86.61 for 37.3 hours in 1961). The cost-of-living index reached 105.8 (1957–59 = 100), compared with 104.3 in 1961.

An extensive program of new building construction and urban renewal projects remained a vital part of the city scene in 1962. The Lincoln Center for the Performing Arts, covering 14 acres on Manhattan's West Side—intended to revitalize the cultural activity of the city, as well as to clear a congested residential area—was well on its way to completion. Philharmonic Hall, the first of the major buildings in the complex, was opened on September 23. (See also MUSIC.) Construction began in March on the 126-acre New York City Terminal Market in the Bronx, scheduled for completion in 1964, and expected to be the world's largest fruit and produce market. On September 24, the 50-story Americana opened its doors and became the city's first hotel of more than 1,000 rooms to be constructed since 1931.

The city's skyline is newly dotted with numerous middle- and low-income housing projects. Almost 27,000 cooperative and rental apartments were under construction in 1962 with state and city aid. On June 26, the Board of Estimate approved the controversial West Side (Manhattan) and Cadman Plaza (Brooklyn) urban renewal projects, which will combine low-cost, middle-income, and luxury housing.

The 1963–64 capital budget allocated funds for 36 new school construction projects. A total of 1,023,875 students were enrolled in the city's elementary, junior high, and academic and vocational high schools in September 1962, an increase of 19,618 over the preceding year. As part of an integration effort, 9,000 Negro and Puerto Rican children were transferred to predominantly white schools outside of their district under the Open Enrollment Program. Calvin E. Gross of Pittsburgh was appointed superintendent of schools on October 23 to replace John J. Theobald. Total enrollment in the 37 private and public colleges throughout the city in September 1962 reached 251,614.

Although New York retained its position as the leading port in the nation, the volume of oceangoing traffic in and out of the Port of New York continued to decline. During the first nine months of 1962, 19,602 passenger and cargo vessels entered and left the port (compared with 19,896 during the same period of 1961). Ten years ago the port handled one third of the nation's cargo, compared with 21.4% in 1961. The Port Authority has planned, started, or completed a number of new piers in order to attract business going to competing ports. The bright spot in the transportation picture was the records set at air terminals. During 1961, air cargo traffic increased 11.4% over 1960, and passenger traffic increased 2.1%.

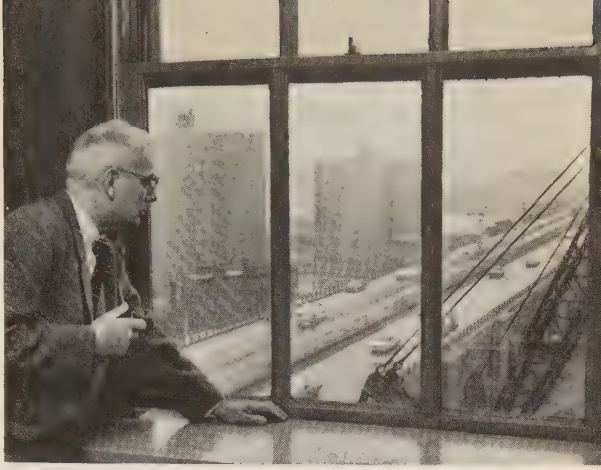
Among the major transportation improvements of 1962 was the opening on August 29 of a six-lane lower deck of the George Washington Bridge. (See BRIDGES.) Henry A. Barnes became traffic commissioner on January 15, and initiated numerous experiments to meet the city's difficult traffic problems.

Labor-management relations continued to be a major problem and center of concern for New Yorkers in 1962. A four-day strike called on January 1 against the Fifth Avenue Coach Lines by the 6,000 members of the Transport Workers Union was settled with the assistance of city officials. When the city refused to permit a fare increase, the company dismissed some of its employees. The union then began a second strike on March 1 which halted bus service in Manhattan and the Bronx. On March 21 the city, empowered by the state legislature, seized the struck lines and the employees went back to work. The bus company sought redress in the courts, where the matter was awaiting decision.

One of the most controversial and highly publicized strikes of 1962 came from an unusual source—the teachers of New York City, whose demands for pay increases and the right of collective bargaining were at the heart of the dispute. On April 11, about half of the city's 40,000 teachers went on strike, and 25 schools were closed. A bitter political dispute between Albany and City Hall was resolved when it was announced the following day that the state would give the city an additional $13 million for educational needs, and the right to borrow against $48.6 million more. In May, pay raises were announced; and in October the principle of collective bargaining was accepted by the city. (See also EDUCATION.)

Other labor stoppages included a strike in January by the International Brotherhood of Electrical Workers; maritime strikes which halted activity on the docks between June 16 and July 3 and again in December; a walkout in July of nonmedical employees in two hospitals; and a newspaper strike in November which halted publication of the *News* for eight days.

Nine daily newspapers with a combined circulation of about 5½ million suspended publication on December 8 after a printers' strike closed four of them. Major issue in the dispute was wage increases. Nearly 20,000 employees of the papers were idled, and publishers' losses in advertising and circulation revenue ran into the millions of dollars. The shutdown also had a considerable impact on the city's economic life during the holiday season, and many stores reported a decline in Christmas sales. (See also NEWSPAPERS.)



THE NEW YORK TIMES

Henry Barnes, on his first day as New York City traffic commissioner, January 15, studies traffic on Brooklyn Bridge.

Despite vociferous opposition from business, the Board of Estimate approved legislation setting a minimum wage of $1.25 per hour for all employees of private business in the city, effective Nov. 21, 1962. The courts have been asked to decide the legality of the law.

Juvenile delinquency and crime continued an ever-current problem, as the crime rate during the first six months of 1962 increased 8.5% over the previous year. Numerous attempts were made to stem the vicious cycle of slums and crime, including an announcement by President Kennedy on May 31 of a $12,600,000, three-year mass social experiment on the Lower East Side of New York, called Mobilization for Youth.

Increasing use of the judicial system led to the reorganization of the courts as of Sept. 1, 1962. The County Courts, which had handled criminal

A model of the 1964–65 World's Fair in Flushing, N.Y., is viewed by President Kennedy in New York City, December 14. The fair is expected to open on April 22, 1964.

UPI

cases of a serious nature, were abolished, and their jurisdiction transferred to the Supreme Courts. The Family Court replaced the Domestic Relations Court; the Criminal Court replaced the Court of Special Sessions; and the City and Municipal Courts were absorbed in a new Civil Court.

Rent control of residential properties, a state responsibility since 1950, was transferred to the city by enabling legislation signed by Governor Rockefeller on Feb. 17, 1962. Mrs. Hortense Gabel was appointed the city's first rent and rehabilitation administrator on April 2.

In the November 6 elections, Robert M. Morgenthau, the unsuccessful Democrat-Liberal candidate for governor, carried the city by a vote of 1,282,972 to 1,077,607 for Nelson A. Rockefeller, the Republican incumbent. In the race for United States senator, Jacob K. Javits outpolled his Democrat-Liberal opponent, James B. Donovan, by a vote of 1,224,444 to 1,089,937 in the city and was reelected by a wide margin in the state. Louis J. Lefkowitz (Republican) was reelected attorney general, although he failed to carry the city. Arthur Levitt remained comptroller with an easy victory. The city continued to be a Democratic stronghold, sending 16 Democrats and 3 Republicans to Congress.

(For additional information see the Index entry, *New York City.*)

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NEW ZEALAND

Lying some 1,200 miles southeast of Australia in the South Pacific Ocean, this autonomous British dominion and member of the Commonwealth of Nations comprises two principal islands: North Island (44,281 square miles) and South Island (58,093), with adjacent Stewart Island (670) and Chatham Islands (372). The total land area, including minor islands, is 103,736 square miles.[1]

New Zealand's population (2,414,984, including 167,086 Maoris, according to revised 1961 census figures) was 2,485,478 (including 174,918 Maoris) as of June 30, 1962. Excluded from the total were the 1961 populations of Cook Islands (18,378); Niue Island (4,845); Tokelau Islands (1,960); and Western Samoa (108,810). Urban areas, including principal cities and their adjacent boroughs, with populations (including Maoris) were: Wellington, 153,300 (Wellington City, the capital, 124,700); Auckland, 466,300 (city, 145,000); Christchurch, 226,800 (city, 153,500); Dunedin, 106,100 (city, 73,700); and Hutt, 102,400 (Lower Hutt City, 54,000). Immigrants intending permanent residence, 1962 est., 32,769 (assisted passages, 3,584); permanent departures, 12,691.

Government.—In 1962, Brigadier Sir Bernard Fergusson succeeded Viscount Cobham, who had served from Jan. 2, 1957, as governor general. He is assisted by a 16-member Executive Council headed by the prime minister, Keith J. Holyoake. The legislature is unicameral, consisting of an 80-member House of Representatives (including 4 Maoris), popularly elected every 3 years; in 1961 the National Party held a majority of 12 seats over the Labor Party.

Education and Religion.—Government expenditure on education (1961–62): £NZ43,550,000. Number of schools (with enrollments, 1960–61): 2,028 public (state) primary (378,927); 335 private primary (54,168); 156 Maori (13,187); 45 intermediate (31,628); 109 public secondary (64,434); 108 private secondary (18,684); and 41 technical (22,716). Enrollments in 1960 at 4 universities and 2 agricultural colleges aggregated 16,524; at 7 teacher-training colleges, 5,105. Principal religious groups (with adherents, 1956): Church of England (780,999); Presbyterian (483,884); Roman Catholic (310,723); and Methodist (161,823).

Finance.—Estimated government expenditure, 1962–63: £NZ498.5 million (up £NZ11.4 million over 1961–62), including (in millions): social services, £NZ223.9 (up £NZ11.5); works and other capital expenditure, £NZ72.5; administration, £NZ33.4; and defense, £NZ28.6. The budget for 1962–63 provided for tax concessions of £NZ14 million, and for increased war pensions; expenditures were to be met from taxation (£NZ426 million), and by borrowing.

Social Services.—Payments in force on March 31, 1962, and their annual value (in thousands) included: old-age, 100,083 (£NZ24,208); widows, 13,623 (£NZ4,450); welfare, 6,499 (£NZ322); family, 357,568 families with 874,000 children (£NZ32,846); superannuation, 105,499 (£NZ24,094); war veterans allowances, £NZ6.38 million.

Defense.—Personnel in the chief arms of defense (1961): army regulars, 4,905 all ranks; territorial reservists, 60,951, including 7,753 volunteers; Royal New Zealand Air Force regulars, 4,390; Royal New Zealand Navy, 2,851 officers and ratings.

Transportation and Communications.—Government railways, 1961–62: 3,333 miles of track; passengers carried, 26,324,000; freight, 10,822,000 tons. Motor passengers, 22,280,000; operational revenue, £NZ36,639,000; expenditure, £NZ36,801,000. Road mileage (1960): 56,893; licensed motor vehicles (1962), 961,676 (automobiles, 561,888). In 1961–62 the domestic services of New Zealand National Airways carried 843,500 passengers, and 68,300 tons of freight; in 1961, international air services carried 124,800 passengers, and 1,284 tons of freight. Telephones, 744,797 (1960); radios, 580,000 (1960); television sets, 46,000 (1962).

Economic Indicators.—National income at market prices, 1961–62: £NZ1,247.8 million; gross national product, £NZ1,345.8 million. Net overseas assets, May 1962: £NZ64,431,000, an increase of £NZ17 million over December 1961—the lowest figure in more than three years. Cost-of-living index (1958 = 100): 106 in 1961 (105 in 1960).

Manufactures and Mining.—The labor force (902,000 in 1961, including 237,900 in manufacturing industries) exceeded 919,000 in 1962. Chief manufactures (1961): household appliances, 345,358 units; yarn, 9,508,000 pounds; woolen piece goods, 5,009,000 square yards; cigarettes, 3,191 million; passenger cars, 31,884; trucks and buses, 9,744; radios, 151,898; television sets, 20,699; and electric power, 7,327 million kw.-hr. The output of 8,734 factories was valued at £NZ756,800,157 in 1961. Chief minerals: coal (2,913,000 tons in 1961), and gold (33,000 ounces, valued at £NZ418,500, in 1960).

Agriculture.—Number of sheep (1961–62): 48,485,000; cattle, 6,446,000 (dairy cows, 1,929,000). Sheep and lambs shorn totaled 57,253,000, for a record clip of 590 million pounds; wool sales (greasy basis), 423,358,000 pounds; meat production, 757,000 tons. Chief crop acreages and yields (in thousand bushels, 1961–62): wheat, 183,000 (8,601); oats, 32,000 (1,585); and barley, 73,000 (3,490).

Foreign Trade.—In 1960–61, imports were valued at £NZ322,097,000, including (in millions): machinery, £NZ89.38; metal manufactures, £NZ46.16; textiles, £NZ37.44; chemicals, £NZ22.36; food, beverages, and tobacco, £NZ21.71; and mineral fuels, £NZ21.46. Total exports, 1960–61: £NZ283,679,000 (including re-exports), chiefly wool, £NZ100,144,000; meat, £NZ77,045,000; and dairy produce, £NZ68,382,000. Of total 1960–61 exports, £NZ164,967,000 went to Commonwealth countries (United Kingdom, £NZ143,387,000); imports from the Commonwealth, £NZ207,978,000 (United Kingdom, £NZ128,455,000). Exports to the United States (New Zealand's second biggest market) totaled £NZ40,843,000; imports from the United States, £NZ27,023,000.

Events, 1962.—After talks with political leaders in Europe and the United States, Deputy Prime Minister John R. Marshall reported to the House of Representatives on June 20 that "profound changes, affecting every person in New Zealand," would follow the entry of Great Britain into the European Economic Community (Common Market). He warned that although his government was searching the world for new markets and was finding some, no substitute had yet appeared for the British market for New Zealand's exports of mutton, lamb, butter, and cheese.

To prevent the threatened dislocation of trade, the British government sought a protocol to the Community's Treaty of Rome (1957) which

[1] Outlying groups include the Auckland Islands (234 square miles), Campbell Island (44), and the Antipodes Islands (24). New Zealand administers the island territories of Cook (with associated islands, 90 square miles), Niue (100), Tokelau or Union (4), and Kermadec Islands (13), and the Ross Dependency (175,000) in the Antarctic. Jointly with the United Kingdom and Australia, New Zealand is a trustee of Nauru (q.v.), but it relinquished its trusteeship of Western Samoa (q.v.) on Jan. 1, 1962.

would provide opportunity for comparable outlets for international agricultural products into the enlarged Common Market. In 1962, however, the Community's policy was restrictive of agricultural trade. Marshall said that in addition to receiving assurances from Great Britain that it would protect New Zealand's vital interests, he had had "encouraging discussions" in Washington with President Kennedy, whose influence would be used "toward breaking down the trade barriers which so sorely beset us." (See also COMMONWEALTH OF NATIONS; EUROPE; GREAT BRITAIN.)

Prime Minister Holyoake attended the London conference of Commonwealth prime ministers in September. He later met with President Kennedy in Washington, and described their wide-ranging discussion as "very useful and friendly."

Wool prices at New Zealand auctions averaged 39.25 pence per pound in 1962 (1.19 pence below prices in the previous year); gross receipts fell by £NZ2.3 million to £NZ95.5 million. Affected also by lower prices for lamb and beef, export earnings increased by only £NZ3 million in the fiscal year 1962.

A memorial to Adm. Richard E. Byrd, who had spent much time in New Zealand preparing for his five Antarctic expeditions, was unveiled by Prime Minister Holyoake on Mount Victoria, near Wellington, on March 11, the fifth anniversary of Admiral Byrd's death.

Two Soviet diplomats were expelled from New Zealand on July 12 for espionage, of which the government said it had "conclusive proof."

DONGVAN ROWSE,
Author and Publicist.

NEWFOUNDLAND

Bounded on the east and south by the Atlantic Ocean and on the west by the Gulf of St. Lawrence and the Province of Quebec, this most easterly of the Canadian provinces has an area of 156,185 square miles (including Labrador on the mainland) and an estimated population on July 1, 1962, of 471,000 (1961 census, 457,853). The chief urban centers (with 1961 census figures) are: St. John's the capital, 90,838 (metropolitan area); Corner Brook, 25,185; Wabana, 8,026; Gander, 5,725; Stephenville, 6,043; and Windsor, 5,505.

Government.—Newfoundland has 6 members in the Senate of Canada and 7 members in the federal House of Commons. The province is administered by a lieutenant-governor and a Legislative Assembly of 42 members (34 Liberals, 7 Progressive Conservatives, and 1 Independent), elected on Nov. 19, 1962. The lieutenant-governor in 1962 was Campbell L. Macpherson, and the premier was Joseph R. Smallwood.

Education.—In 1961–62 there were 1,253 schools, with 128,917 pupils and 4,317 teachers. Memorial University, in St. John's, had an enrollment of 1,907 students in 1961–62.

Finance.—Revenue on current account in the 1961–62 fiscal year was $86,141,765; expenditures, $85,926,700. Revenue for 1962–63 was estimated at $90,658,700.

Industry.—The basic industries are pulp and paper, mining, and fishing. The value of forest production in 1961 was approximately $86 million; of minerals, $93 million; and of fisheries, approximately $25 million. Labrador, which is being actively explored and developed, has a proved iron ore reserve of over 3 billion tons in addition to some of the most valuable stands of virgin timber in North America and a potential of 9 million horsepower of electrical energy on the Hamilton River. On Newfoundland, there are two pulp and paper mills, large areas of timber, and extensive deposits of iron ore, limestone, lead, zinc, copper, fluorspar, pyrophyllite, and gypsum.

Transportation and Communications.—The Canadian National Railways has a total of 705 miles in Newfoundland, with the main line extending 547 miles from St. John's on the east coast to Port aux Basques on the west coast. A 347-mile railway has been built in Labrador extending from Knob Lake to Seven Islands in Quebec. Commercial air services link Newfoundland with mainland Canada and with Europe. There are worldwide cable connections, and the federal government provides telegraphic service throughout the province. At the end of 1962 there were some 65,000 telephones.

Events, 1962.—On August 18, celebrations were held at Placentia marking the Tercentenary of the founding of that community by the French in 1662. The Atlantic Charter was drawn up in Placentia Bay in 1941 by President Roosevelt and Prime Minister Churchill. At Labrador City, a multimillion dollar iron ore development began operations in July with hydroelectric power from the Hamilton River. Mining became the province's leading industry for the first time in 1961.

Premier Joseph R. Smallwood and his Liberal Party were returned to power in the November 19 election, which had been called to seek a mandate for the premier's $70 million fisheries development program. In the last session of the legislature, the Legislative Assembly had been increased from 36 to 42 members.

J. G. CHANNING,
Deputy Minister of Provincial Affairs, Provincial Government of Newfoundland.

NEWSPAPERS

The basic circulation figures of newspapers in the United States changed only slightly from 1961 to 1962, but the general pattern of publishing was altered by continuing consolidation, expansion of chain ownership, and growth of the population of suburban areas. In March 1962 there were 1,763 daily English-language newspapers in the United States, with an aggregate circulation of 60,293,114, the March report of the Audit Bureau of Circulation showed. This was a gain of 2 newspapers and 0.14% in circulation over the previous year.

Acquisitions, Mergers, and Suspensions.—Samuel I. Newhouse, owner of the second largest chain of newspapers (in circulation) in the United States, acquired his 19th paper, the New Orleans (La.) *Times-Picayune* in June for $40 million. In October Newhouse offered $41 million for the Omaha (Nebr.) *World-Herald*, an offer that was accepted by the paper's board of directors. The stockholders, meeting to accept the offer, however, heard a last-minute bid by an Omaha contractor, Peter Kiewit, to buy the newspaper, and sold it to him instead of to Newhouse. The purchase price was in excess of $40 million, including the newspaper, a television station, and real estate. The 19 Newhouse newspapers in 1962 had an aggregate circulation of over 6 million, compared with about 8.6 million for newspapers owned by the various corporations of the Hearst empire.

In early January 1962, Los Angeles lost two of its daily newspapers when the Chandler interests suspended publication of the afternoon *Mirror* and the Hearst morning *Examiner* was incorporated into the afternoon *Herald Express* under the name of the *Herald Examiner*. In June the Hearst Publishing Co., Inc., acquired full control of the evening San Francisco *News-Call Bulletin*, formerly a joint venture of the Hearst and Scripps-Howard chains. The paper had resulted from a merger in 1959 of the Scripps-Howard *News* and the Hearst *Call-Bulletin*.

In Phoenix, Ariz., the Arizona *Journal*, an offset daily, published its first edition on Feb. 14, 1962. (Two months later the paper won third honorable mention for newspapers over 50,000 circulation in the F. Wayland Ayer Cup typographical competition. The *Christian Science Monitor* won first prize.) Dow Jones & Co., publishers of the *Wall Street Journal*, began publishing the *National Observer*, a national weekly newspaper, on February 4, and later changed the day of publication from Sunday to Monday. The New York *Times* on Octo-

ber 1 began publication of its west coast edition in Los Angeles, with circulation in 13 states, including Alaska and Hawaii. The paper, which is preponderantly mail-delivered, is basically the same as the New York edition, with news of purely New York interest deleted, and with considerably less advertising. It is published six days a week.

The Harte-Hanks group of Texas acquired the stock of the San Antonio *Express-News*. In Hawaii, the Chinn-Ho Syndicate merged the Honolulu *Star-Bulletin* and the *Advertiser* into a common operation. The Roy Thomson group of Canada bought three small dailies in Austin, Minn., Dalton, Ga., and Lafayette, La., and sold the St. Petersburg (Fla.) *Independent* to the St. Petersburg *Times*.

Among the papers which suspended publication in 1962 were the Jamestown (N.Y.) *Sun*, after 13 years of operation, and the Jackson (Miss.) *State Times*, after almost 7 years. In both cases, greatly increasing costs were blamed.

In Minneapolis, Minn., the *Herald*, created to fill a void during a 116-day strike against the Minneapolis *Star* and *Tribune*, quit publication after the strike was settled on August 3. Also suspending publication was the weekly Milwaukee (Wis.) *Reporter*, which tried to convert to daily operation after the Milwaukee *Journal* purchased the *Sentinel*, a Hearst paper. The *Sentinel* was closed by a strike of the American Newspaper Guild in May and was sold on July 19, with the strike still in progress. The *Sentinel* continued publication under the new management.

Strikes and Strike Rulings.—In addition to the strikes in Minneapolis and Milwaukee, the Detroit (Mich.) *Free Press* and *News* were shut by a strike of teamsters and mechanical unions from April 11 to May 11. A strike of the Teamsters Union and the American Newspaper Guild closed the Cleveland *Plain Dealer* and the *Press and News* on November 29.

An American Newspaper Guild strike closed the New York *Daily News*, the largest paper in the United States, from November 2 to November 10. It was settled on the basis of a wage increase of $8 a week, spread over two years. The New York Typographical Union rejected the same offer and struck against four newspapers on December 8; the five other daily newspapers in the Publishers Association of New York then ceased publication. (The *Long Island Press* closed its edition for Queens County, a part of New York City, but continued publication of its editions for suburban Nassau and Suffolk counties.) The strike and shutdown continued into 1963.

The major issues were wages, working rules, and the introduction of more automation in the newspaper production departments. The National Labor Relations Board ruled in November that members of the Publishers Association could suspend publication jointly in a breach-of-contract dispute. The publishers relied on the same doctrine to shut down when one or more newspapers was subjected to a strike after the expiration of a contract.

Circulation and Sales.—At the Sept. 30, 1961, audit of the Audit Bureau of Circulation, 1,761 daily newspapers had a circulation of 59,261,464, less than 1% higher than a year earlier. There were 312 morning editions with a circulation of 24,094,361, a gain of 0.27% over the previous year; 1,458 evening newspapers with a circulation of 35,167,103, a gain of 0.9%; and 558 Sunday editions with a circulation of 48,216,499, a gain of 1.1%.

The 1962 *Ayer Directory of Publications* listed 8,964 weekly, 353 biweekly, and 33 triweekly newspapers in the United States, with an aggregate paid circulation of 24,027,995. This was an increase of 19 newspapers and 500,000 subscribers over the previous year's figure.

Advertising.—The dollar value of newspaper advertising in 1962 was about $3 billion, about 3% above the 1961 figure. Circulation revenue was expected to be about $2 billion. Including the income of weekly newspapers, the newspaper business was a $6 billion industry.

Personnel.—John Denson resigned as editor of the New York *Herald Tribune* on October 11 after serving in that post since March 1961. Denson had come to the *Herald Tribune* from *Newsweek* magazine.

Westbrook Pegler, for 18 years a columnist for the Hearst-owned King Features Syndicate, resigned in August 1962 because of "irreconcilable differences on vital matters."

Lee Hills of the Detroit *Free Press* was named president of the American Society of Newspaper Editors in April, and Irwin Maier, publisher of the Milwaukee *Journal* and *Sentinel*, became president of the American Newspaper Publishers Association.

Canada.—As of March 31, 1962, Canada's 103 daily newspapers had an aggregate circulation of 4,162,501, slightly higher than a year earlier. *Le Petit Journal* of Montreal, which began publication in 1961, closed in 1962. The Thomson group added its 26th paper, the Ft. William (Ontario) *Times Journal*. The Toronto *Globe and Mail* opened several foreign bureaus and moved toward publication of a national newspaper.

JEROME H. WALKER,
Executive Editor, "Editor & Publisher."

NICARAGUA

Situated between Honduras and Costa Rica, the Republic of Nicaragua is the largest of the Central American republics. It has an area of 57,143 square miles, including the 3,475 square miles of its two major lakes, and a population of 1,552,000 (Dec. 31, 1961, est.). Principal cities and populations (June 30, 1960, est.): Managua, the capital, 242,227; Léon, 73,616; Matagalpa, 65,321; Jinotega, 51,448; Masaya, 45,495; Granada, 44,183. Spanish is the official language.

Government.—Nicaragua is organized as a republic with a highly centralized form of government. Administratively it is divided into 16 departments, 1 national district, and 123 municipalities. The chief executive is the president (Luis A. Somoza Debayle, elected Feb. 3, 1957) who is elected for a single 6-year term, and is assisted by a cabinet of 11 members. The bicameral National Assembly consists of a 19-member Senate (16 elected directly for 6-year terms to represent the several departments, and 3 appointed) and a 42-member Chamber of Deputies (elected directly for 6-year terms). Political parties and number of seats held in the Chamber of Deputies: Nationalist Liberal (PLN), 28; Nicaraguan Conservative, 14. The highest judicial body is the Supreme Court of Justice.

Education and Religion.—School enrollment, 1960: 319,017. Number of schools (with enrollments, 1960): 2,082 public primary (152,783); 2,184 public and private secondary (165,050); 1 university (1,184). In June 1961, the Central American Catholic University was inaugurated in Managua. In 1961, illiteracy of all ages was estimated at 65.5%, and nearly 40% of the children of school age were without schooling. Principal religion: Roman Catholicism.

Finance.—Government revenue, 1962–63 est.: 306.1 million córdobas (up 59.9 million from 1961); expenditure, 311.8 córdobas (up 59.6 million from 1961). The córdoba was revalued on July 1, 1955, to U.S.$0.142. National debt: 114.4 million córdobas as of April 1962. Gold and foreign exchange holdings: $32.8 million as of June 1962 (up $11.8 million from June 1961). Per capita income (1961): $170.

Transportation and Communications.—Transport network (kilometers): railways (1960), 403; main roads (1961): paved, 687; all-weather, 1,855; dry weather, 3,558. National airline (1960): Líneas Aéreas de Nicaragua (LANICA); Nicaragua is also served by 11 foreign airlines. Motor vehicles (1960): 8,650 passenger cars; 5,000 trucks; 500 buses. Telephones: 8,224 (1960); radio receivers, 35,000 (1958); television sets, 6,000 (1959).

Economic Indicators.—Gross national product: 291.8 million córdobas in 1959. Cost-of-living index (1953 = 100): 116 in August 1961 (95 in September 1960). Consumer price index (1956 = 100): 96.1 in January 1961 (95.7 in January 1960).

Manufactures and Minerals.—Industry accounts for about 10% of national income. Chief products (1960): cigarettes, 819.2 million (up 3.8% from 1959); matches (boxes of 40), 21.7 million (up 2.7%); beer, 4.1 million liters (down 18.7%); aguardiente, 4 million liters (down 24.6%); cement, 32,000 metric tons (down 8.5%); silk

textiles, 10.7 million yards (up 5.9%); electric power, 183.6 million kw.-hr. (up 10.6%).

Agriculture.—Agriculture is the principal source of national wealth, and it accounts for about 40% of the national income and engages about 65% of the labor force. Chief crops (1961–62): cotton, 245,000 bales (of 500 pounds each; up 44% from 1960–61); cottonseed, 2.2 million quintals (of 101.4 pounds each); coffee, 540,000 quintals (up 4.5%); coffee (soluble), 3 million pounds; sugar (1960), 1,322,432 quintals (down 5.6% from 1959). Dairy production (1960): milk, 13,941,405 liters (up 35.6% from 1959). Meat production (1961–62): beef, 15 million pounds (up 36% from 1960–61).

Foreign Trade.—Total exports, 1961: $68.4 million (up 8% from 1960); imports, $74.4 million (up 3.3%). Principal exports (1961): cotton, $18.4 million; soluble coffee, $2.1 million; beef, $4.7 million; livestock, $1.7 million; shrimp, $475,000. Principal imports: machinery, vehicles, iron and steel products, chemicals and drugs, foodstuffs. Chief customers (with percentages of total Nicaraguan exports received, 1959): United States (26.62%); Japan (21.65%); West Germany (14.15%); United Kingdom (6.52%); Netherlands (1.66%). Principal suppliers (with percentages of total imports provided, 1959): United States (52.01%); West Germany (7.2%); Netherlands (6.46%); Japan (5.02%); United Kingdom (4.29%).

Events, 1962.—In January, while the agrarian reform law awaited action by the National Congress, the government acquired some 5,800 manzanas (1 manzana equals 1.74 acres) for distribution to small farmers. Between March and June, however, spontaneous invasions of farm lands by landless peasants took place in the southeastern departments of Chinandega, Léon, and Matagalpa. Strikes by dockworkers in San Juan del Sur and Corinto in April were followed by the strike of the Nicaraguan teachers' federation in June.

Foreign capital in loans was sought for basic economic sectors. By September, publicly announced loans amounted to $29 million, 65% of which came from the Inter-American Development Bank ($7.7 million), the Agency for International Development ($7.34 million), the International Bank for Reconstruction and Development ($3.2 million), and the United Nations Special Fund ($800,000). Principal projects financed included home construction, farm credits, and agricultural development for low-income families. Private credits of $10 million from the Compagnie Générale d'Enterprises Electriques (Paris) were granted in July to establish battery and plastics factories.

Political opposition to the long rule of the Somoza family was linked with the need for radical social changes. A strong fear persisted that the presidential election scheduled for February 1963 would not be freely conducted as promised. Candidates and party platforms, nevertheless, emerged in 1962. In January, Fernando Agüero Rocha was chosen as candidate of the opposition Conservative Party on a platform of complete social reform.

The Somoza-led Nationalist Liberal Party in April named as its candidate Foreign Minister René Schick Gutiérrez, who resigned in July to devote full time to the campaign. An anti-Somoza National Opposition Front (FON) nominated Humberto Alvarado Vásquez as candidate. This development, however, suggested the possible division of the opposition. Proposals for supervision of the election by the United Nations or the Organization of American States were officially rejected by the administration as an invasion of Nicaraguan sovereignty. The ensuing period of political unrest was highlighted by a gun battle on July 11 in the Chamber of Deputies.

When the all-important Supreme Electoral Commission was formed in September, the Nicaraguan Conservative Party refused to name a representative on the ground that the commission was fradulently composed. Toward the end of the year, it appeared that the Conservatives would probably abstain from the pending presidential election and leave the Nationalist Liberals with no more than token opposition.

Walter A. Payne,
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University of the Pacific.

NICKEL

The United States, the world's largest consumer of nickel, in 1961 produced only 2.8% of the world's total (3.5% in 1960). World output of nickel in 1961 was estimated at 396,000 short tons, 10% greater than in 1960. Estimated free-world output was 301,000 short tons, almost 4% larger than in 1960.

United States mine output of nickel was 13,113 short tons in 1961, or 7% less than the 14,079 tons produced in 1960. According to the U.S. Bureau of Mines, the deficit of 16% in nickel imports from Cuba, resulting from the seizure of United States nickel plants in 1960, was made up by increased imports from Canada. Canada's output in 1961 increased 10% over 1960 to 236,555 tons, providing the major part of free-world production (79%).

United States imports of new nickel products for consumption, chiefly from Canada and Norway, totaled 131,134 tons gross weight in 1961, 23% more than the 109,042 tons imported in 1960. Exports of nickel from the United States (mainly contained in nickel and nickel alloys in ingots, bars, rods, and other crude forms and scrap) increased from 54,109 tons in 1960 to 55,493 tons in 1961. Shipments to West Germany were 28% of the total; to Japan, 22%; to Sweden, 21%; and to Canada and the United Kingdom, 8% each.

Total consumption of nickel in the United States in 1961 was 118,515 short tons, 10% greater than the 108,159 tons used in 1960. In the first eight months of 1962, consumption of nickel (exclusive of scrap) totaled almost 80,000 short tons (reported by companies, which consumed 94.5% of the total nickel in 1961).

(See Mineral Production for output of major producing countries.)

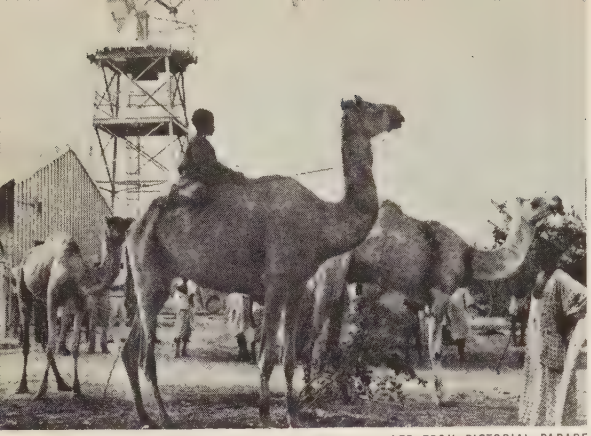
NIGER

The Republic of the Niger is a landlocked, relatively inaccessible country in north-central Africa, with an area of 458,993 square miles that is largely desert. The population of 3,112,000 (1962 est.) consists mainly of sedentary Hausa and Djerma-Songhai ethnic groups in the south and nomadic Peuls and Touaregs in the central and northern regions. The capital and largest city is Niamey (est. pop., 30,000), situated on the Niger River. French is the official language, but many African languages are spoken.

Government.—This former territory within French West Africa attained full independence on Aug. 3, 1960. The president of the republic conducts policy, initiates laws, and is empowered to wield exceptional powers to preserve national security. He is elected by the unicameral National Assembly, which is chosen by universal suffrage for a five-year term. Hamani Diori, leader of the Niger Progressive Party, was elected president on Nov. 9, 1960. He heads a cabinet composed entirely of members of his own party. Niger is a member of the Council of the Entente.

Education and Religion.—About 6% of the school-age population attends school. In 1960 there were 192 primary schools (with 21,054 pupils) and 8 secondary schools (1,040 pupils). Education has been hampered by reason of the large proportion of nomadic peoples in the country, the lack of Christian missions operating among the largely Muslim population, and a shortage of teachers.

Finance.—The estimated government budget for 1962 was balanced at 7.2 billion francs CFA, a rise of 17% over 1961 (246.85 francs CFA equal U.S.$1). In late 1961 a government-controlled development bank was



AFP FROM PICTORIAL PARADE

The history of transportation is epitomized as camels at Kano, Nigeria, amble by one of the 18 monitoring towers in the Project Mercury manned space flight control network.

opened in Niamey with a capitalization of 150 million francs CFA.

Transportation and Communications.—Road networks (miles, 1961): paved, 48; gravel or stone, 1,817; dirt, 3,400. There are no railroads. Niamey has an international airport. Most of the foreign trade passes through the port of Cotonou, Dahomey. Niamey and Zinder are the southern terminals of two trans-Saharan highways.

Production.—The economy is based on agriculture and stock raising. Principal food crops (metric tons, 1960): millet and sorghum, 938,000; cassava, 101,000; cowpeas, 47,000; onions, 19,000; rice, 7,000. Chief crops and other products for export (metric tons, 1960): decorticated peanuts, 50,525; hides, 1,358; live animals, 134,386; peanut oil, 5,470 (1959); gum arabic, 53 (1959); tin, 87.

Foreign Trade.—Total exports, 1961: 2,261 million francs CFA (3,108 million in 1960); imports, 4,663 million francs CFA (3,439 million in 1960). Chief exports (millions of francs CFA, 1961): peanuts, 1,023; peanut oil, 366; oilcake, 79; and livestock and livestock products, 796. Main imports were food, textiles, transport materials, metal products, and fuel. France took 71% of Niger's exports and provided 50% of imports in 1960.

Events, 1962.—Ardaly Douada, an exiled leader of the illegal Freedom Party, was assassinated in Bamako, Mali, on May 24. The party's leadership, which has advocated Niger's inclusion in a proposed Mali Federation, blamed the murder on the Niger government, but the charge was officially denied.

In an effort to stimulate agricultural production and streamline the marketing facilities for agricultural products, the government approved the establishment of Copro-Niger, a semigovernmental trading company, with a capitalization of 50 million francs CFA.

Iron deposits exceeding an estimated 100 million tons of medium-quality ore were uncovered at Say, about 40 miles southeast of Niamey.

In January, Niger joined France and Chad in the first meeting of the Common Organization of the Saharan Regions, held in Tamanrasset, Algeria.

J. L. L.

NIGERIA

The Federation of Nigeria is the world's most populous Negro nation, situated in western Africa on the Gulf of Guinea. Total area: 356,669 square miles; population (mid-1962 est.), 36,473,000. The federation has three autonomous regions (with areas and mid-1961 est. populations): Northern (281,782 square miles; pop., 19,877,000, including former Northern Cameroons, which became a province of Nigeria on June 1, 1961); Eastern (29,484 square miles; pop., 8,377,000); and Western (45,376 square miles; pop., 7,119,000). The federal territory of Lagos (27 square miles; 1961 est. pop., 379,000) is the capital and chief port. Other principal cities (with mid-1960 estimates): Ibadan (600,000), capital of the Western Region; Kaduna (51,000), capital of the Northern Region; Enugu (63,000), capital of the Eastern Region; Ogbomosho (140,000); and Kano (130,000).

Government.—Nigeria attained independence within the Commonwealth of Nations on Oct. 1, 1960. The British crown is represented by a governor, Dr. Nnamdi Azikiwe (since Nov. 16, 1960). Prime Minister Alhaji Sir Abubakar Tafawa Balewa heads a cabinet which took office on Oct. 1, 1960. The federal legislature consists of a 44-member nominated Senate and a 312-member elected House of Representatives. Party seating in the House (following elections of Dec. 12, 1959): Northern People's Congress, 142; National Convention (formerly National Council), 89; Action Group, 73; and others, 8. Each region exercises considerable autonomy through its local government.

Education and Religion.—Most of the population is illiterate, and only about one fourth of all school-age children attend school. Education at the primary and secondary levels is the responsibility of the regional governments; the federal government maintains institutions of higher learning. Number of schools (enrollments, 1960): 16,047 primary (2,600,180); 514 secondary (85,411); 36 technical (6,346); 317 teacher-training (27,061); 4 universities (1,806). There are universities at Ibadan, Nsukka, Ife, and Kano, where the University of Northern Nigeria (with an enrollment of 430 students) was opened officially in October 1962. Principal religions: Islam (comprising an estimated 42% of the population in 1960); Protestantism (11%); Roman Catholicism (5%); paganism (42%).

Finance.—The Nigerian pound equals U.S.$2.80. Government receipts, fiscal year 1963 est.: £67 million; expenditure, £59.5 million. The budgetary surplus for fiscal year 1963 totaled £7.5 million (compared with £10.5 million for fiscal year 1962). Federal capital expenditure under the six-year development plan (1962–68) was estimated at £62 million for fiscal 1963. Foreign exchange holdings: $321 million as of June 30, 1960 ($358 million at the end of 1959).

Transportation and Communications.—Government railways comprise main lines from Lagos to Kano (700 miles) and from Port Harcourt to Kaduna (570 miles), and aggregate 1,770 miles of track. The road network of 37,844 miles includes 5,800 miles of all-weather highways. Nigerian Airways and six other main international airlines operate regular air services from Lagos and Kano. Other data for 1960: passenger cars, 43,600; commercial vehicles, 32,400; telephones, 41,661; radio receivers, 143,000; television sets, 10,000 (1962).

Agriculture.—Agriculture employs 75% of the labor force, accounts for over 50% of national income, and provides 85% of total export value. Nigeria is the world's largest producer of palm kernels and palm oil, and an important exporter of cocoa, peanuts and peanut oil, and rubber. Subsistence crops, principally maize, millet, yams, rice, and beans, account for some 80% of agricultural output. Chief cash crops and estimated outputs in the 1961–62 crop year: cocoa beans, 426.6 million pounds (down 1% from 1960–61); palm kernels, 462,966 short tons exported (down 1%); palm oil, 197,000 short tons exported (down 4%); peanuts, 1,375,000 short tons (up 8%); rubber, 55,800 metric tons (down 6%); cottonseed, 102,000 metric tons (up 70%).

Manufactures and Minerals.—Industrial production is based on palm oil extraction, cloth weaving, lumber milling, and the processing of other raw materials. Manufactures include cement (282,000 metric tons in 1961, or nearly double the output in 1960), plywood, plastics, aluminum ware, ceramics, textiles, soap, and cigarettes. Chief minerals and 1961 outputs (in metric tons): petroleum, 2,304,000 (more than double that in 1960); coal, 607,000 (up 6%); tin, 7,800.

Foreign Trade.—Total exports, 1961: £173.5 million (up 2% from 1960); imports, £222.0 million (up 3%). Exports of cocoa, palm kernels and oil, and peanut products provide about 65% of total export value. Chief imports are machinery, transport equipment, foods and beverages, textiles, fuels, and chemicals. Nigeria's principal customers are Great Britain (which took 45% of the country's total exports in 1961); the Netherlands (13%); and the United States (11%). Principal suppliers are Britain (which supplied 29% of Nigeria's imports in 1961); Japan (14%); and West Germany (7%).

Events, 1962.—As the African country having political institutions most similar to those of the Western democracies, Nigeria continued to experiment with a decentralized federal framework markedly dissimilar to the authoritarian one-party systems of other West African nations. The success or failure of Nigeria to develop its resources and industrialize its economy is of great importance to the future of political democracy in Africa, for failure will tend to encourage authoritarian tendencies in other African states, while success will perhaps encourage many of these states to emulate Nigeria's democratic example.

The nation's democratic institutions withstood a severe trial in 1962 as the result of a political crisis in the Western Region caused by a split between moderate and radical factions of the region's ruling Action Group party. The regional premier and leader of the moderates, Chief Samuel Akintola, was dismissed from office on May 21 by the regional governor, Sir Adesoji Aderemi, after the party's federal executive had asked him to resign because of alleged "maladministration" and "antiparty activities." Akintola's faction had differed on party tactics and policies with the more radical majority group, headed by Chief Obafemi Awolowo, leader of the Action Group opposition in the federal legislature.

As the result of Akintola's dismissal, rioting broke out in the regional legislature in Ibadan on May 25, and the federal government on May 29 declared a state of emergency in the region. Following the disorders, 15 political leaders were placed under detention. On July 7 the Supreme Court ruled that Akintola's dismissal was invalid because the legislature had not initiated proceedings to remove him as premier.

The federal government arrested 15 political leaders in Lagos on September 17 and 18, and later charged them and other associates with importing arms and ammunition to be used in an attempted plot to overthrow the government. Among those arrested were Chief Awolowo and other heads of opposition parties. Twenty-five persons accused of participating in the treasonable conspiracy went on trial in Lagos late in the year.

The creation of a fourth region of Nigeria, to be called the Mid-West Region and to be formed from the southeastern part of the Western Region, was approved in April by the federal legislature, and subsequently by the legislatures of the Eastern and Northern regions. The government of the Western Region opposed the measure, however, and initiated litigation which delayed enactment.

Nigeria's five-year development plan (1962–68) was introduced in the federal legislature on March 21. The plan intends to produce a self-sufficient and diversified economy at a total cost of $1.9 billion, of which about half was to be obtained from foreign sources. The key project is a multipurpose $190 million hydroelectric installation at Kainji on the Niger River. Preliminary work on the Kainji Dam was begun in late 1962.

The government's independent course in foreign affairs was underscored by the abrogation on January 21 of the British-Nigerian defense agreement of 1960. Both nations announced that the move was taken to alleviate fears that Nigeria's "freedom of action" might be impaired under the accord, which had provided for mutual defense.

Nigeria was host to a conference of the representatives of 20 African states, held in Lagos from January 25 to 30 (see AFRICA).

W. R. F.

NIKOLAYEV, Andrian Grigoryevich. See biographical sketch under SPACE FLIGHT.

NOBEL PRIZES

The 1962 Nobel Prizes, each of which included prize money amounting to about $50,000, were officially presented on Dec. 10, 1962. This was the 66th anniversary of the death of Alfred Bernhard Nobel, who left the fund to establish the prizes, first awarded in 1901. In Stockholm, Sweden, King Gustav VI Adolf conferred the prizes in physics, chemistry, medicine and physiology, and literature. No Nobel Prize for peace was given in 1962. The Nobel laureates—who were named in October and November—and their achievements are discussed below.

Physics.—In 1962, Lev Landau became the fourth Russian to win the Nobel Prize in physics since it first was awarded in 1901. He was honored for having created "pioneering theories for condensed matter, especially liquid helium." Landau had studied the properties of helium II at close to absolute zero (−273.16°C.), developed a mathematical theory to explain its amazing superfluidity and superconductivity, and predicted its unusual "second sound" phenomenon, involving temperature waves rather than the compressional waves of ordinary sound. (See also PHYSICS.)

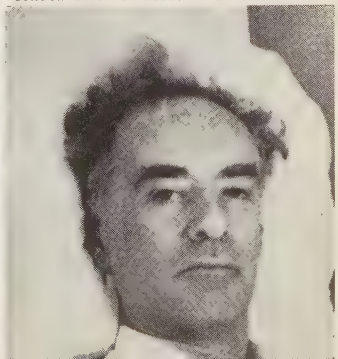
Lev Davidovich Landau was born in Baku, USSR, Jan. 22, 1908. He received his doctorate from Leningrad University in 1927 at the age of 19 and then worked with Niels Bohr (q.v.) in Copenhagen. In 1937 he was appointed head of the theoretical section of the Moscow Institute for Physical Problems, where he has worked with Peter Kapitza and made important contributions to the fields of quantum mechanics, nuclear physics, and cosmic radiation. On Jan. 7, 1962, he was severely injured in an automobile accident near Moscow and had not recovered sufficiently to go to Stockholm to receive his award.

Chemistry.—Max Perutz and John Kendrew of the Cavendish Laboratory, Cambridge University, were honored with the 1962 Nobel Prize in chemistry for their contribution to the understanding of life processes by being the first to determine the structures of complex globular proteins. Using X-ray diffraction techniques, Perutz had worked out the coiled structure of the molecule of hemoglobin, which transports oxygen in the blood, and Kendrew that of myoglobin, a simple form of hemoglobin found in muscle fibers.

Max Ferdinand Perutz was born in Vienna, Austria in 1914, emigrated to England in 1936, and received his doctorate from Cambridge University four years later.

(*Left*) Nobel laureates gather in Stockholm on December 10 to receive their prizes. From left are Dr. Maurice Wilkins of Great Britain, medicine; John Steinbeck of the United States, literature; Dr John C. Kendrew and Dr. Max F. Perutz of Great Britain, chemistry; and Dr. Francis H. C. Crick of Great Britain and Dr. James D. Watson of the United States, medicine. (*Right*) Lev Landau of the Soviet Union, winner of the physics prize, recovers in hospital from car crash injuries suffered on January 7.

LONDON DAILY EXPRESS: WIDE WORLD



Since 1947 he has been chairman of the Medical Research Council Unit for Molecular Biology at the Cavendish Laboratory.

John Cowdery Kendrew was born in Oxford, England, March 24, 1917. A graduate of Cambridge University (B.A. 1939; Ph.D. 1949), he worked for the Ministry of Aircraft Production during World War II, then became deputy director of the Molecular Biology Unit at Cambridge.

Medicine and Physiology.—Two British biophysicists and an American biologist shared the 1962 Nobel Prize in medicine and physiology for their determination of the molecular structure of deoxyribonucleic acid (DNA), the substance that controls heredity. The recipients of the award were Maurice H. F. Wilkins, Francis H. C. Crick, and James D. Watson. Working with Rosalind Franklin (d. 1958) at the University of London, Wilkins concluded from X-ray diffraction evidence that the submicroscopic DNA molecule in the nucleus of the living cell has the form of a double intertwined spiral. Using Wilkins' photographs and others, Crick and Watson, at Cambridge University, constructed a spiral model of the DNA molecule and described its double-helical configuration as the device by which genetic information is assured of being passed on from one generation to another. Wilkins demonstrated later that this molecular model was correct. (See also BIOCHEMISTRY; GENETICS.)

Maurice Hugh Frederick Wilkins, born in New Zealand on Dec. 15, 1916, was trained in physics at Cambridge and Birmingham universities in England. During World War II he worked on the Manhattan (atomic bomb) Project at the University of California, Berkeley. Since 1946 he has been associated with the Medical Research Council's Biophysics Research Unit at King's College, University of London.

Francis Harry Compton Crick was born on June 8, 1916. A graduate of University College, London, and of Cambridge University, he was an Admiralty physicist during World War II and made important contributions to the development of radar. He has been with the Cambridge Unit for Molecular Biology since 1949. The Watson-Crick model of the DNA molecule was formulated in 1951–1952 and the results of the work published in 1953.

James Dewey Watson, born in Chicago, Ill., April 6, 1928, received the Nobel award for work done when he was 25. He graduated from the University of Chicago in 1947 and obtained his doctorate from Indiana University in 1950 for research on bacterial viruses. After a year of further work in Copenhagen, he went to Cambridge, England, where he collaborated with Francis H. C. Crick on their award-winning research. Later he moved to the California Institute of Technology and then (in 1955) to Harvard University.

Literature.—The 1962 Nobel Prize in literature went to John Steinbeck for his "realistic and imaginative writings . . . distinguished by a sympathetic humor and a social perception." Steinbeck was the sixth American author to receive the honor. In the award announcement, the Swedish Literary Academy cited his novel *The Winter of Our Discontent* (1961) as a return to the "towering standards" of *The Grapes of Wrath* (1939), winner of the 1940 Pulitzer Prize for its epic treatment of Depression farm migrants. *The Winter of Our Discontent*, which American critics greeted with mixed enthusiasm, is a fable of the temptations of an honest man in a world of declining moral standards.

John Ernst Steinbeck was born Feb. 27, 1902, in Salinas, Calif., center of an agricultural region that forms the background of much of his fiction. His father was a county official and his mother a schoolteacher. He attended Stanford University, and until his success as a writer held various odd jobs so that he could travel and write. The first of his 27 published books was *Cup of Gold* (1929); however, he did not attain recognition until after the appearance of *Tortilla Flat* in 1935. *In Dubious Battle* (1936), *Of Mice and Men* (1937), and *The Grapes of Wrath* (1939) established his reputation as one of the leading "sociological" novelists in the United States. His most recent book, *Travels with Charley; In Search of America*, was published in 1962.

NORFOLK ISLAND. See AUSTRALIA.

NORTH AMERICA. See CANADA; MEXICO; UNITED STATES.

NORTH ATLANTIC TREATY ORGANIZATION

Any survey of the activities of NATO within a given period must have regard both to the more or less routine pieces of information that testify to the day-to-day business of an organization in being, and also to such indications as there may be of long-term changes either pending or actually taking place.

New Commands and Appointments.—The year 1962 saw the coming into operation of a new military command as a part of the NATO structure. This was the Allied Command, Baltic Approaches (BALTAP), established within the existing command CINCNORTH (Commander-in-chief, Allied Forces, Northern Europe). The creation of the command, which was announced on Dec. 8, 1961, was activated and developed during 1962. Lt. Gen. Tage Andersen, Royal Danish Air Force, was named as first commander, with Maj. Gen. Peter von der Groeben of the German Army as his deputy. The command consists of a headquarters and four subordinate commands: land forces in Schleswig-Holstein and Jutland; land forces in Zeeland; naval forces; and air forces. The new command, which had been under discussion for three years, was made possible by the development of the German Army, and it will divide up the inconveniently large responsibility of CINCNORTH, which is based in Oslo, Norway.

The new command was protested by the Soviet Union, which professed to see it as "a new and most dangerous step encouraging Hitler's former generals and admirals in their predatory designs," and which also hinted that it prejudiced the neutrality of Sweden and Finland. The Danish reply said that "the participation in NATO of the Federal Republic of Germany does not alter the purely defensive nature of the alliance. . . . The unified command now brought into being is a NATO command, which will permanently have a Danish commander-in-chief. . . ."

Among personnel changes may be mentioned those in the Standing Group of the Military Committee and in the North Atlantic Council. On Jan. 1, 1962, Lt. Gen. Jean Marie Guerin of the French Army assumed duty as Standing Group representative to the North Atlantic Council, succeeding Maj. Gen. R. H. Barry of the British Army. Also at the beginning of the year there was a change in the honorary presidency of the North Atlantic Council, according to the principle of annual alphabetical rotation by countries. Selim Sarper, foreign minister of Turkey, succeeded Alberto-Franco Nogueira of Portugal, but, due to political changes in Turkey, Sarper was replaced in April by the new foreign minister, Feridun Cemal Erkin.

Resignation of Norstad.—By far the most important of the NATO personnel changes of 1962—and one of the most important to occur for many years—was the resignation of Gen. Lauris Norstad (United States) as Supreme Allied Commander, Europe (SACEUR). Norstad, who had filled this post with distinction since 1956, submitted his resignation to President Kennedy, who accepted it on July 20. Five days later, the North Atlantic Council approved as Norstad's successor Gen. Lyman L. Lemnitzer, who had been nominated by Kennedy, and who at the time of his selection was chairman of the U.S. Joint Chiefs of Staff. Norstad

had expressed a desire to be relieved of his duties about November 1, but because of the Cuban crisis in late October the NATO Council, in agreement with Kennedy, decided to keep Norstad in his post until the turn of the year. Lemnitzer took over the command on Jan. 2, 1963.

Algeria.—One of the little-noted aspects of the attainment of independence by Algeria in 1962 was the fact that, for the first time, the integrity of the territory guaranteed by the North Atlantic Treaty had been breached. Article 6 states that "an armed attack on one or more of the Parties is deemed to include an armed attack on the territory of any of the Parties in Europe or North America, on the Algerian Departments of France. . . ." A neutralist and leftward-leaning Algeria in place of a French Algeria is certainly in one sense a loss to NATO; but the Algerian question had never been handled by NATO, and if its resolution meant that more French Army units would be available for European defense, there was a net gain.

Reassessments of Strategy.—Throughout 1962 a fundamental reassessment of NATO strategy was being carried on—one which was perhaps overdue, and which was being enforced by a basic change in the relative situations and power of the United States and western Europe. When NATO came into being in 1949, and throughout much of its first decade, the states of western Europe were wholly dependent on the United States strategically as well as economically. United States military policy was therefore accepted without much quibbling, because the only point that really mattered, in European eyes, was the existence of an absolute commitment on the part of the United States to defend western Europe against a Soviet attack.

By 1962 it was clear that such conditions had disappeared. The recovery of western Europe was complete and, at least within the Common Market, the region had a more buoyant economy than had the United States, even though its military strength was still far less, both relatively and absolutely. (See also EUROPE.) This situation was reflected in the growing demand for an independent nuclear striking force in Europe. The British already had one, which in the last resort was under the control of the prime minister, although there was little question that it would be used only in accordance with general NATO—and American—strategy. The French determination to obtain, at all costs, a nuclear force of their own raised more doubts, because there could be no such certainty regarding its eventual use or control.

The European arguments for a separate NATO nuclear force in Europe—or a French nuclear force—or (the most acceptable of these possibilities) a joint Anglo-French force—were not tenable on strategic grounds; but then, their basis was not logic, but pride. It was said that there were doubts that the United States would ever doom its cities to destruction for a European cause. But French President de Gaulle or British Prime Minister Macmillan would be even less likely to bring even more certain doom on Paris or London for a non-French or non-British cause—for example, Berlin.

However, the pressures arising from the new self-assertiveness of western Europe are not to be easily denied, and in the late summer and fall of 1962, Washington seemed to be fighting a not altogether successful rearguard action against what it clearly regarded as a serious or even fatal mistake, but one which in the end it might have to accept.

UPI

Gen. Lyman Lemnitzer (right) succeeds Gen. Lauris Norstad (left) as commander in chief of United States forces in Europe, at Paris, November 1. Norstad's retirement as NATO chief was postponed until 1963 owing to the Cuban crisis.

This was the tone of President Kennedy's remarks at his press conference on July 5, when he reluctantly opened the door to the possibility of a separate European nuclear deterrent:

". . . stronger pressures," the president said, "have arisen in Europe for a European nuclear force not as dependent upon the United States as the present one. What we have suggested is that this is a matter that Europe should consider carefully; that we would, of course, be responsive to any alternative arrangements that they wish to make. . . ." Kennedy said that the United States regarded the present arrangement under NATO as giving "full and sufficient guarantees for the integrity of Europe." He added, however, that "if Europe does not agree with that . . . then we'd be prepared to discuss an alternate arrangement."

Ministerial Meetings of the Council.—The steps taken at the regular spring ministerial meeting of the North Atlantic Council, held at Athens, May 4–6, must be viewed in relation to this background. The major item which emerged from the meeting was the assignment to NATO use of the five nuclear-armed Polaris submarines based on the Holy Loch, near Glasgow, Scotland. This was in accordance with the American offer made a year earlier. The vessels, however, are still under American, not joint, command, and the gesture was no more than a symbol of the American commitment.

The Athens meeting also began to deal with the desirability of achieving a better balance between nuclear and conventional forces in NATO, thus strengthening the possibility of local European defense with nonnuclear weapons. Every strategic expert is now convinced of the necessity of this step, but the difficulty is to get the European allies to provide the necessary manpower. This difficulty had by no means disappeared by the time the annual year-end ministerial meeting of the Council was held in Paris from Dec. 13 to 15, 1962, but the final communiqué did speak of the intention to increase the effectiveness of the alliance's conventional defenses.

(See also NATIONAL SECURITY.)

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NORTH BORNEO. See BORNEO.

NORTH CAROLINA

A South Atlantic state of the United States, North Carolina ranks 28th among the states in area (land, 49,067 square miles; inland water, 3,645) and 11th in population (4,731,000 on July 1, 1962, a 3.8% increase from the 1960 census figure of 3,556,155). Urban places with populations above 15,000 in 1960:

Asheville	60,192	Kinston	24,819
Burlington	33,199	Lexington	16,093
Charlotte	201,564	Lumberton	15,305
Concord	17,799	New Bern	15,717
Durham	78,302	Raleigh (*capital*)	93,931
Fayetteville	47,106	Rocky Mount	32,147
Gastonia	37,276	Salisbury	21,297
Goldsboro	28,873	Shelby	17,698
Greensboro	119,574	Statesville	19,844
Greenville	22,860	Thomasville	15,190
Hickory	19,328	Wilmington	44,013
High Point	62,063	Wilson	28,753
Kannapolis (uninc.)	34,647	Winston-Salem	111,135

Government.—Chief executive and judicial officers in 1962 included Terry Sanford (Democrat), governor, serving a four-year term; lieutenant governor (vacancy); Thad Eure, secretary of state; Edwin Gill, treasurer; Henry L. Bridges, auditor; T. Wade Bruton, attorney general; Charles F. Carroll, superintendent of public instruction; and Emory B. Denny, chief justice of the 7-member Supreme Court.

The North Carolina General Assembly, which convenes in odd-numbered years, comprised 48 Democrats and 2 Republicans in the Senate in 1962 and 105 Democrats and 15 Republicans in the House of Representatives.

Finance.—In the 1962 fiscal year, revenue of $759,696,557 included $509,570,110 from state taxes and $130,545,407 in federal funds. Chief tax yields were the 3% general sales tax ($131,215,914) and taxes on individual incomes ($95,453,963), corporate incomes ($54,668,337), and motor fuels ($108,520,991). Spending of $754,448,040 included $321,056,542 for education, $145,482,002 for health, welfare, and safety, and $181,365,668 for highways.

Education.—In the 1961–62 school year it was estimated that public elementary schools staffed by 27,967 teachers enrolled 857,500 pupils; secondary schools with 10,934 teachers enrolled 285,500; and parochial schools with 480 teachers enrolled 12,379. College enrollment totaled 77,481.

Estimated public school spending in the 1961–62 school year totaled $357,950,000, including current expenditures of $303 million ($290 per pupil) and capital outlays of $44 million. Revenue of $377 million was drawn chiefly from state funds ($247 million) and local districts ($86 million). Teachers' salaries averaged $4,877 (high school, $4,998; elementary, $4,820). Actual spending for higher education (1961 fiscal year) amounted to $71,991,000.

Public Assistance.—In the 1962 fiscal year, public assistance payments to a monthly average of 189,601 persons totaled $69,060,615. This amount included $24,870,171 for the aged and $27,805,719 for dependent children.

Transportation and Communications.—A total of 614 miles of federally aided highway construction and reconstruction were completed in the 1961 fiscal year. *Highways, roads, and streets* on Jan. 1, 1961, totaled 80,913 miles (44,813 surfaced). These served 1,900,003 *motor vehicles* (as registered on July 31, 1962), including 1,352,283 automobiles. Operating in the state were (1961) 29 *railroads* (using 4,450 line miles of track); (1962) 5 regularly scheduled *airlines;* and 105 commercial and municipal *airports* and 1 heliport.

Communications media included (1962) 157 AM and 49 FM *radio stations;* 12 VHF *television stations;* 51 daily *newspapers* (circulation, 1,214,954) and 142 other newspapers (394,326); and (January 1) 325,300 business and 936,700 residential *telephones.*

Labor Force.—Nonagricultural employment in manufacturing establishments averaged 1,200,100 in 1961, compared with 1,195,500 in 1960. Of nonfarm employees in 1961, 42.2% were in manufacturing, 18.1% in trade, and 14.2% in government services. Insured unemployment during 1961 stood at 47,200, compared with 38,000 for 1960.

Manufacturing.—Manufacturing engaged 496,559 workers in 1960, including 420,694 in production, and provided a payroll of $1,740,576,000.

LEADING NORTH CAROLINA MANUFACTURES, 1960

Industry group	Total employees	Total payroll	Adjusted value added by mfr.[1]
		(in thousands)	
Textile mill products	217,427	$695,521	$1,231,464
Food and kindred products	34,084	119,206	276,936
Furniture and fixtures	45,179	151,459	275,782
Chemicals and products	12,826	63,481	200,417
Apparel and related products	34,083	83,790	137,050
Paper and allied products	12,094	64,870	113,080
Lumber and wood products	30,107	65,755	108,949
Nonelectrical machinery	11,021	45,038	90,475

[1] For definition, see footnote 1 in the article *Industrial Production.* (Source: *1960 Annual Survey of Manufactures.*)

Adjusted value added by manufacture amounted to $3,760,774,000.

Mining.—In 1961, North Carolina ranked 39th among the states in the value of its mineral production, with 0.28% of the national total. Tungsten output rose over 75% from 1960, as the mines were worked for the first full year. The state ranked first in feldspar, scrap mica, and sheet mica, and second in olivine and tungsten. About half of the total value of $50,124,000 was accounted for by stone.

Agriculture.—Cash farm income in the first nine months of 1962 (excluding government payments) totaled $700,796,000, compared with $755,310,000 for the corresponding period of 1961. For the full year 1961, income comprised $322,300,000 from livestock, $800,300,000 from crops, and $32,012,000 in government payments. Principal income sources in 1961 were tobacco, $556,339,000; broilers, $82,369,000; wholesale milk, $66,240,000; and eggs, $65,989,000.

The state's 191,000 farms in 1959 had an acreage of 15,888,000 (4,746,000 in harvested cropland). Livestock on farms on Jan. 1, 1962, included 907,000 cattle, 1,279,000 hogs, and 14,426,000 chickens, and (1961) 183,200,000 broilers. An average of 309,000 family and 104,000 hired workers engaged in farming in 1961.

NORTH CAROLINA CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Apples (1,000 bu.)	1,554	2,300	2,700
Corn for grain (1,000 bu.)	65,515	66,384	72,632
Cotton lint (1,000 bales)	368	278	275
Peaches (1,000 bu.)	1,170	1,500	1,500
Peanuts (1,000 lb.)	293,962	309,760	347,600
Potatoes (1,000 cwt.)	3,384	3,549	2,802
Soybeans (1,000 bu.)	7,307	13,064	13,392
Tobacco (1,000 lb.)	866,758	853,951	928,700
Wheat (1,000 bu.)	8,078	11,368	4,896

(Source: U.S. Department of Agriculture.)

Events, 1962.—North Carolina had one of the most exciting off-year elections in its history as the Republican Party, for the first time in many years, waged an intensive campaign for offices at all levels. In the Republican primary in May, Claude L. Greene, Jr., won the nomination for United States senator over Charles H. Babcock, Jr. In the 6th, 9th, and 11th Congressional District primaries, the successful candidates were Blackwell P. Robinson, James T. Broyhill, and Robert Brown, respectively. In the Democratic primaries in the 3d, 5th, 6th, and 8th districts, the four incumbents —David N. Henderson, Ralph J. Scott, Horace R. Kornegay, and A. Paul Kitchin, respectively—were renominated. The only close contest was in the new 8th District, where Kitchin defeated John P. Kennedy by about 1,800 votes.

In the November election, Republican Charles R. Jonas, incumbent representative from the old 10th District, defeated Kitchin, incumbent from the old 8th District. (The revisions were brought about when the number of districts were reduced from 12 to 11.) In the new 9th District, Broyhill defeated Democratic incumbent Hugh Q. Alexander by a margin of slightly more than 1,000 votes. Thus, for the first time in 30 years, North Carolina was to have two Republicans in Congress. Democratic incumbents were reelected in the nine other congressional districts, though by small margins in the 10th and 11th. Sen. Sam J. Ervin, Jr., was reelected, and the Democrats were victorious in all of the contests for state offices.

The Republicans boosted their strength in the 120-seat House of Representatives from 15 to 22 seats; in the state Senate, Republican strength remained at 2 of the 50 seats. The most startling

upset occurred in Guilford County, where Republican candidates for the legislature captured the Senate seat and all four seats in the House of Representatives.

Six amendments to the state constitution were approved by the electorate by heavy majorities. These concerned: (1) revision of the state court system; (2) a procedure for the automatic reapportionment of the state House of Representatives by the speaker after each federal census; (3) clarification of the provisions "controlling succession to the office of governor and lieutenant governor upon death, resignation or removal from office, or temporary physical or mental incapacity"; (4) authorization for the General Assembly to reduce the residence requirement for voting in presidential elections; (5) authorization for the General Assembly to fix and regulate the salaries of elective state officers constituting the Council of State and the Executive Department during their terms of office; and (6) clarification of the General Assembly's powers to provide for a uniform statewide classification and exemption of property for taxation.

In March the chief justice of the state Supreme Court, J. Wallace Winborne, retired and was succeeded by Associate Justice Emery B. Denny. To fill the vacancy, Governor Sanford appointed Susie Sharp, previously special judge of the Superior Court, who thus became the first woman to serve on the state's highest court.

In November, Dr. Douglas Maitland Knight was named president of Duke University, succeeding the interim president, Dr. Deryl Hart.

"Events" by: HUGH T. LEFLER,
Kenan Professor of History,
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NORTH DAKOTA

A North Central state of the United States, North Dakota ranks 17th among the states in area (land, 69,457 square miles; inland water, 1,208) and 44th in population (642,000 on July 1, 1962, a 1.5% increase from the 1960 census figure of 632,446). Urban places with populations above 7,500 in 1960:

Bismarck (*capital*)	27,670	Mandan	10,525
Dickinson	9,971	Minot	30,604
Fargo	46,662	Valley City	7,809
Grand Forks	34,451	Williston	11,866
Jamestown	15,163		

Government.—Chief executive and judicial officers in 1962 included William L. Guy (Democrat), governor, serving a two-year term; Orville W. Hagen, lieutenant governor; Ben Meier, secretary of state; John R. Erickson, treasurer; Curtis Olson, auditor; Leslie R. Burgum, attorney general; M. F. Peterson, superintendent of public instruction; and P. O. Sathre, chief justice of the 5-member Supreme Court.

The North Dakota Legislative Assembly, which convenes in odd-numbered years, comprised 28 Republicans and 21 Democrats in the Senate in 1962 and 72 Republicans and 41 Democrats in the House of Representatives.

Finance.—In the 1962 fiscal year, revenue of $117,782,563 comprised $116,196,297 from state sources and $1,586,266 in federal funds. Chief tax yields were the 2% general sales tax ($13,445,836) and taxes on individual and corporate incomes ($7,559,170) and motor fuels ($17,599,911). Spending of $119,947,933 included $29,131,873 from the general fund and $34,239,328 from the highway fund.

Education.—In the 1960–61 school year, public elementary schools staffed by 4,577 teachers enrolled 103,380 pupils; secondary schools with 2,391 teachers enrolled 37,086; and private and parochial schools with 747 teachers enrolled 19,553. College enrollment (fall 1961) totaled 14,201 in 13 institutions, including 5 junior colleges and 8 senior colleges and universities.

Estimated public school spending in the 1961–62 school year totaled $65,525,000, including current expenditures of $50,700,000 ($390 per pupil) and capital outlays of $12,750,000. Revenue of $70 million was drawn chiefly from state funds ($14.5 million) and local districts ($41 million). Teachers' salaries averaged $4,150 (high school, $4,850; elementary, $3,800). Actual spending for higher education (1961 fiscal year) amounted to $19,501,000.

Public Assistance.—In the 1962 fiscal year, public assistance payments to a monthly average of 18,339 persons totaled $13,786,264. This amount included $6,658,479 for the aged and $3,420,254 for dependent children.

Transportation and Communications.—There were 1,834 miles of highway reconstruction completed in 1961. *Highways and roads* on Dec. 31, 1961, totaled 102,274 miles (58,136 surfaced). These served 363,362 *motor vehicles* (as registered on Aug. 31, 1962), including 225,469 automobiles. Operating in the state in 1962 were 6 *railroads* (using 5,196 line miles of track); 3 regularly scheduled *airlines;* and 104 commercial and municipal *airports.*

Communications media included (1962) 26 AM *radio stations;* 11 VHF *television stations;* 10 daily *newspapers* (circulation, 163,631) and 107 other newspapers (163,236); and (January 1) 51,900 business and 157,800 residential *telephones.*

Labor Force.—The state's labor force on July 15, 1962, included 127,000 agricultural workers. Nonagricultural employment totaled 159,060, compared with 155,430 a year earlier and an average of 152,210 for the 12 intervening months. Of nonfarm wage and salary workers, 28% were in trade, 25% in government service, and 16% in service industries. Unemployment on July 15, 1962, stood at 9,120, compared with 9,150 a year earlier.

Manufacturing.—Manufacturing engaged 5,954 workers in 1960, including 4,226 in production, and provided a payroll of $25,079,000. Adjusted value added by manufacture totaled $59,535,000. The leading industry in 1960 was food and kindred products, with 3,009 employees who earned $12,032,000 in wages and added $26,599,000 in adjusted value by manufacture. (See below, *Events, 1962.*)

Mining.—In 1961, North Dakota ranked 31st among the states in the value of its mineral output, with 0.47% of the national total. Mineral fuels accounted for 90% of the total value, and lignite production continued its three-year uptrend. (See below, *Events, 1962.*)

NORTH DAKOTA MINERAL PRODUCTION, 1961
(In short tons, except as noted)

Mineral	Quantity	Value
Clays	...[1]	$ ...[1]
Coal (lignite)	2,726,000	6,141,000
Natural gas (million cu. ft.)	20,100	2,533,000
Petroleum (1,000 bbl.)	23,568[2]	64,105,000[2]
Sand and gravel	9,395,000	7,507,000
Stone	40,000	40,000
Other minerals	...	4,371,000
Total	...	$84,697,000

[1] Figure withheld to avoid disclosing confidential data from an individual company. [2] Preliminary. (Source: U.S. Bureau of Mines.)

Agriculture.—Cash farm income for the first nine months of 1962 (excluding government payments) totaled $449,337,000, compared with $365,176,000 for the corresponding period of 1961. For the full year 1961, income comprised $208,317,000 from livestock, $293,311,000 from crops, and $44,336,000 in government payments. Principal income sources in 1961 were wheat, $186,473,000; cattle, $126,031,000; and barley, $33,630,000.

The state's 55,000 farms in 1959 had an acreage of 41,466,000 (19,358,000 in harvested cropland). Livestock on farms on Jan. 1, 1962, in-

NORTH DAKOTA CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Barley (1,000 bu.)	70,489	45,334	99,365
Flaxseed (1,000 bu.)	18,266	8,262	18,912
Oats (1,000 bu.)	54,346	31,434	98,072
Potatoes (1,000 cwt.)	11,119	13,970	14,820
Soybeans (1,000 bu.)	1,703	2,590	756
Sugar beets (1,000 short tons)	404	592	565
Wheat (1,000 bu.)	113,230	69,432	158,500

(Source: U.S. Department of Agriculture.)

cluded 1,881,000 cattle, 275,000 hogs, 715,000 sheep, and 2,595,000 chickens. An average of 70,000 family and 17,000 hired workers engaged in farming during 1961. (See below, *Events, 1962.*)

Events, 1962.—North Dakota recorded its greatest wealth-producing year in history. The state's "new wealth" of nearly $1 billion from four major sources in 1962 far surpassed the previous record established in 1958, and represented a gain of 33% over 1961, when a drought plagued much of the state.

Each wealth-producing industry established a new record during the year. Agriculture, always the largest industry in the state, accounted for 81% of the total, about $775,911,000, topping the previous record of $704,366,000 in 1948. The 1962 total includes more than $70 million in government payments.

The estimated value of oil and gas produced in 1962 was $71 million, compared with $64 million in 1961. Total estimated oil production for the year was 26 million barrels, gained from 91 producing pools in 78 oilfields. New oil wells brought in in 1962 totaled 87; dry holes drilled during the year, to December 1, totaled 95. The Portal Pipeline, the most significant development in the industry during the year, brought a 50-cent-per-barrel wellhead price increase to producers. The value of other minerals, including lignite, sand and gravel, clays, stone, and salt, amounted to $17.5 million.

The economy of North Dakota gained $63 million through manufacturing and processing in 1962, compared with $59,535,000 in 1961. The State Travel Department estimated that tourist income during the year increased 10%, to $32 million. A survey showed that more tourists visited the parks, recreation areas, and historic sites, and that they stayed longer than in previous years. Many persons en route to the World's Fair in Seattle traveled by way of North Dakota, which has made excellent progress in its development of superhighways.

North Dakota gained 20,174 nonagricultural jobs in the decade ending in 1962. Employment growth in the state's towns and cities was a substantial 15.6%, only 2.6% less than the national average. There were gains in the oil industry, in wholesale and retail trade, in personal and business services, and in finance, insurance, and real estate. Job losses were reported in railroading, lignite mining, and meat-packing.

Democratic Gov. William L. Guy was reelected to his second term in the November 6 election, but by a scant margin of less than 2,000 votes over Mark Andrews, 36-year-old Republican national committeeman. In the race for a U.S. Senate seat, Republican Milton R. Young, who has served since 1945, won easily from William Lanier, a Fargo attorney. Both Republican congressmen were returned to office. On the state level, Republicans won all other offices except that of governor, and increased their majorities in both houses of the state legislature.

A reapportionment plan adopted by a special state commission appointed in 1961 was ruled inequitable and therefore void by the state Supreme Court. The previous apportionment remained in effect.

"Events" by: C. W. Leifur,
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NORTHERN IRELAND

Northern Ireland's six counties and two county boroughs (land area, 5,242 square miles) form an integral part of the United Kingdom of Great Britain and Northern Ireland. At the 1961 census the population totaled 1,425,400, distributed as follows (provisional figures): Antrim, 690,000 (including Belfast county borough, 416,100); Armagh, 117,600; Down, 267,000; Fermanagh, 51,600; Londonderry, 165,300 (including Londonderry county borough, 53,700); and Tyrone, 133,900. Belfast is the capital city and chief port.

Government.—Lord Wakehurst, who assumed office as governor on Dec. 3, 1952, was reappointed for a second 6-year term in 1958; he is advised by ministers responsible to Parliament, which consists of a 52-member House of Commons and a 26-member Senate. Northern Ireland also elects 12 members to the United Kingdom House of Commons.

Education and Religion.—Schools and enrollments, 1960–61: 1,510 primary (189,610 pupils); 116 secondary intermediate (54,192 pupils); 31 technical intermediate (4,317 pupils); 81 grammar (38,546 pupils); 20 special (1,579 pupils); and 164 centers of higher education (35,512 students). Student enrollment at Queen's University, Belfast, was 4,225; at Magee University College, Londonderry, 252. In 1961, Protestants numbered 899,000; Roman Catholics, 498,000 (an increase of 5.6% since the 1951 census).

Finance.—Revenue, 1962–63 est.: £126,941,000 (£110,952,000 from taxes); expenditure, £119,387,800 (supply services, £108,520,800). Northern Ireland's contribution to the British Exchequer was £7.5 million; the budget surplus was estimated at £53,200. Public debt: £91,022,572 as of March 31, 1961.

Transportation and Communications.—Road mileage, 1962: 13,809 (trunk roads, 381). Rail traffic is conducted by the Ulster Transport Authority. British European Airways and private operators maintain air services with Great Britain. The first section of a 40-mile motor highway between Belfast and Dungannon (costing £10 million) was opened in July 1962. Passenger cars (1959): 115,300; commercial vehicles, 36,300.

Economic Indicators.—Employed persons (mid-1962): 204,700 (up 5,100 from 1961); unemployed, 36,900 (7.2% of the work force; down 0.9% from 1961). Net value of production, 1960: £593 million (up 10.5% from 1959). National Insurance Act contributors, 1961: 569,000 (receipts, £24,961,000; payments, £26,681,000).

Manufactures and Mining.—Over 200,000 persons are employed in manufacturing (including 54,000 in textile industries in 1962), engineering, and shipbuilding (55,000 in 1961); 2,416 were employed in mines and quarries in 1960. Sales of electricity to 350,334 consumers, 1960–61: 1,374 million units.

Agriculture.—Acreage (in thousands) of chief crops, 1961 (provisional): oats, 173 (down 29 from 1960); barley, 110 (up 51); and potatoes, 73 (down 14). Livestock (in thousands): cattle, 1,064; sheep, 1,168; pigs, 1,067; poultry, 10,740; and horses, 10.

Foreign Trade, 1961.—Total exports, £342 million; imports, £383 million. Great Britain took 91% of exports. Linen exports exceeded £12 million.

Events, 1962.—A general election was held on May 31. The Unionist Party, which had controlled the government for 41 years, was returned to power with 34 seats—a loss of two from the party's strength in the Parliament dissolved on May 9. Although the Northern Ireland Labor Party gained one of eight Belfast seats and recorded an increased total vote, it failed to increase its parliamentary representation of four.

Economic problems were the principal election issue. The prime minister, Viscount Brookeborough, emphasized during the campaign that his government had helped 130 domestic companies to expand and 170 foreign businesses to begin operations in Northern Ireland. The latter companies included three American firms in 1962, one of them a subsidiary of the International Telephone and Telegraph Corporation.

A new £75,000 extension to the physics department of Queen's University, Belfast, was opened by the queen mother. The new facilities are equipped for modern research, including work on nuclear energy and cosmic rays.

Donovan Rowse,
Author and Publicist.

NORTHERN RHODESIA. See Rhodesia and Nyasaland.

NORTHWEST TERRITORIES

Comprising 1,304,903 square miles, slightly less than 34% of Canada's total area, the Northwest Territories includes all of the Canadian mainland north of the 60th parallel except the Yukon Territory and parts of Quebec and Newfoundland. The Territories includes islands in Hudson, James, and Ungava Bays, as well as the entire Arctic Archipelago. For administrative purposes it is divided into three districts: Mackenzie (527,490 sq. mi.), Keewatin (228,160 sq.mi.), and Franklin (549,253 sq. mi.). In 1962 the population was estimated at 23,000, of which 38% was Eskimo and 22% was Indian.

Government.—The Northwest Territories is governed by a commissioner (R. G. Robertson in 1962) acting on instructions from the governor in council or the minister of northern affairs and national resources. Legislative powers are exercised by a Council of 9 members with a normal 3-year term of office. Five councillors are appointed, and 4 elected from constituencies in the Mackenzie District. (Administration is by the Department of Northern Affairs and National Resources.)

Education.—In 1962 the Department of Northern Affairs and National Resources operated 42 schools in the Territories, and assisted in the operation of 1 company school, 3 part-time schools, and 1 seasonal school. Public and separate school boards operated 1 school each in Yellowknife. Total enrollment as of March 31, 1962, was 4,873, of whom 1,631 were Eskimos and 1,151 were Indians. Large residences, accommodating a total of 1,180 pupils, were maintained by the federal government at Inuvik, Fort McPherson, Fort Simpson, Fort Smith, Yellowknife, and Chesterfield Inlet. Family-type units accommodating 8 pupils each were maintained at Baker Lake, Eskimo Point, and Igloolik. Vocational training is also provided.

Public Health and Welfare Services.—Health and welfare services for all residents are provided by agencies of the federal and territorial governments. In 1962 there were 12 hospitals, 7 of which were operated by missions, 2 by companies, 1 by the locally elected hospital board of Yellowknife, and 2 by the Northern Health Service. The latter also operated 11 nursing stations. Rehabilitation centers are established at Frobisher Bay and Inuvik, and welfare services are provided by professional social workers.

Transportation and Communications.—The main water transportation route is provided by the Mackenzie River system, a waterway some 2,350 miles long stretching north and west to the Arctic Ocean. All-weather roads now total 361 miles, including the Mackenzie, Hay River, and Yellowknife highways. Approximately 20 miles of the all-weather Ingraham Trail from Yellowknife to MacKay Lake was completed in 1962. These roads provide access to Enterprise, Hay River, Fort Providence, Rae, and Yellowknife from southern points. Secondary and local roads total 400 miles. There are 12 airports operated by the Transport Department, 6 airfields owned and operated by mining companies, and 49 water aerodromes. Regular mail and passenger services are maintained to many points. Telephone communications have been established between southern Canada and Fort Smith, Hay River, and Yellowknife in the Mackenzie District and Frobisher Bay on Baffin Island. There are radio stations in the larger towns.

Production and Industry.—Extraction of minerals ($19,992,484 in 1961, compared with $26,481,649 in 1960) continues to be the mainstay of the economy. Gold was the biggest revenue producer among the minerals: 402,580 ounces, valued at $14,267,435, were produced in the Yellowknife area in 1961. Other minerals produced in 1961 included: pitchblende, $2,782,000; nickel, $2,600,000; copper, $272,000; and silver, $71,049. The development of 1 million tons of high-grade tungsten ore in the Flat River area is under way. As of Aug. 31, 1962, companies held oil and gas exploratory permits on 52,354,614 acres of mainland, 52,136,785 acres in the islands north of the 70th parallel, and 18,962,428 acres on the continental shelf. In 1961, 516,979 barrels of crude petroleum were produced.

Fur production in 1961 amounted to 316,340 pelts, valued at $1,319,748. Commercial fisheries on Great Slave Lake produced a total of 5,688,964 pounds, principally lake trout and whitefish, with an estimated market value of $1,314,951. More than 15 million feet of lumber was produced at an estimated value of $1 million. The territories had some 2,000 tourists in 1961.

Events, 1962.—On February 12, construction was begun on the 438-mile Great Slave Lake Railway. This is the first railway to cross the 60th parallel into the Northwest Territories; it will bring extensive lead-zinc deposits of Pine Point into production and open up 6 million acres of arable land for homesteading.

WIDE WORLD

King Olav V of Norway (second from left) inspects guard at Edinburgh Castle, October 16, on state visit to Scotland.

Active exploration for minerals, oil, and gas continued during 1962. Impressive deposits of high-grade iron ore were found along the Yukon-Northwest Territories border, and plans were made to construct an airstrip and winter road into the area. Following the discovery of a rich occurrence of gold, claims were recorded in the Contwoyto Lake area. An extensive area of oil-saturated sands was discovered in the northwestern area of Melville Island in August.

The summer session of the Northwest Territories Council was held at Cape Dorset in the eastern Arctic. The decision was made to recommend Fort Smith as the capital of the proposed Mackenzie Territory.

The development of Eskimo cooperatives in the Arctic part of the Territories continued; 10 cooperatives are engaged in business operations based on commercial fishing, handicrafts, tourism, graphic art, lumbering, and the operation of small retail stores. The first shipment of Arctic char was sent to Great Britain in the summer of 1962. A gross profit of about $800,000 was expected for the 10 enterprises in 1962.

R. G. Robertson,
Commissioner, Northwest Territories.

NORWAY

The constitutional monarchy of Norway (*Norge*), in northwestern Europe, has an area of 125,031 square miles (not including Svalbard[1]), of which only about 4% is arable, and a population (October 1962 est.) of 3,650,000. Principal cities and populations (Jan. 1, 1962, est.): Oslo, the capital (482,000); Bergen (117,000); Trondheim (60,500); and Stavanger (53,200).

Government.—The constitution of 1814, with amendments, provides for three separate branches of government. Legislative power is vested in the 150-member Storting, a modified unicameral parliament, elected every fourth year. Three fourths of its members constitute the Odelsting and one fourth the Lagting. The present Storting, elected Sept. 11, 1961, includes 74 Laborites, 29 Conservatives, 16 Centerites, 15 Christian Democrats, 14 Liberals, and 2 of the Socialist People's Party. Executive authority is vested in the king (since Sept. 21, 1957, Olav V) who exercises his power through a cabinet headed by a prime minister. (The present Labor cabinet is headed by Einar Gerhardsen.) There are presently 14 government ministries, whose heads are members of the cabinet. Judiciary power is centered in the Supreme Court.

Education and Religion.—School enrollment, 1959–60: 637,148. Number of schools (with enrollments 1959–60): 5,322 primary and continuation (481,777), 301 secondary (79,950), 71 folk high (4,968), 44 special (2,167), 563 vocational (58,786), 2 universities (6,632), 7 technical

[1] Svalbard is a Norwegian Arctic territory comprising the Spitsbergen archipelago and several other islands, with a total area of 24,101 square miles. The territory is administered by a governor residing at Longyearbyen, on West Spitsbergen. Both Norway and the Soviet Union operate coal mines in Spitsbergen.

colleges (2,868). Principal religion: Evangelical Lutheran State Church (96% of population).

Finance.—Government revenue, 1963 est.: Kr. 8,346 million; expenditure Kr. 9,435 million. Total financing needs: Kr. 1,076 million. Net foreign debt, Jan. 1, 1962: Kr. 4,700 million (up Kr. 1,300 million since Dec. 31, 1960). Net foreign exchange holdings, July 1, 1962: Kr. 2,886 million (down Kr. 477 million since Jan. 1, 1962). Deficit on balance of payments (January–July, 1962): Kr. 910 million.

Transportation and Communications.—State-owned railways (miles, 1961): 2,706 (1,048 electrified); public roads (miles, 1962): 28,972; merchant fleet (gross tons, July 1, 1962): 12,332,000. Most domestic air routes are operated by Scandinavian Airlines System. Motor vehicles (Jan. 1, 1962): 356,883 (218,500 private cars and 107,411 trucks and vans). Telephones (July 1, 1962): 669,398; radio receivers (Jan. 1, 1962): 1,021,451; television sets (Sept. 21, 1962): 156,383.

Economic Indicators.—Gross national product (1962): Kr. 38,870 million (up 4%). Index of industrial production and mining (July 1962): 99 points (1955 = 100). Consumer price index (July 15, 1962): 109.4 points (1959 = 100). Number of unemployed (Oct. 1, 1962): 7,800 (0.5% of labor force and 0.7% of all employed workers).

Manufactures and Minerals.—Chief industrial products (metric tons, 1959): wood pulp, 1,371,872; ores, 5,201,754; coal, 250,679; pig iron, 337,764; alloys, 287,626; aluminum, 145,949; hydroelectric power (1961–62) 37 billion kw.-hr.

Fishing and Whaling.—The total fish catch for January–June 1962 was about 439,000 tons (728,000 tons for the same period in 1961). Whale oil production during the 1961–62 Antarctic whaling season was 94,384 tons (23% below 1960–61).

Agriculture and Forestry.—Comprising 20.6% of the labor force, agriculture and forestry account for 8.5% of the gross national product. Chief crops (tons, 1960): hay, 3,033,538; potatoes, 1,247,227; barley, 399,520; oats, 173,206; wheat, 22,942; rye, 3,694. Dairy production (metric tons, 1959): milk, 1,596,882; cheese, 38,509; butter, 14,870. Commercial timber (1961–62): 260 million cubic feet.

Foreign Trade.—Total exports, January–July 1962 (in million kroner): 3,946.2; total imports, 6,767.4. Principal exports: nonferrous metals, 710.5; fish and fish products, 442.3; paper, 383.6; wood pulp, 298.9; iron and steel, 253.4; ships, 198.7; chemical fertilizers, 194.4; other chemicals, 146.1; fats, 140.8; furs, 105.5. Principal imports: machinery, 1,168.3; ships, 882.7; fuels, 598.5; chemicals, 454.0; transport equipment (not ships), 422.5; iron and metal, 417.9; yarn and textiles, 358.1; ores, 323.7; instruments, 244.2; vegetables, 199.1; grains, 172.0. Chief customers (in million kroner for January–June 1962): Great Britain, 592.3; West Germany, 456.9; Sweden, 416.3; United States 393.9; European Free Trade Association (EFTA), 1,365.8; European Economic Community (EEC), 827.3. Chief suppliers: West Germany, 844.6; Great Britain, 792.6; Sweden, 672.3; United States, 458.2; Netherlands, 270.3; Denmark, 235.3; EFTA, 1,860.2; EEC, 1,570.5.

Events, 1962.—During 1962, Norway moved closer toward resolving the most crucial issue that it has faced since 1905—whether or not to seek a link with the European Economic Community. Parliament sanctioned a constitutional amendment that would permit the national assembly, by three-fourths majority, to transfer limited sovereign powers to a supranational organization. Next, on April 28, it authorized the government, by a vote of 113 to 37, to initiate negotiations with a view to full membership in the EEC. The decision came after months of heated public debate. Norway's declaration of intent, presented to the EEC Council of Ministers on July 4, expressed the special needs of Norway's agriculture and fishing industry. It was made clear that the result of negotiations, besides being subject to parliamentary approval, also would be submitted to an advisory referendum of the Norwegian people at large. Actual negotiations were not expected to start until Great Britain decided to join the EEC. Meanwhile, individual firms within the vulnerable home industry began to cooperate on sales and production techniques, as a means of strengthening their competitive position.

By the end of the third quarter of 1962, the economic situation was still marked by high activity and virtually full employment, though the rate of expansion was somewhat below the 1961 level. The main sources of concern were the creeping inflation, caused by the continuing price-wage squeeze, and the large deficits in foreign trade and the balance of payments. In an effort to keep price-wage developments within bounds, the government initiated regular consultations between the authorities and the national organizations of labor, industry, and agriculture due to negotiate new collective agreements during 1963. In addition, the government outlined a variety of fiscal and monetary anti-inflation tools, including a further limitation of credits through voluntary agreement. Several important export industries, notably wood and whale- and fish-oil processing, lagged.

The UN General Assembly, by 85 of the 109 total votes, elected Norway as a nonpermanent member of the Security Council for the 2-year term 1963–64. Norway was the first nation to buy United Nations bonds. Also, Norway pledged a nearly 50% increase in its 1963 contribution to the UN Special Fund and a 25% increase in the contribution to the UN Extended Technical Assistance Program.

King Olav V, sailing on the royal yacht *Norge*, paid state visits to France, September 25–29, at the invitation of President Charles de Gaulle, and to Scotland, October 16–20, where he was guest of Queen Elizabeth and the Duke of Edinburgh. Premier and Mrs. Einar Gerhardsen, at the invitation of President John F. Kennedy, paid an official visit to the United States, May 9–14.

Parliament approved a 25% increase in old-age pension benefits, together with higher premium rates. It also amended the Vacation Act, which assures workers a 3-week annual holiday with pay, so as to increase the vacation pay from 6.5% to 7.5% of yearly earnings. The Labor Party, which has been the ruling party in Norway since 1935, marked its 75th anniversary in 1962.

At the request of Parliament, a five-member committee of legal experts submitted a 550-page unevaluated report on the treason trials conducted in Norway after World War II, in which 54,241 persons were indicted.

The Norwegian Zero Energy Reactor Assembly, the nation's third experimental reactor, was dedicated at Kjeller. On Andøya island, in North Norway, the Norwegian-Danish space research program was started with the successful launching of a Nike-Cajun rocket, carrying 66 pounds of instruments. The nation's growing electronics industry received international recognition when NATO designated Norway as prime contractor for the production of several thousand Bullpup air-to-surface missiles, with Great Britain, Denmark, and Turkey as subcontractors.

At Bodø, the North Norway railway was officially opened by King Olav, thus ending a 94-year fight to provide a rail link between North and South. California Texas Oil Company and the Soviet Union sent large geological expeditions to search for oil in the Norwegian-governed Arctic archipelago of Spitsbergen.

In Stavanger, the keel was laid for the first of two mammoth 80,000-ton oil tankers to be built for the Norwegian firm of Sigval Bergesen, Jr. Sford shipyards expanded its facilities in order to build ships of up to 150,000 tons.

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NOVA SCOTIA

This Maritime province of southeastern Canada has an area of 21,068 square miles, of which 14,439 are forest land, 1,034 improved agricultural land, and 325 fresh water. For its relatively short length of 374 miles, Nova Scotia has an astonish-

ing length of coast—some 4,600 miles. The population of the province is 746,000 (est. July 1962), an increase of 1% since the 1961 census of 737,007. The metropolitan area of Halifax-Dartmouth has a population of 183,000. Other centers, with estimated 1962 populations are: Sydney, 33,600; Glace Bay, 24,200; Truro, 12,400; New Glasgow, 9,800; Yarmouth, 8,600.

Government.—The province is represented in the federal Parliament by 10 senators (appointed for life), and has 12 members in the elected House of Commons. In 1962, as a result of the general election in June, Nova Scotia is represented by 9 Progressive Conservative members, 2 Liberals, and 1 New Democratic Party.

The province is administered by a lieutenant-governor, appointed for 5 years by the federal government. The incumbent in 1962 was Maj. Gen. E. C. Plow, appointed in 1958, and advised by a cabinet headed by Premier Robert L. Stanfield. The cabinet is responsible to a 43-member House of Assembly, in which the Progressive Conservatives hold 27 seats, the Liberals, 15, and the New Democratic Party, 1.

Education.—In September 1962, the estimated enrollment in the public schools was about 190,000. Education accounts for about 25% of the ordinary government expenses of the province. There are several universities, notably Dalhousie, in Halifax; St. Francis Xavier, in Antigonish; and Acadia, in Wolfville.

Finance.—Estimated revenue for the fiscal year 1962–63 was $108,119,127; estimated expenditure, $100,405,190, plus sinking fund payments of $9,273,450. Nova Scotia's net direct debt as of March 31, 1961, was $170,784,502.

About 15% of present provincial revenue comes from a 5% sales tax to be applied for support of the provincial hospital scheme.

Communications.—The province has about 1,400 miles of railway. In 1962 there were 15,400 miles of road, of which 3,360 were paved. In the decade 1950–60, Nova Scotia spent some $100 million on highways, of which $19 million was supplied by the national government for the Trans-Canada Highway.

Agriculture.—Farm cash income for 1961 was $45.7 million, a 4% increase over 1960, and gross agricultural income was $56.5 million. The large apple crop in 1961 totaled 3.1 million bushels; the 1962 crop was estimated at 2.5 million bushels. About 15% of the apple crop is sold in Great Britain, about 7% in continental Europe.

Mining.—Mineral production in 1960 was valued at $59,545,000, a decrease of some 10%. Coal production (at 4.3 million tons) was down slightly, and gypsum (4 million tons) was down 10%.

Manufacturing.—The gross value of manufacturing in 1960 was $410 million. Chief manufactures were foods and beverages, followed by iron and steel products.

Fishing.—The 1961 saltwater fish catch was 456,955,000 pounds, with a landed value of $27,947,000. (Market value is about double the landed value.) Lobsters and scallops comprise a very substantial part of the industry: 19,782,000 pounds of lobster were landed, valued at $8.8 million, and 10,435,000 pounds of scallops, valued at $3 million. The value of scallops increased 50% over 1960.

Forestry.—Pulpwood production in 1961 increased 41% over 1960, but sawn lumber declined by 16%. Christmas tree production continued about as before, but problems of marketing remained.

Tourism.—In 1961, about 631,000 tourists came to Nova Scotia, an increase of 8% over 1960. The tourist season in 1962 was handicapped by unusually wet weather. Visitors in 1962 may have been as numerous as in 1961, but the average visit was shorter, and the amount they spent will not match the $60 million spent in 1961.

Events, 1962.—In the June general election for the House of Commons of Canada, the Liberals won two seats and the New Democratic Party (formerly the Co-operative Commonweath Federation) won one. All 12 of Nova Scotia's seats had been held by the Progressive Conservatives, whose majorities were substantially reduced in the seven districts in which they won.

Cape Breton Island's lagging population growth reflected the economic difficulties arising from its failure to prevent the closing of mines.

Cocktail lounges, which were permitted for the first time in nearly 50 years by liquor laws enacted in 1961, have quietly appeared and been accepted.

A newsprint mill was scheduled for construction at Sheet Harbor. It will provide 90,000 tons of newsprint per year for Hearst newspapers.

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NUCLEAR PHYSICS. See ATOMIC ENERGY; PHYSICS.

NURSING. See Index entry.

NUTRITION

An important objective of the Food and Agriculture Organization of the United Nations (FAO) and of the World Health Organization (WHO) is the improvement of diets throughout the world. The development of appropriate programs and the evaluation of their success can be done only with adequate information about the nutritional requirements of the different populations living and working under varying conditions. Committees convened by FAO previously considered the requirements of calories and protein. A report in 1962 was directed toward calcium requirements.[1]

The problems associated with the development of nutritional standards for calcium are somewhat unique. On the one hand there is little convincing evidence of specific disabilities attributable to calcium deficiency; on the other, more people fail to consume the currently recommended amounts of calcium than those of any other nutrient. The recommended daily allowances of the Food and Nutrition Board of the National Research Council, which are the nutritional standards of the United States, provide an intake of 800 milligrams daily for adults and relatively more for children and for pregnant and lactating women. The average intake in the United States is believed to be about 800 to 900 mg. per person a day.

Milk and dairy products, the principal sources of calcium, ordinarily supply from 70 to 90% of the calcium in the American diet. Since milk is not a generally available food in many countries, most people of the world consume considerably less calcium. Average daily intakes range from those in the United States and a few other countries down to approximately 250 mg. per person in countries such as Japan. The problem of defining an adequate level of calcium intake would not be urgent except for its implications in large-scale programs. If intakes less than those recommended in the United States constitute a nutritional hazard, efforts to raise the intakes must be made. The only obvious method of achieving this would be through the widespread fortification of foods with calcium. Such programs are expensive and difficult to administer and cannot be justified unless there is a clear indication that they will improve the health of the populations toward which they are directed.

Previous estimates of calcium requirements have been based almost entirely on so-called calcium balance studies in which the amount of calcium eaten is compared with the amount excreted. If the amount excreted is larger than the amount eaten, calcium is being lost from the body; if it is less, calcium is being stored. By varying the intake it is possible to estimate the amount which must be consumed to equal that excreted. A normal adult is not growing and presumably needs just the amount which will prevent either serious loss or gain of calcium. Studies of this kind, done mostly in the United States and Europe, have indicated that the average individual needs about 700 mg., although some require considerably more.

This technic and interpretation may be questioned, however, since it is clear that many persons apparently develop normally and live long

[1] *"Report of an FAO/WHO Expert Group,* WHO Technical Report Series No. 230, 1962."

lives on much lower intakes. They must somehow adapt to the conditions under which they live. Calcium balance studies in areas where the intake is habitually low do, in fact, show that calcium balance is achieved at much lower intakes than those commonly consumed in the United States. Furthermore, studies in Norway have demonstrated that when the usual intake of a group of men was lowered, the excretion decreased after variable periods of time. Within a period of weeks or months the men adapted to the new level of intake and calcium balance was restored in most of the subjects.

Since most of the body calcium is in the skeleton, it would appear that calcium requirements should be relatively high during growth. The body of a new-born infant contains approximately 25 to 30 grams of calcium. The adult body is estimated to contain from 850 to 1,400 grams. Disregarding variations in growth, approximately 1,200 grams must be stored during the growth process; over a 20-year period, about 165 mg. of calcium a day would have to be retained in the body. There is much evidence that dietary calcium is not efficiently utilized, although this varies with the intake and the physiological state. The FAO/WHO expert group concluded from considerations of this kind that a safe intake would not be less than 400 mg. per day.

Examination of the clinical evidence for calcium deficiency led to the following major conclusions:

(1) No clear-cut evidence of calcium deficiency is apparent in children or adult men. In many areas of the world where calcium intakes are low, children grow more slowly and the final adult size may be less. There is no good evidence that this is due to calcium deficiency, since other factors—both nutritional and non-nutritional—which may affect growth are usually present. Nor is there good evidence that somewhat reduced rates of growth or smaller final size is a disadvantage. Continuing studies are required.

(2) It has been established beyond doubt that the development of rickets and dental caries is largely independent of calcium intake.

(3) In some countries with low calcium intakes, repeated pregnancies and long lactation have been associated with the development of osteomalacia. It is clear that this is not due solely to the calcium intake. It probably does not occur if exposure to sunlight or vitamin D intake is adequate, but a low calcium intake may be an exacerbating factor.

(4) Senile osteoporosis is a common disease of old age, thought by some to be associated with a diet deficient in calcium. The evidence is insufficient at present to support such a conclusion, but this is an important disease and much more investigation is required.

(5) There are some clinical conditions (hereditary diseases, steatorrheas, and various forms of renal disease) in which calcium absorption is very poor and calcium deficiency may be important.

(6) In the treatment of diseases of the skeleton, intakes of 600 to 800 mg. per day are adequate.

(7) The possible ill effects of high calcium intake require much more study. High intake may be detrimental in individuals susceptible to kidney stone formation, although there is no evidence that they are causative of this condition. Idiopathic hypercalcemia of infancy is a disease in which normal calcium intakes are toxic while the conditions last. Sarcoidosis, hypothyroidism, and idiopathic hypercalcuria are conditions in which overabsorption of calcium frequently occurs and which respond to a lowering of the calcium intake.

Another area in which calcium intake may eventually become important relates to the accumulation of radiostrontium in the body. There may be a possibility of diminishing the uptake and retention of radiostrontium by increasing the calcium intake. Other expert committees have been convened to specifically consider problems in this area.

In arriving at its conclusions, the FAO/WHO expert group utilized the term "suggested practical allowance," since it felt that there are insufficient data to permit an adequate definition of the minimum calcium requirement. The suggested practical allowance is defined as the intake at which the needs of the great majority of persons in any defined population group are likely to be adequately met. These were given as follows: birth to 12 months (children not breast fed), 500 to 600 mg. a day; 1 to 9 years, 400 to 500 mg.; 10 to 15 years, 600 to 700 mg.; 16 to 19 years, 500 to 600 mg.; adults, 400 to 500 mg.; and women during pregnancy and lactation, 1,000 to 1,200 mg.

It was recognized that intakes much higher than these occur in many countries. The group found no evidence that intakes as high as 1,500 mg. a day were undesirable. It, therefore, did not suggest alteration in the calcium intake of large groups of people whose dietary habits provide daily intakes of the order of 800 to 1,000 grams. No special recommendations were made for old age or for differences in physical activity.

A considerable proportion of the report dealt with recommendations for further research to provide additional information in this important area. Priority areas of research include basic studies of the histology, biochemistry, and physics of bones, collection and examination of bones from different areas of the world, thorough study of population groups consuming either very high or very low intakes of calcium, effects of different levels of intake on health in pregnancy and lactation, and the role of dietary calcium in the etiology and treatment of osteoporosis.

(See also AGRICULTURAL RESEARCH SERVICE; FOOD RESEARCH.)

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NUTS

The 1962 peanut crop in the United States, according to the U.S. Department of Agriculture, was estimated at 1,811 million pounds, 4% above the 1961 production of 1,743 million pounds. Major producing states (with 1962 estimated production in millions of pounds) were: Georgia, 545.2; North Carolina, 347.6; Texas, 224.7; Alabama, 196.9; Virginia, 239.2; and Oklahoma, 165.2.

Pecan production in 1962 was estimated at 69.3 million pounds, the smallest since 1936 and 71.1% lower than the 1961 output of 246.8 million pounds. Weather and pests were blamed for the small crop. Principal producing states (with 1962 estimated production in millions of pounds) were: Georgia, 15; Alabama, 6; Louisiana, 6; Texas 12; Mississippi, 8; New Mexico, 7.5; and Oklahoma, 7.

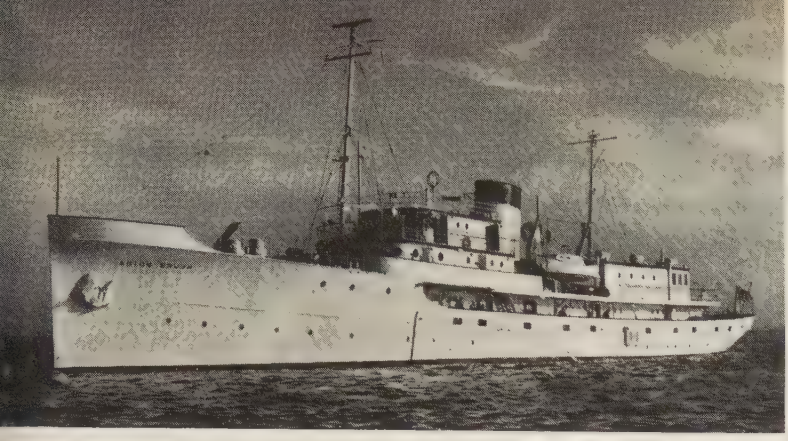
The almond yield in 1962 in California was estimated at 48,000 tons, 28% lower than the 1961 output of 66,400 tons.

English walnut production in 1962 was estimated at 81,400 tons, 21% higher than the 1961 crop of 67,500 tons. California produced 78,000 tons; Oregon, 3,400 tons.

Filbert production in 1962 was estimated at 7,900 tons, 33% lower than the 11,760 tons produced in 1961. Oregon accounted for 7,400 tons, and Washington for 500 tons.

The 1962 tung nut crop was estimated at 21,800 tons, only about 20% of the 1961 crop of 111,500 tons; a late freeze after the bloom was blamed for the poor production. Chief producing states were Mississippi, 11,000 tons; Florida, 8,000 tons; and Louisiana, 2,200 tons.

NYASALAND. See RHODESIA AND NYASALAND.



OCEANOGRAPHY—The research ship *Anton Bruun* will play a vital role in the International Indian Ocean Expedition during 1963.

WOODS HOLE OCEANOGRAPHIC EXPEDITION

OATS. See GRAINS.

OBITUARIES. For a list of prominent persons who died in 1962, see the NECROLOGY at the end of this volume.

OBSERVATORIES. See ASTRONOMY.

OCCUPATIONAL REHABILITATION. See Index entry, *Vocational Guidance*.

OCEANIA. See PACIFIC ISLANDS.

OCEANOGRAPHY

Among the outstanding developments in oceanography during 1962 were the establishment of a chain of current-measuring anchored buoys from the United States to Bermuda; the launching and field testing of an immense, floating instrument platform; the development of a new navigational system that may eventually measure the slope of the earth's surface; the successful carrying out of a substantial part of the International Indian Ocean Expedition; and the beginning of the second phase in drilling toward the Mohorovičić discontinuity layer (Project Mohole).

A new record ocean depth of 37,782 feet (7.2 miles) was reported on November 6 by the British survey ship *Cook* in the Mindanao Trench east of the Philippines in the Pacific; the previous record of 36,204 feet had been found in the Mariana Trench in the Pacific by Russian scientists in 1959.

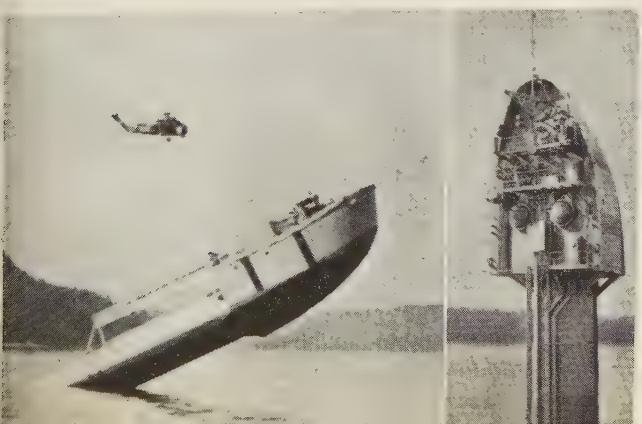
Current-Measurement Buoys.—William S. Richardson of the Woods Hole Oceanographic Institution has recently anchored a series of instrumented buoys from Gay Head on the island of Martha's Vineyard, Mass., to Bermuda across the Gulf Stream. The instruments are measuring continuously the speed and direction of the current, both at the sea surface and at depths below. This is the greatest array of current-measuring apparatus ever assembled. Since the measurements are continuous and the operation has already been carried out successfully for several months, it is expected that a great deal will be learned about the fluctuations in time and space of the Gulf Stream, already known to be one of the world's greatest currents.

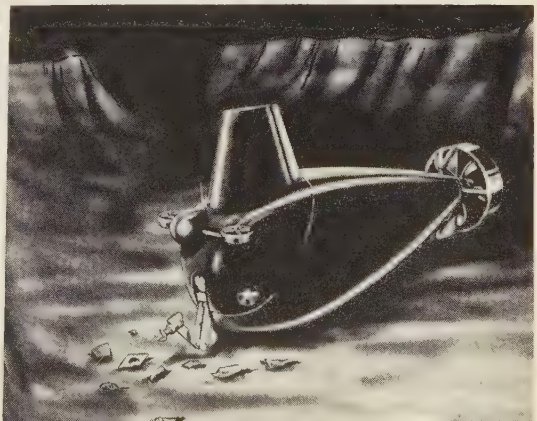
Floating Instrument Platform.—Built and launched in Portland, Oreg., a floating instrument platform (called FLIP) has undergone its first sea trials, and has been towed to San Diego, Calif., where the scientific equipment is being installed. The platform is 355 feet long and 12.5 feet wide at the water line, 20 feet wide at its bottom (300 feet below the surface), and weighs about 600 tons. A cabin 14.5 by 25 feet in area is mounted 30 feet above the water line. FLIP is designed to float horizontally while being towed to the working area, and then, when one end is flooded with sea water, to float vertically. Such an arrangement provides an extremely stable platform, with less than three feet of up and down movement for 30-foot ocean waves, and only a little more than one degree of roll. Its first use will be in measurements of underwater sound, but it will also provide an ideal platform for studies of both surface and internal waves and in marine biology. The instrument was designed and will be used by F. H. Fisher and F. N. Spiess, Marine Physical Laboratory of the Scripps Institution of Oceanography, University of California, San Diego.

Navigational Aid.—William S. von Arx of the Woods Hole Oceanographic Institution has reported (*Naval Research Review*, January 1962) the development of a gyro-erected optical navigation system (called Geon), that uses a meridian gyrocompass as a level reference plane instead of the present method of sighting from the horizon.

(*Left*) The 355-foot FLIP (floating instrument platform) was floated horizontally to this site in Dabob Bay, Wash., where it is "flipped" to a vertical position, July 25, providing a deep base for oceanographic study. (*Right*) To be completed in 1963, the U.S. Navy research vehicle in this sketch will have an undersea endurance of 24 hours and a range of 30 miles.

UPI; U.S. NAVY





It allows a ship's position to be determined from one sight of a celestial body during clear-sky conditions at any time of the day or night, with an accuracy of about one nautical mile.

A second possible use of a more refined Geon would be, in combination with the Transit satellite, to determine the regional slope of the earth. This would be done by using Geon to obtain the astronomical position on the earth's surface and Transit to fix the geocentric coordinates of the same point. With still greater refinement it may be possible to examine the circle of the horizon from ships at sea and establish with high precision the attitude of the horizon relative to the direction of local gravity.

International Indian Ocean Expedition.—By September 1962 about 275 ship-months of work on this project had been specifically planned or completed. About one fourth of this total was done before 1962, but the major effort started in mid-1962, according to Robert G. Snyder, coordinator of the expedition. The expedition is cooperative, planned by the International Council of Scientific Unions through the Special Committee on Oceanic Research. Participating countries are Australia, France, Germany, India, Indonesia, Japan, Pakistan, Portugal, South Africa, Thailand, the United Kingdom, the United States, and the USSR. United States participation in the various fields of oceanic research is being planned through the Woods Hole Oceanographic Institution, the Scripps Institution of Oceanography, the Lamont Geological Observatory, the Narragansett Laboratories of the University of Rhode Island, and the universities of Washington, Michigan, and Hawaii. The U.S. Weather Bureau will place meteorological equipment and personnel aboard the United States vessels. A coordinated meteorological program has been organized with a center in Bombay. Other participating agencies include the U.S. Coast Guard and the U.S. Air Force. Scientists from more than 100 colleges and universities will be involved in the research, which will include physical and chemical oceanography, geochemistry, geophysics, geology, meteorology, and biology.

Equatorial Undercurrent.—During the earlier part of the International Indian Ocean Expedition, in the winter of 1959–60, measurements on the 33d cruise of the Soviet research vessel *Vityaz* provided some evidence of a strong eastward-flowing subsurface current at the equator, analogous to the recently discovered Equatorial Undercurrent (Cromwell Current) of the Pacific and Atlantic oceans. Since the northeast monsoon prevails during the winter, the wind system is more nearly like that of the Atlantic and Pacific, and it might be supposed that such a flow would occur in the Indian Ocean also. However, in summer the southwest monsoon prevails, and there has been much speculation as to whether this current should exist in the Indian Ocean in summer. In July 1962 an expedition led by John A. Knauss aboard the United States research vessel *Argo* made careful observations along the equator in the Indian Ocean and found no eastward-flowing current.

Drilling Into the Ocean Floor.—The preliminary drilling in 1961 penetrated successfully through 600 feet of sediment below 11,700 feet of water off the coast of Baja (Lower) California. Preparations have begun for the second stage in drilling toward the Mohorovičić discontinuity, the level at which the marked increase in the velocity of transmission of sound waves indicates the transition from the earth's crust to its next great layer, the mantle. The second phase will probably be carried out near Puerto Rico, although alternative areas near Hawaii have been considered. The project is sponsored by the National Science Foundation (q.v.), which has contracted with construction firms for the drilling.

(See also Coast and Geodetic Survey, U.S.; Geography and Exploration.)

Joseph L. Reid, Jr.,
Associate Research Oceanographer,
Scripps Institution of Oceanography.

OFFICE OF EDUCATION, U.S. See Education.

OFFICE OF EMERGENCY PLANNING. See Civil Defense.

OHIO

A North Central state of the United States, Ohio ranks 35th among the states in area (land, 40,972 square miles; inland water, 250) and 6th in population (10,097,000 on July 1, 1962, a 4% increase from the 1960 census figure of 9,706,397). Urban places with populations above 25,000 in 1960:

Akron	290,351	Lorain	68,932
Alliance	28,362	Mansfield	47,325
Barberton	33,805	Maple Heights	31,667
Canton	113,631	Marion	37,079
Cincinnati	502,550	Massillon	31,236
Cleveland	876,050	Middletown	42,115
Cleveland Heights	61,813	Newark	41,790
Columbus (*capital*)	471,316	Norwood	34,580
Cuyahoga Falls	47,922	Parma	82,845
Dayton	262,332	Portsmouth	33,637
East Cleveland	37,991	Sandusky	31,989
Elyria	43,782	Shaker Heights	36,460
Euclid	62,998	South Euclid	27,569
Findlay	30,344	Springfield	82,723
Garfield Heights	38,455	Steubenville	32,495
Hamilton	72,354	Toledo	318,003
Kettering	54,462	Upper Arlington	28,486
Lakewood	66,154	Warren	59,648
Lancaster	29,916	Youngstown	166,689
Lima	51,037	Zanesville	39,077

Government.—Chief executive and judicial officers in 1962 included Michael V. DiSalle (Democrat), governor, serving a four-year term; John W. Donahey, lieutenant governor; Ted W. Brown, secretary of state; Joseph T. Ferguson, treasurer; James A. Rhodes, auditor; Mark McElroy, attorney general; Edward E. Holt, superintendent of public instruction; and Carl V. Weygandt, chief justice of the 7-member Supreme Court.

The Ohio General Assembly, which convenes in odd-numbered years, comprised 20 Republicans and 18 Democrats in the Senate in 1962 and 84 Republicans and 55 Democrats in the House of Representatives.

Finance.—In the 1962 fiscal year, revenue of $1,690,292,226 included $950,143,678 from state taxes and $320,619,360 in federal funds. Chief tax yields were the 3% general sales tax ($264,878,026), motor fuel taxes ($231,325,106), and licensing ($168,938,698). Spending of $1,665,049,399 included $364,363,834 for education, $325,775,709 for health, welfare, and safety, and $334,640,079 for highways.

Education.—In the 1961–62 school year it was estimated that public elementary schools staffed by 44,611 teachers enrolled 1,340,653 pupils; secondary schools with 29,990 teachers enrolled 660,620; and parochial schools with 10,442 teachers enrolled 367,090. College enrollment totaled 188,016.

Estimated public school spending in the 1961–62 school year totaled $1,011,200,000, including current expenditures of $822 million ($443 per pupil) and capital outlays of $150 million. Revenue of $1,029,500,000 was drawn chiefly from state funds ($242 million) and local districts ($582 million). Teachers' salaries averaged $5,530 (high school, $5,845; elementary, $5,288). Actual spending for higher education amounted to $129,793,000.

Public Assistance.—In the 1962 fiscal year, public assistance payments to a monthly average of 375,393 persons totaled $204,211,206. This amount included $84,434,755 for the aged and $48,709,646 for dependent children.

Transportation and Communications.—A total of 2,118 miles of state highway construction and reconstruction was completed in the 1962 fiscal year. *Highways and roads* on Jan. 1, 1962, totaled 104,525 miles (72,420 surfaced). These served 4,492,172 *motor vehicles* (as registered on March 31, 1962), including 3,712,280 automobiles. Operating in the state were (1960) 51 *railroads* (using 11,926 line miles of track); (1961) 11 regularly scheduled *airlines;* and 201 commercial and municipal *airports.*

Communications media included (1962) 93 AM and 62 FM *radio stations;* 11 VHF and 14 UHF *television stations;* 96 daily *newspapers* (circulation, 5,899,210) and

266 other newspapers (923,543); and (January 1) 1,064,900 business and 3,164,200 residential *telephones.*

Labor Force.—The civilian labor force in July 1962 totaled 3,962,900, including 203,600 agricultural workers. Nonagricultural wage and salary workers numbered 3,120,900, compared with 3,069,800 for the previous July and an average of 3,047,300 for the full year 1961. Chief sources of nonfarm employment in July 1962 were trade (610,200), government services (409,400), and service industries (386,600). Unemployment in July 1962 stood at 209,000, compared with 271,400 for the previous July.

Manufacturing.—Manufacturing engaged 1,179,700 workers in 1961, including 861,400 in production. During 1960, manufacturing employees numbered 1,265,640, of whom 911,593 were in production; total payroll was $7,473,451,000, and adjusted value added by manufacture amounted to $13,841,807,000.

LEADING OHIO MANUFACTURES, 1960

Industry group	Total employees[1]	Total payroll (in thousands)	Adjusted value added by mfr.[1] (in thousands)
Transportation equipment	166,236	$1,107,602	$2,144,049
Primary metals	171,526	1,078,306	2,003,014
Nonelectrical machinery	168,735	1,047,640	1,725,834
Electrical machinery	118,356	677,969	1,346,581
Fabricated metals	114,851	649,901	1,163,151
Food and kindred products	83,018	430,158	1,005,283
Chemicals and products	46,751	284,109	855,836
Rubber and plastics products	79,298	464,602	811,146
Stone, clay, glass products	66,004	347,942	746,218
Printing and publishing	62,972	361,424	619,550
Paper and products	37,348	213,176	405,294

[1] For definition, see footnote 1 in the article *Industrial Production.* (Source: *1960 Annual Survey of Manufactures.*)

Mining.—In 1961, Ohio ranked 16th among the states in the value of its mineral output, with 2.03% of the national total. The 1961 value declined 6% due to a decrease in construction and reduced output of pig iron and steel. The state was first in production of clays and lime.

OHIO MINERAL PRODUCTION, 1961
(In short tons, except as noted)

Mineral	Quanity	Value
Cement:		
Portland (376 lb. bbl.)	15,303,000	$ 53,251,000
Masonry (280 lb. bbl.)	846,000	2,604,000
Clays	4,923,000	13,790,000
Coal	32,226,000	121,343,000
Coke	6,703,475	112,870,000[1]
Ferroalloys	544,441	134,694,000[1]
Iron, pig	11,007,351	669,033,000[1]
Lime	3,123,000	42,158,000
Natural gas (1,000 cu. ft.)	36,423,000	9,069,000
Petroleum (bbl.)	5,161,000[2]	15,947,000[2]
Salt, common	3,465,000	25,037,000
Sand and gravel	33,688,000	41,272,000
Stone[3]	33,652,000	55,701,000
Other minerals	...	1,693,000
Total	...	$368,315,000[1,4]

[1] Value for processed materials is not included in the total. [2] Preliminary. [3] Excludes certain stone, value of which is included in "Other minerals." [4] Total adjusted to avoid duplication of value of clays and stone. (Source: U.S. Bureau of Mines.)

Agriculture.—Cash farm income for the first nine months of 1962 (excluding government payments) totaled $725,303,000, compared with $739,839,000 for the corresponding period of 1961. For the full year 1961, income comprised $636,029,000 from livestock, $409,330,000 from crops, and $60,439,000 in government payments. Principal income sources in 1961 were wholesale milk, $216,860,000; cattle, $156,251,000; hogs, $151,735,000; and soybeans, $101,638,000.

The state's 140,000 farms in 1959 had an acreage of 18,507,000 (9,743,000 in harvested cropland). Livestock on farms on Jan. 1, 1962, included 2,249,000 cattle, 2,651,000 hogs, 977,000 sheep, and 13,147,000 chickens. An average of 206,000 family and 36,000 hired workers engaged in farming in 1961.

WIDE WORLD

Shown here with her court, Jacquelyn Jeanne Mayer, 20, of Sandusky, Ohio, is elected Miss America 1963, September 8.

OHIO CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Apples (1,000 bu.)	3,205	3,500	3,700
Corn for grain (1,000 bu.)	194,223	187,738	202,388
Grapes (tons)	14,690	16,500	17,000
Hay (1,000 tons)	3,803	3,829	3,142
Maple sirup (1,000 gal.)	121	99	114
Oats (1,000 bu.)	50,776	36,850	48,314
Peaches (1,000 bu.)	956	950	700
Soybeans (1,000 bu.)	29,373	48,216	46,104
Tobacco (1,000 lb.)	22,958	22,806	25,115
Tomatoes (1,000 cwt.)	509	403	360
Wheat (1,000 bu.)	44,367	45,167	38,688

(Source: U.S. Department of Agriculture.)

Events, 1962.—Democratic Gov. Michael V. DiSalle, seeking reelection to a second term, was defeated by State Auditor James A. Rhodes in the November 6 elections. The victor's plurality was a record-breaking 555,669 votes. Democratic Sen. Frank J. Lausche weathered the Republican landslide, however, with an easy victory (by 692,640 votes) over John M. Briley of Toledo, who had been chairman of the Ohio Republican Finance Committee.

The contest for the governorship was extremely personal, and involved charges against the conduct of the state liquor department and the attorney general's office. Rhodes proposed an industrial development program, supposedly without increased taxation. DiSalle had gained the nomination after one of the most bitter primary fights in Ohio history. His opponent, Cleveland attorney Mark McElroy, waged an intensive campaign and succeeded in carrying 21 counties in the May 8 primary.

In November, Ohio Republicans increased their representation in Congress from 16 to 18. Robert A. Taft, Jr., a fourth-generation representative of the Cincinnati Republican family, easily won the congressman-at-large seat. After an interval of six years (for reasons of health) Oliver P. Bolton was returned to Congress, as was his mother, Frances P. Bolton; the two represent adjoining districts in northern Ohio.

Republicans also maintained control of the General Assembly (by 88 to 49 in the House, and 20 to 13 in the Senate). Carl V. Weygandt, 74, chief justice of the Ohio Supreme Court since 1933, lost by a narrow margin to Justice Kingsley Taft. A proposed constitutional amendment advocated by a large dairy products store chain, would

have specifically exempted certain items from coverage under the state's "blue laws." The plan was rejected by the voters, leading immediately to stricter observance of Sunday closing regulations.

During the year Senator Lausche strongly criticized the awarding of federal defense contracts to coastal states to the neglect of Ohio's interests, and demands were made for changing the situation. Cincinnatians took a major step toward rehabilitation of the blighted waterfront district by approving a $16.6 million bond issue.

In late February and early March, flood conditions resulted in property losses, particularly in the Scioto and Sandusky valleys. Drought during the summer caused Governor DiSalle to designate 21 counties as drought disaster areas.

In February, Lt. Col. John H. Glenn, Jr., of New Concord became the first American to orbit the earth (see SPACE FLIGHT). He was accorded a hero's reception in his hometown on March 3. In the sports world, golfer Jack Nicklaus of Columbus, making his first professional tour, won the National Open championship in June and the "World Series of Golf" in September (see also SPORTS, GAMES, AND SHOWS).

A new branch of the Ohio State University was opened in September in Lakewood, a suburb of Cleveland.

(See also CLEVELAND.)

"Events" by: FRANCIS P. WEISENBURGER,
Professor of History,
The Ohio State University.

OIL. See PETROLEUM.
OILS AND FATS. See FATS AND OILS.
OKINAWA. See PACIFIC ISLANDS.

OKLAHOMA

A Southwestern state of the United States, Oklahoma ranks 18th among the states in area (land, 68,887 square miles; inland water, 1,032) and 26th in population (2,448,000 on July 1, 1962, a 5.2% increase from the 1960 census figure of 2,328,284). Urban places with populations above 15,000 in 1960:

Altus	21,225	Muskogee	38,059
Ardmore	20,184	Norman	33,412
Bartlesville	27,893	Oklahoma City (*capital*)	324,253
Duncan	20,009	Okmulgee	15,951
Enid	38,859	Ponca City	24,411
Lawton	61,697	Shawnee	24,326
McAlester	17,419	Stillwater	23,965
Midwest City	36,058	Tulsa	261,685

Government.—Chief executive and judicial officers in 1962 included J. Howard Edmondson (Democrat), governor, serving a four-year term; George Nigh, lieutenant governor; William N. Christian, secretary of state; William A. Burkhart, treasurer; Imogene Holmes, auditor; Mac Q. Williamson, attorney general; Oliver Hodge, superintendent of public instruction; and Ben T. Williams, chief justice of the 9-member Supreme Court.

The Oklahoma Legislature, which convenes in odd-numbered years, comprised 40 Democrats and 4 Republicans in the Senate in 1962 and 105 Democrats and 14 Republicans in the House of Representatives.

Finance.—In the 1962 fiscal year, revenue of $542,894,028 included $382,885,849 from state sources and $160,008,179 in federal funds. Chief tax yields were the 2% general sales tax ($57,013,809) and taxes on individual incomes ($39,049,495) and motor fuels ($68,687,025). Spending of $496,934,041 included $146,320,949 for education, $201,232,031 for health, welfare, and safety, and $117,914,686 for highways.

Education.—In the 1961–62 school year it was estimated that public elementary schools staffed by 12,155 teachers enrolled 335,500 pupils; secondary schools with 9,200 teachers enrolled 214,500; and parochial schools with 691 teachers enrolled 17,469. College enrollment totaled 59,623 in 33 institutions, including 15 junior colleges and 18 senior colleges and universities.

Estimated public school spending in the 1961–62 school year totaled $204,550,000, including current expenditures of $167,650,000 ($335 per pupil) and capital outlays of $33,000,000. Revenue of $213.5 million was drawn chiefly from state funds ($81 million) and local districts ($98 million). Teachers' salaries averaged $4,950 (high school, $4,980; elementary, $4,930). Actual spending for higher education (1961 fiscal year) totaled $54,620,000.

Public Assistance.—In the 1962 fiscal year, public assistance payments to a monthly average of 165,598 persons totaled $110,382,686. This amount included $71,285,564 for the aged and $26,275,250 for dependent children.

Transportation and Communications.—A total of 697 miles of highway construction and reconstruction was completed in the 1962 fiscal year. *Highways, roads, and streets* on Jan. 1, 1962, totaled 103,973 miles (20,570 surfaced). These served 1,232,083 *motor vehicles* (as registered in 1961), including 900,124 automobiles. Operating in the state in 1962 were 20 *railroads* (using 5,984 line miles of track); 5 regularly scheduled *airlines;* and (1961) 133 commercial and municipal *airports* and 4 heliports.

Communications media included (1961) 56 AM and 13 FM *radio stations;* 10 VHF *television stations;* 59 daily *newspapers* (circulation, 1,705,730) and 215 other newspapers (348,056); and (Jan. 1, 1962) 271,900 business and 670,500 residential *telephones.*

Labor Force.—The state's labor force in July 1962 included 155,000 agricultural workers. Nonagricultural employment totaled 594,000, compared with 586,700 a year earlier and an average of 583,400 for 1961. Of nonfarm wage and salary workers, 23.3% were in trade, 22.7% in government services, and 15% in manufacturing. Unemployment in July 1962 numbered 44,200, compared with 55,100 a year earlier.

Manufacturing.—Covered manufacturing engaged 83,222 workers in 1961 and provided a payroll of $412,373,614. In 1960, workers averaged 93,139, including 58,841 in production. They received $471,191,000 in wages and added $803,493,000 in adjusted value by manufacture.

LEADING OKLAHOMA MANUFACTURES, 1960

Industry group	Total employees	Total payroll (in thousands)	Adjusted value added by mfr.[1]
Petroleum and coal products	6,025	$35,830	$138,182
Food and kindred products	14,913	61,654	133,077
Nonelectrical machinery	9,945	50,540	88,448
Fabricated metals	8,819	45,773	83,884
Stone, clay, glass products	6,442	31,002	71,216
Transportation equipment	6,569	36,473	50,942
Printing and publishing	6,116	27,059	50,369
Primary metals	3,241	16,853	38,339

[1] For definition, see footnote 1 in the article *Industrial Production.* (Source: *1960 Annual Survey of Manufactures.*)

Mining.—In 1961, Oklahoma ranked fifth among the states in the value of its mineral output, with 4.34% of the national total. Mineral fuels provided 93% of the total value. The state was first in output of helium, second in tripoli, third in natural gas and natural gas liquids, and fourth in petroleum.

OKLAHOMA MINERAL PRODUCTION, 1961
(In short tons except as noted)

Mineral	Quantity	Value
Clays[1]	792,000	$ 801,000
Coal	1,032,000	6,784,000
Helium (1,000 cu. ft.)	313,244	5,872,000
Lead (recoverable content of ores)	980	202,000
Natural gas (1,000 cu. ft.)	892,697,000	108,016,000
Natural gasoline (1,000 gal.)	521,237	33,358,000
Petroleum (1,000 bbl.)	191,834[2]	558,237,000[2]
Petroleum gases (1,000 gal.)	817,082	30,141,000
Sand and gravel	5,310,000	5,513,000
Stone	14,981,000	16,561,000
Zinc (recoverable content of ores)	3,148	724,000
Other minerals	...	21,920,000
Total	...	$785,973,000[3]

[1] Excludes certain clays, value of which is included in "Other minerals." [2] Preliminary. [3] Total adjusted to avoid duplication in the value of clays and stone. (Source: U.S. Bureau of Mines.)

Agriculture.—Cash farm income for the first nine months of 1962 (excluding government payments) totaled $463,998,000, compared with $488,755,000 for the corresponding period of 1961. For the full year 1961, income comprised $366,056,000 from livestock, $313,859,000 from

crops, and $36,732,000 in government payments. Principal income sources in 1961 were cattle, $260,683,000; wheat, $177,253,000; cotton lint, $52,861,000; and wholesale milk, $52,664,000.

The state's 95,000 farms in 1959 had an acreage of 35,801,000 (8,975,000 in harvested cropland). Livestock on farms on Jan. 1, 1962, included 3,654,000 cattle, 428,000 hogs, and 3,481,000 chickens. An average of 129,000 family and 36,000 hired workers engaged in farming in 1961.

OKLAHOMA CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Barley (1,000 bu.)	6,677	19,250	9,026
Broomcorn (tons)	11,490	6,600	7,000
Cotton lint (1,000 bales)	360	369	330
Cottonseed (1,000 tons)	147	153	137
Hay (1,000 tons)	1,793	2,169	2,282
Mung beans (1,000 lb.)	5,440	7,370	8,160
Peanuts (1,000 lb.)	100,348	146,625	165,200
Pecans (1,000 lb.)	20,640	11,600	7,000
Rye (1,000 bu.)	768	792	522
Sorghum grain (1,000 bu.)	13,627	16,866	19,740
Soybeans (1,000 bu.)	891	3,062	2,822
Wheat (1,000 bu.)	75,225	110,832	71,953

(Source: U.S. Department of Agriculture.)

Events, 1962.—One of the more notable political events in Oklahoma history occurred on November 6 when Henry Bellmon, Noble County farmer, became the first member of the Republican Party to be elected governor. He defeated W. P. (Bill) Atkinson, Midwest City Democrat, by 392,316 to 315,357. Bellmon's campaign promises to break the Democratic "strangle hold" on the state government and to seek no tax increases proved more popular with the voters than Atkinson's insistence that additional tax burdens appeared necessary. Democrats were, as usual, elected to other state offices.

Democrat Mike Monroney was returned to the U.S. Senate for a third term with a victory (by about 44,000 votes) over B. Hayden Crawford. The five Democrats and one Republican in the U.S. House of Representatives were all reelected.

Oklahoma's veteran U.S. Sen. Robert S. Kerr, one of the most influential figures in Congress, died on Jan. 1, 1963. To fill the vacancy, Democratic Gov. J. Howard Edmondson, 37, resigned on January 6 (just eight days before he was to be succeeded by the Republican governor-elect) in favor of Lt. Gov. George Nigh, who immediately appointed Edmondson to the Senate seat. A special election will be held in 1964 for the remaining two years of the term.

Reapportionment of the Oklahoma Legislature on a population basis must be accomplished before election of the 1965 membership, but the determination of the agency of government which will make the apportionment was not clear. By a three-judge federal court decision on August 3, the Legislature which convenes in January 1963 was given until March 8 to reapportion; otherwise this would be accomplished by judicial order. Notwithstanding this ruling, voters in November expressed approval of a measure which takes the apportionment decision away from the Legislature and places it in a committee composed of the secretary of state, state treasurer, and attorney general. By whatever agency, reapportionment was expected to minimize rural domination of the Legislature and give metropolitan centers a sizable increase in representation.

Construction began May 10 on Oklahoma's Southwest Turnpike, an 86-mile, 4-lane divided highway. The turnpike consists of two sections, the northern part extending 61 miles from the southwestern edge of Oklahoma City to Lawton, and the southern part running 25 miles from Lawton to U.S. Highway 70. Target date for completion of the $57 million project is June 1, 1964. The State of Texas will spend $2.5 million in the Wichita Falls area to connect its Red River Valley Expressway with the improved road.

Under a Ford Foundation grant announced in October, Oklahoma City University will receive $2 million within the next three years if it can raise $4 million from other sources. Another grant, of $1,250,000, was made to the Mummers Theatre of Oklahoma City. This provides $700,000 to help finance a permanent building if $750,000 can be raised locally. On assurance of the building the foundation will provide $550,000 to help underwrite artistic, administrative, and technical development over a 10-year period.

Tulsa voters on July 17 approved an $18.9 million water, sewer, and fire protection bond issue, the largest amount authorized in 40 years. In October 1961, citizens of Oklahoma City had approved a $39.8 million bond issue, and on November 27 an additional $47.4 million. This sum will be spent in three years to modernize the city—improve park and zoo facilities, streets, and traffic control, and provide a new passenger terminal for Will Rogers Field.

Oklahoma on November 6 elected its first Republican governor, Henry Bellmon of Billings. Democrats won all the other state offices.

WIDE WORLD

The state took pride in its 19 national winners at the 4-H Club Congress, held at Chicago in November. This achievement broke the old record of 16 national winners for one state—set by Oklahoma in 1961.

"Events" by: J. Stanley Clark,
Author of "The Oil Century from the Drake Well to the Conservation Era."

OLD AGE

No issue related to older people in the United States aroused so much debate throughout the nation, as well as in Congress, during 1962 as the proposal to finance hospitalization and nursing services for older people out of Social Security funds.

In 1961 a bill to enact such a program (popularly known as the "Medicare plan") was introduced by Sen. Clinton P. Anderson (D, N. Mex.) and Rep. Cecil R. King (D, Calif.). Public hearings were held on this bill by the House Ways and Means Committee, but the bill never reached the floor of the House. President Kennedy, in two messages to Congress early in 1962, again requested that health insurance protection for the aged be made a part of the Social Security system. When the bill seemed stalled in committee, Senator Anderson, along with 20 other Democratic and 5 Republican senators, proposed an amendment to H.R. 10606 (the public welfare bill) and thus secured floor debate on his proposal. Despite the fact that Senator Anderson had incorporated numerous revisions in the 1962 version of his bill

PLETCHER IN THE SIOUX CITY JOURNAL

"YOUR REFLEXES ARE VERY, VERY SLOW"

in order to attract broader support, the Senate on July 17, 1962, after two weeks' debate, voted 52 to 48 to table the Anderson amendment.

Other proposals introduced in Congress in 1962 sought to obtain federal financial support for health protection for aged persons outside the Social Security system. Sen. Thruston Morton's (R, Ky.) amendment would have reimbursed states for premium payments on behalf of older persons in a bona fide health insurance program. Sens. Leverett Saltonstall (R, Mass.) and Jacob K. Javits (R, N.Y.) proposed federal matching grants-in-aid to states that created an approved state plan of health protection for aged persons. An amendment by Sen. Prescott Bush (R, Conn.) would have permitted the Social Security system to reimburse beneficiaries of federal Old-Age, Survivors, and Disability Insurance (OASDI) for premiums paid by them to voluntary health-insurance programs.

Under the present system of health protection for older persons, states receive grants-in-aid from the federal government for the costs of hospital and medical care provided to persons 65 or over who can not pay for the care needed out of their own resources. The King-Anderson bill and other proposals were designed to establish or encourage a system by which health care would be received as a right rather than on the basis of need.

Welfare Legislation.—While public attention was focused on congressional action on the King-Anderson bill, other legislation of considerable importance to older people was enacted as part of the public welfare bill passed July 19, 1962. Old-age assistance grants were increased by $4 per month; and, to encourage self-support, the first $10 and half of the next $50 earned by old-age assistance recipients were excluded from consideration of need. Other amendments encouraged a greater degree of independence and self-help among the dependent aged. Of administrative importance was an amendment which permitted states to place programs of assistance to the aged, the disabled, and the blind under a single administrative unit.

Income of Older People.—Figures for 1961 income received by persons over 65, compiled by the Social Security Administration, re-emphasize the low economic status of older people in the United States. In fact, their economic position has deteriorated because fewer men over 65 are employed. Only 5.3% of all persons over 65 receive their sole support from earnings derived from employment. About 87% receive some form of public benefit either as their sole source of income or as a supplement to wages and salaries. The remaining 7% live on private savings, are in institutions, or are supported by relatives and friends.

Incomes of families of which the head is over 65 years of age are only half as large as those of families of similar size in which the head is below age 65. The disparity in income between single persons above and below the age of 65 is even greater. The over-65 families had a median income of $2,900 in 1961, but the under-65 families received $5,905. About 31% of all over-65 families received less than $2,000 per year, compared with 10.2% for all under-65 families. (See also CENSUS DATA.)

In June 1961, 12,430,000 persons (72.6% of all persons over 65) received benefits from OASDI, and 7,950,000 (46.4% of all older people) were dependent solely on this source for their livelihood. Although 2,400,000 persons (14% of all persons 65 and over) received public assistance, only 1,510,000 (8.5%) were dependent solely on old-age assistance. Despite the increasing numbers of older people in the population, the total number receiving old-age assistance has remained constant for the past several years. The number, as well as the percentage, of those totally dependent solely on such assistance has declined substantially, however, as a result of the wider coverage and the higher benefits being received by OASDI beneficiaries. In August 1962 the average OASDI benefit to retired workers was $76.15 per month. With a 50% benefit for a dependent wife, the average family benefit would be $114.25. Under the old-age assistance program, the average monthly payment was $73.04.

Programs for the Aging.—The two most important organizations working in the field of the aging are the National Council on Aging (NCOA), located in New York City, and the Division of Gerontology of the Institute for Human Adjustment, University of Michigan. At the annual meeting of the NCOA, in New York City, Oct. 24–27, 1962, a featured discussion subject was "The Older Worker on the Job and in Retirement." Given a prominent place in the discussions were such subjects as automation, union organization, training and retraining, early retirement, and preparation for retirement. The theme of the annual conference of the Division of Gerontology, held at the University of Michigan in June 1962, was the political implications of aging. Plans were made for the Quadrennial International Conference of Gerontology in Copenhagen, Denmark, on Aug. 5–15, 1963.

(See also SOCIAL SECURITY; SOCIAL WELFARE.)

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OLD-AGE AND SURVIVORS INSURANCE. See Index entry.

OLEOMARGARINE. See DAIRY PRODUCTS.

OLIVES. See FRUITS.

OMAN AND MUSCAT. See MUSCAT AND OMAN.

ONIONS. See VEGETABLES.

ONTARIO

The second largest province in Canada, Ontario stretches 1,050 miles from Hudson Bay in the north to Lake Erie in the south, and extends for 1,000 miles from east to west. Its area of 412,582 square miles comprises 10.7% of the total area of Canada. It is the most heavily populated province, with an estimated population of 6,342,000 on June

1, 1962 (1961 census, 6,236,092). About 75% of the population is urban, and 90% is English-speaking. The largest cities are Toronto, the provincial capital, with 672,407 inhabitants in the 1961 census (metropolitan area, 1,618,787); Hamilton, 273,991; Ottawa, the capital of Canada, 268,206; London, 169,569; Windsor, 114,367; and St. Catharines, 84,472.

Government.—The premier of Ontario (since 1961) is John P. Robarts, leader of the provincial Progressive Conservative Party. The head of government is the lieutenant-governor (John Keiller MacKay since 1957), appointed by the federal government. There is no upper house, and the elected Legislative Assembly of 98 members was composed in September 1962 of 67 Progressive Conservatives, 23 Liberals, and 5 New Democratic Party (formerly Co-operative Commonwealth Federation) members; 3 seats were vacant. In the Canadian Parliament, the province is represented by 85 members in the House of Commons and 24 in the Senate.

Education.—Thirteen years of free education are provided by the province and municipalities. Enrollment in 1961–62 was 1,462,000, an increase of 73,000. In 1962–63 financial assistance from the province will be raised $26.9 million to $208 million, and government assistance to the 11 universities will total $45.5 million. University enrollment in September 1962 was approximately 35,000, with nearly half attending the University of Toronto. Plans are under way for the establishment of a new university at Peterborough by 1964.

Finance.—Net ordinary revenue for the fiscal year ending March 31, 1962, was $813,691,000, and net ordinary expenditure was $813,259,000. At that date the net capital debt stood at $1,240,729,219. Major sources of revenue were: corporation taxes, $166 million; gasoline taxes, $164 million; and income tax rental agreements with the federal government, $121 million. The new sales tax, in force only part of the year, provided $76 million. Major governmental expenditures were: education, $269 million; health and welfare, $132 million; and highways, $72 million.

Transportation and Communications.—Motor vehicle registration as of March 1962 was 2,123,286. In 1961–62 (to March), 473 miles of highways were added to the 85,830 in the province. Ontario has 10,500 miles of railways. In 1960 there were 2,300,000 telephones.

Provincial Economy.—The total labor force in 1961 was 2,393,000, and the number employed averaged 2,261,000. The average personal per capita income was $1,855, the highest in Canada. Consumer spending in retail trade reached $6,337 million.

Energy.—In 1961 a record electric power volume of nearly 38 billion kw.-hr. was generated, nearly 90% of which came from the publicly owned Hydro-Electric Power Commission of Ontario. The commission has increased its dependable peak capacity to more than 6.7 million kilowatts. Natural gas sales of 125,142,098 Mcf. were 20% higher than in 1960. Oil production totaled 1,147,682 barrels, the highest figure in over 100 years of records.

Agriculture and Forestry.—With a farm labor force of 172,000, farm cash income for 1961 was a record $895 million. Tobacco production was valued at about $104 million, down 5% from 1960. The value of fruits and vegetables was estimated at $100 million. Pulp and paper output in 1960 amounted to $494 million.

Minerals.—The province ranks first in mineral production, which in 1961 was valued at $948 million (the decline of $35 million from 1960 was more than accounted for by the fall in uranium output). Other minerals showed a gain of 2.6%, with substantial increases being made in iron ore, nickel, and zinc. Nickel output was $301 million; copper, $122.5 million; gold, $92 million; and iron, a record $55 million.

Manufacturing.—Ontario is the most important industrial area in Canada, accounting for over half the country's industrial output. The gross value of production in 1961 was $11,750 million. Ontario accounts for nearly all of Canada's motor vehicle output (99%), heavy electrical machinery (79%), rubber products (82%), and agricultural implements (91%).

Events, 1962.—A revised curriculum (the Robarts Plan) was inaugurated in Ontario's secondary schools in September. The new system offers both 5- and 4-year programs in arts, trades, and business, as well as a 2-year plan for students who intend to leave school early.

The $33 million nuclear power demonstration station at Rolphton was placed in operation in June. The plant, whose full power output is 20,000 kw., provides the Ontario Hydro with Canada's first nuclear-produced electricity. Work proceeded on a 460,000-volt transmission line from the area around James Bay in the north to the southern part of the province. The first large-scale high-voltage system in North America, the 550-mile line is scheduled for completion in 1963.

(See also Ottawa; Toronto.)

Frederick H. Armstrong,
Department of History, University of Toronto.

WHO PHOTO

Egyptian schoolchildren are taught to treat themselves for trachoma, which afflicts an estimated 500 million persons.

OPERA. See Music.

OPHTHALMOLOGY

The spectacular discovery of the year 1962 in ophthalmology was the middle limiting membrane of the retina, found by Fine and Zimmerman with the electron microscope. For decades only the external and internal limiting membrane have been known. The middle limiting membrane lies as a synapse between visual cells and second-order neurons, and forms the boundary of the innermost part of the outer plexiform layer. Cystic formations in the outer plexiform layer are delineated by it, as are also discrete rounded hemorrhages and exudates. Now that it has been described the middle limiting membrane can be recognized under ordinary high-power magnification.

Electromyography.—An entirely new and important approach to the neurophysiology and physiopathology of the extraocular muscles is given by the method of electromyography. The registration and analysis of the electric action potentials within the eye muscles affords an insight into the innervational factor of normal eye activity, and represents a tool for analysis of the altered or impaired ocular motility on the clinical level. In neurogenic paresis or palsies, the electromyogram manifests outfall of electrical activity. In ocular myopathies there is a striking contrast between the abundant discharge of action potentials and the paresis or paralysis of the affected eye muscles. The possibility of differentiation of motor-neuron, and myopathic-ocular-motility disorders is very important. All these insights into the electric behavior of extraocular muscles under normal and pathological conditions facilitate the understanding of underlying fundamental brain processes.

Conjunctivitis.—Adenoviruses are variously transmitted and gain entry through the oropharynx or conjunctiva. Several distinct syndromes have now been identified. Some respiratory illness predominates and involves the eye. The initial and subsequent isolations of Type 8 adenovirus from epidemic keratoconjunctivitis have been followed by epidemiological and experimental studies that established the etiological role of this agent. The existence in the Far East of infantile epidemic keratoconjunctivitis, a systemic syndrome with respiratory symptoms and follicular conjunctivitis but no keratitis, is now confirmed. It appears that this is the reservoir of infection from which arise

explosive epidemics in adults. Conjunctivitis and keratoconjunctivitis due to adenovirus types 3, 4, 7, 8, and 11 have been observed, and the clinical features of these are compared with particular reference to the corneal complications. Acute dacryoadenitis has occurred in association with adenovirus infection. The differential diagnosis of adenovirus infection and the role of the various laboratory investigations have been broadened.

New Drug Treatment.—The virus of herpes simplex depends for reproduction on the synthesis of its deoxyribonucleic acid in host cells. Substances which interfere with this synthesis will therefore interfere with the further development of the virus. But these antimetabolites will also interfere with or inhibit the vital functions in the normal cells, and if given systemically may be toxic. With dendritic keratitis, however, the compound is applied topically to a tissue in which the infected cells are superficial and are rapidly replaced, even if damaged by a compound toxic to both cells and virus. Cells which metabolize at a rate slower than the virus, metabolize less of the antimetabolite than the rapidly producing virus and thus are not inhibited to the same degree as the virus. This has led to the establishment of IDU or 5-iodo-2-deoxyuridine (Stoxil) as a spectacular new treatment for herpes simplex, dendritic keratitis, and related viral conditions. (See also CHEMOTHERAPY.)

Instruments for the Blind.—In the aid of the blind, scientists have begun to substitute auditory or tactile senses for sight. They have improved obstacle detectors by replacing the tapping cane with an electronic beam. Many of the instruments demonstrated have been designed to render the blind mobile. An electronic cane can warn of an obstacle by a sound made audible through an earphone, or alert the user by a vibrating handle. It is a sensitive enough device to inform a blind person of any step down greater than two inches. Light is converted into tactile stimuli by an optical camera worn on the head. It forms a plastic image of an object on the skin of a blind person very much as it is formed on the cerebral cortex, converting points of light into electrical stimuli. Another navigational aid involves a magnetic bar compass. A narrow beam of light is reflected by a mirror within the instrument and amplified, causing a peg to protrude from the top of the unit.

Eye Protection in Space.—As man moves out further into space he will have to protect his eyes from the effects of corpuscular radiation. Without such protection, deterioration of the optic nerve, retina, and extraocular muscles may be expected. Although a short period of weightlessness has no deleterious effect on the eyes, we are not certain about the effects of a prolonged period, or whether any harmful influences can be counteracted.

ROLAND I. PRITIKIN, *Eye Surgeon and Consulting Ophthalmologist;* and M. L. DUCHON, *Ophthalmologist and Author of "What to Tell the Parents of a Cross-Eyed Child," etc.*

OPINION POLLS. See PUBLIC OPINION SURVEYS.
ORANGES. See FRUITS.
ORBITING SOLAR OBSERVATORY. See SPACE FLIGHT.
ORCHESTRAS. See MUSIC.

OREGON

A Northwestern coastal state of the United States, Oregon ranks 10th among the states in area (land, 96,248 square miles; inland water, 733) and 31st in population (1,864,000 on July 1, 1962, a 5.4% increase from the 1960 census figure of 1,768,687). Urban places with populations above 10,000 in 1960:

Albany	12,926	Klamath Falls	16,949
Altamont (uninc.)	10,311	Medford	24,425
Astoria	11,239	Pendleton	14,434
Bend	11,936	Portland	372,676
Corvallis	20,669	Roseburg	11,467
Dalles	10,493	Salem (*capital*)	49,142
Eugene	50,977	Salem Heights (uninc.)	10,770
Grants Pass	10,118	Springfield	19,616

Government.—Chief executive and judicial officers in 1962 included Mark O. Hatfield (Republican), governor, serving a four-year term; Howell Appling, Jr., secretary of state; Howard C. Belton, treasurer; Robert Y. Thornton, attorney general; Leon P. Minear, superintendent of public instruction; and William M. McAllister, chief justice of the 7-member Supreme Court.

The Oregon Legislative Assembly, which convenes in odd-numbered years, comprised 20 Democrats and 10 Republicans in the Senate in 1962 and 31 Democrats and 29 Republicans in the House of Representatives.

Finance.—In the 1962 fiscal year, revenue of $757,785,483 included $202,338,181 from state taxes and $94,802,145 in federal funds. Chief tax yields were from individual incomes ($110,500,000), motor fuels ($38,512,416), and licensing ($43,695,805). Spending of $774,363,697 included $111,751,709 for highways.

Education.—In the 1961–62 school year it was estimated that public elementary schools staffed by 11,642 teachers enrolled 299,727 pupils; secondary schools with 5,000 teachers enrolled 112,469; and parochial schools with 957 teachers enrolled 28,863. College enrollment totaled 47,786 in 23 institutions, including 4 junior colleges and 19 senior colleges and universities.

Estimated public school spending in the 1961–62 school year totaled $206,629,000, including current expenditures of $174,579,000 ($477 per pupil) and capital outlays of $28 million. Revenue of $215.2 million was drawn chiefly from state funds ($62.4 million) and local districts ($130 million). Teachers' salaries averaged $5,775 (high school, $6,050; elementary, $5,650). Actual spending for higher education (1961 fiscal year) totaled $55,419,000.

Public Assistance.—In the 1962 fiscal year public assistance expenditures to a monthly average of 64,000 persons totaled $42,579,471. This amount included $16,214,006 for the aged and $14,120,595 for dependent children.

Transportation and Communications.—With 355 miles of highway construction and reconstruction completed in 1961, *highways and roads* on Dec. 31, 1961, totaled 74,898 miles (45,394 surfaced). These served 996,502 *motor vehicles* (as registered on Dec. 31, 1961), including 859,014 automobiles. Operating in the state in 1962 were 18 *railroads* (using 3,541 line miles of track); 9 regularly scheduled *airlines;* and 120 commercial and municipal *airports* and airfields.

Communications media included (1962) 81 AM and 15 FM *radio stations;* 13 VHF *television stations;* (1961) 24 daily *newspapers* (circulation, 646,272); and (Jan. 1, 1962) 214,100 business and 544,200 residential *telephones.*

Labor Force.—During 1961 nonagricultural employment in the state averaged 506,100, compared with an average of 509,200 for 1960. Of nonfarm employees, 27.4% were in manufacturing, 21.9% in trade, and 18.7% in service industries. Unemployment in December 1961 stood at 27,700, as against 37,200 for December of the previous year.

Manufacturing.—Manufacturing engaged an average of 139,031 persons in 1961 and provided a payroll of $763,245,608. In 1960 manufacturing employed 142,887 workers, including 117,389 in production, and provided a payroll of $738,947,000. Adjusted value added by manufacture totaled $1,345,407,000.

LEADING OREGON MANUFACTURES, 1960

Industry group	Total employees	Total payroll (in thousands)	Adjusted [1] value added by mfr.[1] (in thousands)
Lumber and wood products	71,084	$357,743	$569,939
Food and kindred products	19,885	91,197	204,178
Paper and products	7,162	42,086	114,938
Primary metals	4,943	30,529	79,928
Printing and publishing	4,895	28,800	54,099
Fabricated metals	4,831	29,398	50,830
Transportation equipment	4,623	30,375	43,410
Stone, clay, glass products	2,891	15,179	29,681
Chemicals and products	1,596	8,945	25,103

[1] For definition, see footnote 1 in the article *Industrial Production.* (Source: *1960 Annual Survey of Manufactures.*)

Mining.—In 1961, Oregon ranked 38th among the states in the value of its mineral output ($54,922,000), with 0.30% of the national total. It was first in output of nickel and fourth in diatomite. Employment in the mineral industries decreased 4% during the year. In primary metals, one of the fastest growing industries in the 1950's, the employment decline was the first since 1954. Leading minerals were stone (valued at $20,939,000) and sand and gravel ($13,680,000).

Agriculture.—Cash farm income for the first nine months of 1962 (excluding government payments) totaled $295,778,000, compared with $292,683,000 for the corresponding period of 1961. For the full year 1961, income comprised $194,577,000 from livestock, $218,194,000 from crops, and $10,361,000 in government payments. Principal income sources in 1961 were cattle, $86,877,000; wholesale milk, $41,296,000; and wheat, $40,790,000.

The state's 43,000 farms in 1959 had an acreage of 21,236,000 (3,118,000 in harvested cropland). Livestock on farms on Jan. 1, 1962, included 1,435,000 cattle, 851,000 sheep, and 3,108,000 chickens, and (1961) 11,619,000 commercial broilers. An average of 68,000 family and 27,000 hired workers engaged in farming in 1961.

OREGON CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Apples (1,000 bu.)	2,151	1,700	2,000
Barley (1,000 bu.)	16,898	16,698	16,856
Cherries (tons)	24,630	30,800	40,200
Cranberries (bbl.)	32,490	445,400	28,000
Filberts (tons)	7,660	11,100	7,400
Hay (1,000 tons)	1,855	1,914	1,927
Mint for oil (1,000 lb.)	750	964	990
Onions (1,000 cwt.)	2,030	2,094	2,276
Peaches (1,000 bu.)	420	430	470
Pears (1,000 bu.)	5,175	4,830	6,150
Potatoes (1,000 cwt.)	8,233	9,735	9,230
Prunes (tons)	40,910	28,000	47,000
Strawberries (1,000 lb.)	68,562	67,680	85,250
Walnuts (tons)	5,680	6,300	3,400
Wheat (1,000 bu.)	28,016	20,602	26,280

(Source: U.S. Department of Agriculture.)

Events, 1962.—The year 1962 will long be remembered for its violent Columbus Day "extratropical cyclone," a remnant of typhoon Frieda, the most destructive storm in the history of the Pacific Northwest. Thirty-two Oregonians lost their lives, and damage amounted to more than $170 million. More than 3 million board feet of timber were blown down; of the crop trees, walnuts, filberts, cherries, and prunes suffered the most damage.

On the political scene, two top office-holders retained their seats in the 1962 elections. Democratic U.S. Sen. Wayne L. Morse won reelection for a fourth term, defeating Sigfrid B. (Sig) Unander, former Republican state treasurer. Republican Gov. Mark O. Hatfield won by a large margin over Democratic Attorney General Robert Y. Thornton and Robert Wampler, a Clackamas County deputy sheriff running as an independent. Many observers felt that Hatfield's victory—by a 77,000-plus majority in the face of a Democratic registration advantage of more than 78,000—enhanced his position as a potential Republican vice presidential nominee in 1964.

Democrats took over the 4th Congressional District where the contest was between two members of the state legislature, Speaker of the House Robert B. Duncan, Democrat of Medford, and Rep. Carl Fisher, Republican of Eugene. One lone Republican, Rep. Walter Norblad of Stayton, remained in Congress. Voters finally approved daylight saving time, ending the confusion of the two

WIDE WORLD

High winds in the Pacific Northwest, October 11–13, topple a steeple at the College of Education at Monmouth, Oreg.

preceding summers, and approved a pay increase for legislators, even giving them the right to set their own salaries.

For the second year in succession, Oregon's construction industry was idle for a major part of the summer. A strike of ironworkers, which began on May 28, finally ended on July 21 with a three-year contract providing for a 71-cents-an-hour increase in wages and benefits. This was the longest strike ever to cripple the industry, and delayed completion of much-needed public buildings, especially schools.

The Northwest's lumber industry continued to be troubled by competition from British Columbia, but by year's end prospects appeared somewhat brighter for the future.

Oregon's tourist business registered an increase of 16%, and spending by visitors was estimated to have reached a new high of $217 million. The Seattle World's Fair undoubtedly accounted for much of the upswing. State parks were used by a record 11.5 million persons.

Congress finally authorized a Columbia River dredging project which will allow larger ships to sail to Portland. Construction began in August on a 4.2-mile bridge spanning the mouth of the Columbia near Astoria (see also BRIDGES). The structure will eliminate the final gap in Pacific Coast Highway 101, linking the Canadian and Mexican borders. Work also continued on the huge Cougar Dam (see DAMS).

Among the biggest news stories of the year were the Labor Day riot at Seaside in which more than 120 young people of college age were jailed; the birth of an elephant calf, Packy, at the Portland Zoo, the first elephant born in the United States in 44 years; and the storm of controversy surrounding a speaking tour of several college campuses by Gus Hall, secretary general of the U.S. Communist Party.

"Events" by: ELIZABETH FINDLY,
Head Reference and Documents Librarian,
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ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT. See EUROPE.

ORGANIZATION OF AMERICAN STATES. See Index entry.

ORGANIZATIONS, American. See SOCIETIES AND ORGANIZATIONS.

ORGANIZATIONS, European Political. See EUROPE.

ORIENTAL RELIGIONS. See RELIGION.

ORKNEY ISLANDS. See SCOTLAND.

ORNITHOLOGY. See the Index entry, *Birds.*

ORTHODOX CHURCHES. See RELIGION.

OTTAWA

The national capital of Canada, Ottawa lies on the Ottawa River, about 285 highway miles northeast of Toronto and 125 highway miles west of Montreal, in the Province of Ontario. With an area of about 28 square miles, the city had a population of 258,492 in 1961. Metropolitan Ottawa, which includes Hull, Quebec, across the river, together with two Ontario municipalities enclosed within the city, had a population of 418,399. The fifth largest metropolitan area in Canada, Ottawa is a bilingual city—French and English—with about 60% of its residents speaking the latter language.

The city government consists of a Board of Control and a Council. The former comprises a mayor, elected for a two-year term, and four elected controllers. The Council is composed of two aldermen from each of the city's 10 wards. Administrative functions are vested in the Board of Control, which is fully responsible to the Council. Charlotte Whitton was elected mayor for the third time on Dec. 3, 1962.

The city budget for 1962 called for expenditures of $62,282,178, an increase of 14% over the $54 million spent in 1961. Of this total, $23,757,305 was spent for education and $38,524,873 for general purposes. This sum was raised in the following manner: $33,698,191 from grants and the provision of services; $28,583,987 from taxation on real estate. The taxable assessed property valuation was $542,703,000. Business and commercial assessment amounted to $205,698,000; residential assessment, to $337,005,000.

The school system, consisting of public and separate (Roman Catholic) schools for primary education and public high schools for secondary instruction, is managed by elected boards operating under the jurisdiction of the provincial government. For 1962, enrollment figures were: public primary schools, 24,779; separate primary schools, 25,200; collegiate high schools, 16,600; University of Ottawa (Roman Catholic), 3,500; and Carleton University (nonsectarian), 1,950.

Ottawa has a limited amount of diversified industry, such as printing; sash, door, and planing mills; and scientific equipment. In 1962 there were 238 industrial plants, employing 9,275 persons; the value of factory shipments was $137,480,000.

An 18-month controversy over public housing was ended late in 1962 when the city council decided to construct at least 100 units for elderly people and low-income families at two points in the city. More developments of this sort were planned. Work proceeded on a giant collector sewer system, designed to keep pace with Ottawa's rapid growth and to overcome the problem of pollution in the Ottawa River.

The Garden of the Provinces, a formal garden with imaginative modern fountains, was opened in the heart of the city. Plans were announced for the clearing and renewal of a slum area, the Lebreton flats, in time for the centenary of Canada in 1967. An "embassy row" was also projected near Rideau Hall, the home of Canada's governor-general. A design was chosen for the Macdonald-Cartier Bridge, which was expected to open in 1965, replacing the Interprovincial Bridge between Ottawa and Hull.

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OUTER MONGOLIA. See MONGOLIAN PEOPLE'S REPUBLIC.

OUTER SEVEN (EUROPEAN FREE TRADE ASSOCIATION). See EUROPE.

P·Q

PANAMA CANAL—Spanning the Pacific end of the canal, Thatcher Ferry Bridge was opened in October 1962.

PANAMA CANAL COMPANY

PACIFIC ISLANDS

The term Pacific Islands is used to signify the innumerable islands and island groups, chiefly of volcanic or coral origin, commonly referred to as Oceania. Oceania is divided into three main classifications (although authorities sometimes differ in which of these classifications they place certain fringe island groups):

(1) *Polynesia,* in the central and southeastern Pacific, includes principally Hawaii, Tonga, and Pitcairn Island (qq.v.), and Samoa (see AMERICAN SAMOA and WESTERN SAMOA); the Tuamotu, Society, Gambier, Tubuai, and Marquesas groups (see FRENCH POLYNESIA); and the Ellice and Phoenix groups (see WESTERN PACIFIC ISLANDS, BRITISH).

(2) *Melanesia,* in the western Pacific, includes mainly Fiji and New Caledonia (qq.v.); the Bismarck Archipelago, and the New Hebrides, Louisiade, Admiralty, Solomon, Loyalty, and Santa Cruz groups (see PAPUA AND NEW GUINEA and WESTERN PACIFIC ISLANDS, BRITISH); sometimes Australia, New Zealand, and the Malay Archipelago are also included.

(3) *Micronesia,* in the central Pacific, includes chiefly Nauru and Guam (qq.v.); and the Caroline, Marshall, Mariana, Gilbert, and Bonin groups.

U.S. PACIFIC ISLANDS

The Pacific islands of the United States are important mainly as strategic bases and landing points for sea and air traffic. Johnston Island, in the central Pacific, was the site for United States high-altitude nuclear testing in 1962 (see ATOMIC ENERGY).

Trust Territory of the Pacific Islands.—Comprising the Mariana (except Guam), Marshall, and Caro-

line island groups, this United Nations trust territory is administered by the United States, under an agreement with the UN Security Council which went into effect on July 18, 1947. The trust territory includes 2,141 islands grouped in 96 units or atoll formations (only 64 regularly inhabited), spread over some 3 million square miles in the western Pacific north of the equator. The total land area is about 700 square miles, with a population (1961 census) of 77,913. The principal inhabited islands are Truk (14,554), Ponape (10,964), and Saipan (7,464), which in July 1962 replaced Guam as the capital of the territory. The island peoples, broadly classified as Micronesian, include nine main linguistic groups. English is the official language; Japanese is widely spoken. Bikini and Eniwetok atolls in the Marshalls have served as sites for United States nuclear tests.

In an effort to meet some of the recommendations of the UN Trusteeship Council for acceleration of the preparation of the trust territory for eventual self-government and independence, President Kennedy issued an executive order on Aug. 21, 1962, opening the trust territory to United States citizens, shipping, and investment without prior U.S. Navy security clearance. The executive order was accompanied by a decision to undertake a vigorous program of political, social, and economic development, with the first priority given to education.

PACIFIC ISLANDS OF THE UNITED STATES

(Not including islands belonging to Hawaii and Alaska, and the Trust Territory of the Pacific Islands. Asterisk indicates reference to separate article.)

Island or group	Area (sq. mi.)	Population[1]
*American Samoa	76	20,051
Baker[2]	1	...
Canton and Enderbury[2, 3]	27	320
*Guam	212	67,044
Howland[2]	1	...
Jarvis[2]	1	...
Johnston[4]	..[5]	156
Kingman Reef[4]	..[6]	...
Midway[4]	2	2,356
Palmyra[7]	4	...
Wake[4]	3	1,097

[1] Census of April 1, 1960. [2] Under the administration of the Office of Territories, Department of the Interior. [3] An Anglo-American condominium in the Phoenix group of the Gilbert and Ellice Islands, used as air and communications bases; Enderbury Island was uninhabited in 1960. [4] Under U.S. Navy control. [5] Including nearby uninhabited Sand Island; total area, less than 0.5 sq. mi. [6] About 150 feet long and 120 feet wide at high tide; total area, including submerged shoals, about 40 sq. mi. [7] Administered by the Federal Aviation Agency.

Government.—The trust territory is administered by a high commissioner (Maurice Wilfred Goding, appointed April 24, 1961), under the direction of the U.S. secretary of interior. On May 7, 1962, President Kennedy transferred the administration of Saipan, Tinian, and other islands in the Northern Mariana group from the secretary of the navy to the secretary of interior. Native self-government is being developed on the municipal, district, and regional levels. A conference of elected native leaders meets annually as the Inter-District Advisory Committee to the High Commissioner. In the fiscal year 1961, revenue was $7,430,324, of which $1,296,956 was derived locally and the remainder was appropriated by the United States; obligations totaled $7,430,324.

Education and Religion.—Education is free and compulsory for children aged 8 to 14. School enrollment, as of June 30, 1961: 16,575. Number of schools (with enrollments): 190 elementary (14,400), 19 intermediate (1,804), and 6 secondary (371). In addition, 183 pupils attended high schools on Guam and 132 were in higher institutions on Guam and elsewhere. The population is predominantly Christian; mission schools play an important role in education.

Economy.—Subsistence farming, fishing, and the production of copra are the principal economic activities of the trust territory. Chief cash crops, 1961: copra, 13,868 tons (up 3,151 tons from 1960); trochus shell, 222,720 pounds (down 413,481 from 1960); and seafood, 546,170 pounds. Imports, fiscal 1961: $3,565,474 ($3,746,734 in 1960); exports, fiscal 1961: $1,839,792 ($1,891,300 in 1960). Principal trading partners are the United States and Japan.

Islands under United States Control.—The peace treaty between the United States and Japan, signed on Sept. 8, 1951, placed the Ryukyu, Bonin, and Volcano Islands and certain other Japanese-held islands of the western Pacific under United States jurisdiction, although Japan holds residual sovereignty. These islands were not specifically mentioned in the Japanese–U.S. Treaty of Mutual Cooperation and Security of 1960, but a minute to the treaty provided for mutual emergency defense measures for the islands and contained a declaration by the United States that it would do its utmost to secure the islanders' welfare.

Ryukyu Islands.—The Ryukyu Archipelago consists of three main groups—the Amami-gunto,[1] the Okinawa Islands, and the Sakishima Islands—extending some 500 miles southwest of Japan. The islands under United States control have a total area of 848 square miles and a population (Dec. 1, 1960) of 883,052 (excluding United States personnel and their dependents). The largest island, Okinawa (467 sq. mi.), contains important United States airbases. Naha (1959 pop., 218,000), on Okinawa, is the capital and chief city of the Ryukyus.

The administration of the islands is under a high commissioner (Lt. Gen. Paul W. Caraway took office on Feb. 16, 1961), assisted by a civil administrator (Shannon B. B. McCune was appointed in June 1962). The government includes a 29-member unicameral legislature, elected for a 2-year term, and a chief executive (Seisaku Ota, appointed Oct. 21, 1959). In the Nov. 11, 1962, elections, the Liberal Democratic Party, which favors cooperation with the United States authorities and a gradual reversion of the islands to Japan, won 17 seats in the legislature (a loss of 5); the moderately leftist Okinawa Socialist Masses Party won 7 seats (a gain of 2); the strongly anti-American Okinawa People's Party retained one seat; the Socialist Party won one; and independents, 3.

In order to meet the demand of the Ryukyuans for greater home rule, President Kennedy issued an executive order on March 19, 1962, which provided for the following: (1) the chief executive will be nominated by the legislature for appointment by the U.S. high commissioner, with the proviso that if the nominee was found to be unacceptable by the high commissioner he could appoint another of his choice; (2) the hitherto unlimited veto power of the high commissioner over acts of the legislature would be restricted to bills affecting foreign affairs, military security, or United States property; (3) the term of the legislature was lengthened from 2 to 3 years, and permission was granted to increase the number of seats in the legislature; (4) the civil administrator is to be a civilian instead of a United States general; and (5) changes are to be made in the provisions regarding jurisdiction over certain criminal acts by Americans in the islands. The changes announced by the president incorporated recommendations of a committee of inquiry that was sent to the islands in late 1961. Although the changes were greeted warmly by most Ryukyuans and Japanese, Premier Ikeda of Japan announced that Japan would continue to ask for the return of administrative rights over the islands.

The economy of the islands is greatly affected by the presence of United States military forces, which in 1961 spent about $95 million ($74 million in 1960). In June 1960 about 51,300 persons (13% of the labor force) were employed by United States forces. Agriculture, fishing, and food processing are the main economic activities. Chief crops are rice, sweet potatoes, sugar, and soybeans. Exports, 1960: $29.1 million ($21.1 million in 1959); imports, 1960: $133 million ($112 million in 1959).

Included in the Ryukyus are the Daito Islands (area, 18 sq. mi.; 1950 pop., 2,691), an island group 200 miles east of Okinawa. Sugar and phosphate are produced.

Bonin Islands.—Lying about 800 miles east of the Ryukyus, the Bonin Islands comprise three main island groups: Bailey Islands, Beechey Islands, and Parry Islands. The total area is 40 square miles and the population (July 1, 1960) is 204 (excluding United States personnel). The United States maintains a naval station on Chichi-jima, the principal island in the Bonins. Marcus Island, east of the main group, is usually classified with the Bonin Islands. Rosario Island lies west of the Bonins. The Bonins are administered by the U.S. Navy.

Volcano Islands.—An 86-mile chain of islands and islets, the Volcano Islands lie south of the Bonin Islands. The total land area is 11 square miles, and the population is 1,154. Iwo Jima, with an excellent airstrip which is used as a refueling point for U.S. Air Force planes, is the principal island. Parece Vela, a reef, lies about 400 miles southwest of Iwo Jima. The islands are administered by the U.S. Navy.

J. L. L.

[1] The Tokura-gunto (pop. 1950, 2,938) and the Amani Oshima (area, 471 sq. mi.; pop. 1953, 201,753) groups of the Ryukyus reverted to Japanese control on Dec. 5, 1951, and Dec. 25, 1953, respectively.

PAINTING AND SCULPTURE

Unlike 1961, when the American art world was electrified by all the publicity and activities stemming from the New York Metropolitan Museum's purchase of an important and very costly Rembrandt (*Aristotle Contemplating the Bust of Homer*), 1962 offered no extraordinary headlines save for a scandal. After "The Controversial Century: 1850–1950," an exhibition of paintings and sculptures from the collection of Walter P. Chrysler, Jr., had opened at the National Gallery of Canada, in Ottawa, connoisseurs attacked the genuineness of many of the displayed works. It was alleged that quite a few paintings, attributed by Mr. Chrysler to celebrated impressionists or postimpressionists, were fakes that he had bought from New York dealers whose business practices were suspect. The Art Dealers Association of America, formed in 1962 to establish a code of ethics in the art market, had already initiated an investigation and had brought the subject to the attention of the United States Customs and Internal Revenue services. By the end of 1962 the "Chrysler Affair" had not yet been concluded, and the scandal had jeopardized the tax-exempt status of the museum in Provincetown, Mass., where all these works of art are housed.

On the positive side, 1962 was characterized by the establishment of several new museums, and by the founding of a new periodical, *Art Voices from Around the World*, which called itself "an independent art magazine voicing news, views, and opinions on art." There were more art shows in 1962 than in any of the preceding years. The most original theme was "Fine Art in Sports," the first exhibition of the National Museum of Sport, which, though still in the planning phase, dedicated itself to "a greater appreciation of fine arts through the medium of the public's interest in sports." The range of the works of art displayed at New York's International Business Machines Gallery reached from an Etruscan discus thrower to a ball game depicted by Ben Shahn.

In 1962, American art lovers learned that, through the courtesy of the French government, in the year to follow they would be able to view Leonardo da Vinci's celebrated *Mona Lisa*, first at Washington's National Gallery of Art, and thereafter at New York's Metropolitan Museum of Art. The painting arrived in New York aboard the S.S. *France* on December 19.

Exhibitions.—The Solomon R. Guggenheim Museum, in New York, showed large expressionist paintings by Jan Muller, a refugee from Nazi Germany, who had died in 1958 at the dawn of his international fame. An exhibition of 200 British drawings and watercolors toured American museums from February to June; selected from the Mellon Collection, 12 British museums, and from Queen Elizabeth's private collection, they included some famous works by Turner. The Metropolitan Museum of Art, New York, displayed more than 200 drawings, illustrations, and watercolors by the satirist Thomas Rowlandson and his colleagues, shedding light on the London of around 1800.

Works by Fernand Léger on themes such as diving, cycling, and building, which occupied him during the last decade of his life, were shown at the Guggenheim. The San Francisco Museum of Art exhibited more than 75 items, from oil paintings to tiles, originally owned by two San Franciscans, Michael and Sarah Stein, brother and sister-in-law of Gertrude and Leo Stein. The Wadsworth Atheneum, Hartford, Conn., displayed 45 early and realistic paintings and sculptures by abstract artists, such as Pollock, de Kooning, and Rothko; the Metropolitan Museum: bibelots by Carl Fabergé, jeweler to Russia's czars and czarinas; the Allentown (Pa.) Art Museum: works by Benjamin West, the American innkeeper's son who became court painter to George II and president of the British Royal Academy.

The Guggenheim presented a review of works by Philip Guston, reaching from social realism to the peak of abstract expressionism; the Museum of Primitive Art, New York: 200 items of folk art produced by the primitive Asmat tribe in former Netherlands New Guinea and collected by young Michael C. Rockefeller, who was lost on an expedition in November 1961; the Museum of Modern Art, New York: surrealist works by 19th century masters (Odilon Redon, Gustave Moreau, and the printmaker Rodolphe Bresdin); the Brooklyn Museum: 220 works acquired over several decades by the late Louis E. Stern, an internationally known lawyer who owned works by Courbet, Rousseau, Cézanne, Bonnard, and Chagall, as well as African, Asian, and Egyptian art.

At the beginning of 1962, the show "Art Treasures for America" was seen at the National Gallery of Art and then traveled through many museums across the continent. The show highlighted the donation of the entire Samuel H. Kress Collection of old-master paintings to the nation. They have been, and will continue to be, distributed among colleges and museums that need good samples of French, German, Italian, Spanish, and Dutch paintings of the past.

The Metropolitan Museum showed a selection of its total of 141 master drawings purchased in 1961. Marking the first anniversary of the museum's new Department of Drawings, the show featured works by Poussin, Delacroix, David, Pordenone, Pietro da Cortona, Rubens, and Jan Brueghel the Elder.

The Baltimore Museum of Art presented an exhibition of Manet, Degas, Berthe Morisot, and Mary Cassatt. These artists, related in their personal lives as well as in their art, were represented by oils, pastels, watercolors, drawings, and prints.

"Geometric Abstraction in America," at the Whitney Museum of American Art, New York, surveyed the development of that style in the United States during the past three decades; it showed the work of artists who had drawn their inspiration from the Dutch De Stijl group or were influenced by the pioneer work of the German Bauhaus.

The Art Institute of Chicago showed "Treasures of Versailles," an exhibition of paintings, sculptures, tapestries, furniture, and objects of art from France's most famous palace. The exhibition was to be shown at three other American museums in 1963.

The Guggenheim Museum opened its fall season with "Modern Sculpture from the Joseph H. Hirshhorn Collection," including 444 pieces, from Rodin's *Burghers of Calais* to recent work by young sculptors.

The Philadelphia Museum of Art showed works by Thomas Eakins, who was born in Philadelphia in 1844 and died there in 1916. The show revealed him to have been one of America's truly great painters.

The first Riemenschneider exhibition in this country was staged at the North Carolina Museum of Art, in Raleigh. Twenty works by this Late Gothic sculptor were shown, half of them from museums in the Western Hemisphere, the others from the Louvre, the Rijksmuseum, and several West German museums.

The exhibition "16 German Painters," at Washington's Corcoran Gallery, acquainted Americans with a group of predominantly abstract artists, ranging in age from 27 (Roswitha Lüder-Vombeck) to 59 (Josef Fassbender).

At the Century 21 Exposition (Seattle World's Fair) the exhibition "Masterpieces of Art" consisted of paintings and sculptures from 57 American museums, and from the National Gallery of Canada, the Art Gallery of Toronto, the Montreal Museum of Fine Arts, the Louvre, the Tokyo National Museum, the Academia Sinica (Taipei, Taiwan), and the National Museum of India (New Delhi). In addition to this display of art, reaching from a jade piece of China's remote Shang Period to an oil by Picasso done in 1941, four other shows were made available to visitors to the fair: "Art Since 1950, American," "Art Since 1950, International," "Paintings by Mark Tobey," "Art of the Ancient East," and "Northwest Coast Indian Art."

The Venice Biennale of 1962 contained a United States pavilion, which was under the direction of René d'Harnoncourt, director of the Museum of Modern Art, in New York. The exhibitors were the painters Loren MacIver and Jan Muller, and the sculptors Louise Nevelson and Dimitri Hadzi. The two principal awards donated by Americans went to Europeans: the Arthur Lejwa Prize of New York, for a painter under 40 participating in the Biennale for the first time (Janez Bernik of Yugoslavia) and the David E. Bright Foundation of Los Angeles Award for sculpture (Humbert Dalwood of Great Britain).

In New York, noted one-man shows included those given to Sidney Nolan (Durlacher); Maurice Sterne (Hirschl & Adler); Colleen Browning (Isaacson); Kyle Morris (Kootz); Kahlil Gibran (Nordness); Georges Braque (Rosenberg); Richard Lippold (Willard); Marsden Hartley (Babcock); Leonard Baskin (Borgenicht); Mathias Goeritz (Carstairs); Reuben Nakian (Egan); Chaim Gross (Forum); Lovis Corinth (Frumkin); José Luis Cuevas (Herbert); Willem de Kooning (Janis); Henry Moore (Knoedler); Kenzo Okada (Parsons); Kenneth Armitage (Rosenberg); Ernst Barlach (St. Etienne); Jack Yeats (Willard); Ralph Rosenberg (Landry); Balthus (Matisse); Hans Boehler (Artist's Gallery); Jan Lebenstein (Chalette); Gregorio Prestopino (Nordness); Paul Klee (Silberman); Rufino Tamayo (Knoedler); Kenneth Noland (Emmerich); Richard Stankiewicz (Stable); Edvard Munch (Frumkin); Bernard Meadows (Rosenberg); and Kyoshi Saito (Nordness).

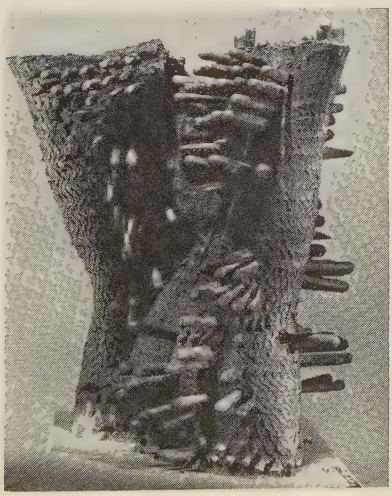
UPI

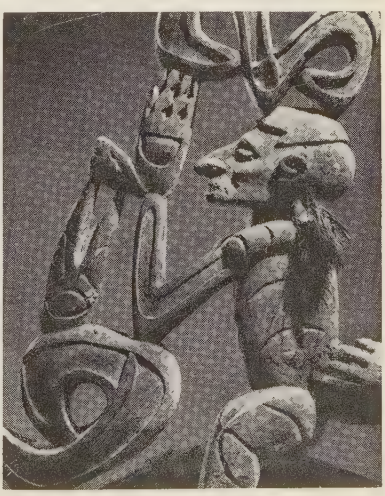
The world's most celebrated painting, Leonardo da Vinci's *Mona Lisa*, is uncrated in Washington, D.C., December 21, for its exhibition in 1963 at the National Gallery of Art.

New Museums, Expansions, and Gifts and Bequests.—The Museum of Modern Art, New York, announced that it will be extended 75 feet west and 55 feet east of the existing structure. The first step in the program will be the construction of a one-story administration building on West 54th Street, east of the present sculpture garden, allowing the present offices to be converted into galleries. The new building program is directed by Philip C. Johnson.

Adelyn D. Breeskin, former director of the Baltimore Museum of Art, was made director of the Washington (D.C.) Gallery of Modern Art. This new museum opened in October 1962 with a retrospective show of the late Franz Kline, whose paintings have exerted a considerable influence on contemporary art. New College, in Sarasota, Fla., received a large gift of money from Royal S. and Janet Reid Kellog. The donation is being used for the construction of the Kellog Art Gallery on the campus, adjacent to the John and Mable Ringling Museum of Art.

In New York, the building of the Gallery of Modern Art on Columbus Circle, sponsored by Huntington Hartford and designed by Edward D. Stone, neared completion in 1962. It was hoped that the museum would be able to open in the early part of 1963. The University of Pittsburgh announced plans to create the Henry Clay Frick Fine Arts Building, donated by Miss Helen C. Frick in memory of her father. Designed by B. Kenneth Johnstone Associates, the building will, in addition to classrooms, studios, and an





***(Left)* Peter Agostini's *Saracen 1215 A.D.*, from the Hirshhorn Collection, exhibited at the Guggenheim Museum in New York. *(Right)* An Asmat carving from New Guinea, collected by the late Michael Rockefeller, on exhibition at New York City's Museum of Primitive Art.**

THE SOLOMON R. GUGGENHEIM MUSEUM; COURTESY OF THE MUSEUM OF PRIMITIVE ART

WIDE WORLD

A record price for the work of a living artist, $224,000, was paid for this two-sided work by Picasso at an auction of the Somerset Maugham Collection in London on April 10.

auditorium, contain galleries for works of art. In New York's Time-Life Building, the Museum of Early American Folk Arts held its first exhibition with a show of more than 100 objects, many of which had never been exhibited before.

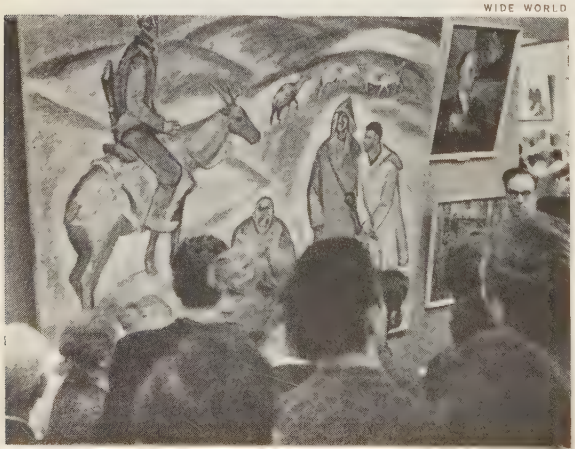
Changing its name from Albright Art Gallery to Albright-Knox Art Gallery, Buffalo's art museum opened a new wing donated by Seymour Knox, the collector of contemporary art. The Minneapolis Institute of Arts opened an American wing named in honor of James Ford Bell, a collector of American art. In addition to paintings and sculpture, the wing includes furniture, glass, fine silver, and four complete Colonial rooms. In Poughkeepsie, N.Y., the Vassar College Art Gallery celebrated its reopening and complete rebuilding with a loan show of paintings and drawings by Hubert Robert, the 18th century French landscape painter.

The Wadsworth Atheneum in Hartford, Conn., announced the acquisition of three important Rembrandts: *Portrait of a Young Man, Portrait of Saskia,* and *Landscape with a Cottage.* A fourth Rembrandt, acquired by the Denver Art Museum, was *Saskia as Minerva,* a small wood panel painted when the artist was 26. One of the few surviving examples of early 14th century painting, a seven-panel altarpiece by Ugolino da Siena, collaborator and later rival of Duccio, was acquired by the Sterling and Francine Clark Art Institute, in Williamstown, Mass.

The Dallas Museum of Fine Arts bought *That Gentleman,* by Andrew Wyeth, for $58,000, which is believed to be the highest price ever paid by a museum for a painting by a living American artist. Maxim Karolik, who in 1941 had donated to the Museum of Fine Arts in Boston his superb collection of American art from the 1720 to 1820 period, added to this collection a large number of 19th century oils, watercolors, and drawings by John Frederick Peto, Henry F. Darby, and others.

In Moscow on December 19, spectators gather before one of several modernist paintings attacked by Premier Khrushchev.

WIDE WORLD



Art Thefts.—There were fewer sensational robberies in 1962 than in the previous year, although the biggest art theft in British history occurred on July 10, when 35 impressionist and modern French paintings were taken from the O'Hana Art Gallery, in London; the property, valued at $980,000, was recovered on July 27. Most of the works lost in the two great French robberies of 1961 turned up in 1962: the eight Cézannes missing from the Vendôme Pavilion, Aix-en-Provence, since Aug. 13, 1961, were found in Marseille on April 11; and all but one of the 57 paintings stolen from the Annonciade Museum in Saint Tropez on July 16, 1961, turned up near Paris on Nov. 16, 1962. The major unsolved theft was that of Goya's *Duke of Wellington,* which disappeared from the National Gallery, London, on Aug. 21, 1961.

Auctions.—At a comprehensive sale of modern paintings, drawings, and sculptures auctioned at the Parke-Bernet Galleries, New York, on Jan. 11, 1962, August Macke's *Composition* (1913) in watercolor, crayons, and chalks, brought $3,000; a pastel by Giacometti, *Summer Day* (1927), $2,400; and Lyonel Feininger's *Shipping* (1939), in pen and watercolor, $2,300. A March 21 sale of paintings, drawings, and sculptures from the collections of Mr. and Mrs. Charles Goldman, Mr. and Mrs. Arthur Murray, Folke Heybroek of Sweden, the Estate of Martha A. Alford, and other sources, included several outstanding paintings by Monet, Sisley, Redon, Mondrian, Léger, Rouault, Bonnard, and Modigliani, as well as sculptures by Daumier, Rodin, and other masters. The sale realized a total of more than $1 million. The highest price, $72,500, was brought by Sisley's *Winter at Louveciennes,* followed by $65,000 for Monet's *Trellises with Flowers.* Sisley's *Banks of the Loing at Moret* brought $60,000; his *Old Houses at Veneux-Nadon* and Monet's *Customs Guards' Cabin* were each purchased for $55,000; and an early Mondrian, *Kerktoren,* was sold for $47,000, a record price at auction for a work by this artist.

On April 11, modern paintings, drawings, and sculpture belonging to the American Federation of Arts were sold at auction for the benefit of the federation's building fund.

Two sales at the Parke-Bernet Galleries in October 1962 offered old masters: On October 24, paintings and early sculptures collected by John and Johanna Bass were sold. The paintings included a small Rembrandt, *Head of an Old Man* (c. 1632); Van Dyck's portrait of Bishop Antoon Triest; Rubens' *Holy Family,* from the collection of Sir Frederick Cook, Bart., Richmond, England; *Self Portrait of the Artist,* an early work of Jan Vermeer of Delft; and portraits by Reynolds and Lawrence. On October 31, 22 paintings were auctioned from the collection of Mr. and Mrs. Norman B. Woolworth, including a Chardin still life, *A Slice of Salmon* (c. 1730–40).

Prizes and Awards.—Two large grants were given by the Ford Foundation through the Archives of American Art: Harlan Philipps is directing an oral-history project at Brandeis University, to put on tape the recollections of outstanding figures in the art world—a painter, a sculptor, a critic, and a collector; Charles Van Ravenswaay is in charge of the other project, to identify and examine for the Missouri Historical Society the contribution made by German colonies in the Missouri Valley from 1830 to 1860.

Paintings, sculptures, and other art objects valued at more than $1 million were left to art museums and colleges under the will of the late Loula D. Lasker. While the bulk of the collection was left to the Bezalel Museum (Jerusa-

lem) and the Tel Aviv Museum, ten American museums and colleges also received a number of works, all by modern masters.

The sculptors Isamu Noguchi and Alexander Archipenko were elected to membership in the National Institute of Arts and Letters, the highest honor society of the arts.

The sculptor Alexander Calder was presented with one of Brandeis University's 1962 Creative Arts awards, while the sculptor David Slivka received a cash grant and Creative Arts Citation from the same institution.

Alfred Blaustein, American printmaker, was awarded a cash prize for his etching *The Tangle*, selected as the best print in any medium at the 44th annual exhibition of the Society of American Graphic Artists.

Samuel Adler received a purchase award for his collage, *Old Ferry Landing*, from the Staten Island Institute of Arts and Sciences in connection with the celebration of its 80th anniversary.

Sculptor and designer Harry Bertoia was commissioned by the Reynolds Metals Company to create an aluminum sculpture for the 1962 R. S. Reynolds Memorial award, given annually with an honorarium of $25,000 to an artist chosen by a jury from the American Institute of Architects.

Charles Sheeler, the American painter and photographer, received the 1962 Award of Merit medal and prize of $1,000 from the American Academy of Arts and Letters.

The American sculptor Louise Nevelson was awarded the $3,000 grand prize in the First Sculpture International of the Center of Visual Arts of the Torcuato Di Tella Institute, in Buenos Aires, Argentina.

Alfred H. Barr, Jr., director of the collections of the Museum of Modern Art, and Alexander Calder, the American sculptor known as the inventor of the mobile, were the winners of the 1962 Art in America annual award for out-

INTERLANDI IN THE DES MOINES REGISTER AND TRIBUNE SYNDICATE

"Yeah, But Will It Sell . . . ?"

standing contributions to American art, which includes a cash prize and a medal designed by Seymour Lipton.

Necrology.—Some of the finest artists, as well as a number of art dealers and writers on art, died in 1962. These included the leading surrealist painter, author, and costume designer, Kurt Seligmann (61); the authority on Chinese art and member of the Princeton University faculty, George Rowley (69); the internationally known sculptor and resident sculptor at the University of Notre Dame, Ivan Meštrović (78); the art historian and member of the Institute for Advanced Study at Princeton University, Paul Frankl (83); the New York art dealer Vladimir de Margoulies (64); the New York portrait painter Ivan G. Olinsky (84); the art historian and director of the art galleries at the University of Notre Dame, Maurice H. Goldblatt (77); the art critic Henry McBride (94); the New York art dealer Kurt M. Stern (67); the painter, illustrator, and author Rafaello Busoni (62); the marine illustrator Anton Otto Fischer (80); the retired curator of prints at the New York Public Library, Frank Weitenkampf (96); the abstract painter Morris Louis (49); the painter and director of the arts workshops at New York's New School for Social Research, Camilo Egas (62); the leader of abstract expressionist painting Franz Kline (51); the painter Eugene Speicher (79); the artist and humorist Ludwig Bemelmans (64); and the former director of New York University's Institute of Fine Arts, Walter Cook (74).

Alfred Werner,
Contributing Editor, "Arts" Magazine, New York.

PAKISTAN

The Republic of Pakistan, formerly part of British India, is located in south central Asia. It consists of the provinces of East Pakistan and West Pakistan, which are separated by 920 miles of Indian territory. The total area is 365,037 square miles,[1] of which only 54,501 square miles are in the eastern province; at the 1961 census the population aggregated 93,831,982, and in mid-1962 it was estimated at 96,558,000 (about 55% in East Pakistan). Approximately 85% of the people are Muslims, and most of the rest are Hindus. The chief cities, with their 1961 census populations, are Karachi, the former capital (1,916,000); Lahore (1,297,000); Dacca (558,000); Hyderabad (434,000); Lyallpur (426,000); Chittagong (363,000); and Rawalpindi (343,000), the temporary capital until the completion of adjacent Islamabad. The official languages are English and the two national languages, Urdu and Bengali.

Government.—Under the benevolent dictatorship of President Mohammed Ayub Khan since 1958, Pakistan received a new constitution on March 1, 1962. Basically presidential rather than parliamentary in nature, the constitution embodies a succession of tiered electorates, known as basic democracies, in which some 80,000 electors choose 150 members of the National Assembly (6 additional seats are reserved for women, who are chosen by the two provincial assemblies). This body, which is largely advisory, has its principal seat in Dacca.

Education.—Estimated illiteracy: 84%. Number of schools (with enrollments), 1960: 44,222 primary (5,204 for girls), 4,469,490; 6,030 secondary (734 for girls), 1,345,549; 3,010 other schools and colleges, 396,751; and 6 universities, 7,843.

Finance.—Revenue budget, 1962–63: revenue, Rs.2.14 billion (Rs.2.23 billion in 1961–62; 1 rupee equals U.S.$0.21); expenditure, Rs.1.96 billion (Rs.1.90 billion). Capital budget, 1962–63: revenue, Rs.2.97 billion (Rs.2.25 billion in 1961–62); expenditure, Rs.2.93 billion (Rs.2.27 billion). Gold and foreign exchange: $352 million on Sept. 30, 1962 (down $13 million from a year earlier). Cost-of-living index (1958 = 100): 105 in 1961 (103 in 1960).

Transportation and Communications.—Transport networks (miles, 1961): railways, 7,047 (193,366,000 passengers and 19,803,000 tons of freight in 1961–62); roads, over 70,000 (10,775 all-weather); navigable waterways, 2,800 in East Pakistan (4,000 in the monsoon season). Chief ports: Karachi (5,342,000 tons handled in 1961–62); Chittagong (2,896,000); and Chalna (1,001,000). National airlines: Pakistan International Airlines; Pakistan Aviation, Ltd. Telephones (1961): 79,586.

Manufactures and Minerals.—General index of industrial production (1958 = 100), 1961: 132 (119 in 1960). Industrial products (long tons, 1961): cotton yarn, 185,100; jute goods, 250,354; sugar, 123,462; newsprint, 28,800; sea salt, 185,100; cement, 1,223,000; steel ingots, 8,517; superphosphate, 8,048; ammonium sulfate, 50,506; sulfuric acid, 4,754; chromite, 25,103; limestone, 1,176,442; fire clay, 16,065; coal, 906,000; crude petroleum, 373,000; cotton fabrics, 699,035,000 yards; silk and rayon fabrics, 21,987,000 square yards; cigarettes, 12,065,000,000 units; rubber tires and tubes, 3,982,000 units; natural gas, 34,664,777,000 cubic feet; electricity (1960), 1,449,894,000 kw.-hr.

Agriculture.—Index of agricultural production (1949–53 = 100), 1961–62: 128 (124 in 1960–61). Chief crops (thousands of long tons, 1961–62): clean rice, 10,575; wheat, 3,943; bajra (bulrush millet), 364; jowar (grain sorghum), 245; corn, 487; gram, 614; sugarcane, 17,434; cotton, 322; jute, 1,244; tea, 26; wool (greasy basis), 14.

Foreign Trade.—Total exports, fiscal year 1961–62: Rs.1,843,429,000 (Rs.1,799,371,000 in 1960–61); imports, Rs.3,109,098,000 (Rs.3,187,635,000).

[1] Including Gwadar (300 square miles), ceded by Muscat and Oman in 1958, but excluding the disputed state of Jammu and Kashmir (see Kashmir) and the minor areas of Gilgit, Baltistan, Junagadh, and Manavadar.

Chief exports: textiles, cotton and jute fibers, rice, fish, and hides and skins. Chief imports: cereals, petroleum products, vegetable oils, chemicals, pharmaceuticals, iron and steel products, machinery, transportation equipment. Principal customers (thousands of rupees, 1961–62): United Kingdom, 294,477; United States, 175,172; India, 151,515; Belgium-Luxembourg, 110,064; Japan, 108,644; West Germany, 98,468; South Africa, 91,120; France, 84,507. Principal suppliers (thousands of rupees, 1961–62): United States, 958,756; United Kingdom, 634,078; West Germany, 292,857; Japan, 247,074; Iran, 115,140; India, 107,093.

Events, 1962.—During the first two years of Pakistan's Second Five-Year Plan (1960–65), national income rose by 9.8%. For the second and third years of the plan, Pakistan estimated its foreign aid requirements at $945 million. Meeting in Washington on Jan. 24–25, 1962, members of an international consortium agreed to furnish assistance totaling this sum, as follows: United States, $500 million; International Bank for Reconstruction and Development, and International Development Association, $209.4 million; West Germany, $80 million; United Kingdom, $47.6 million; Japan, $45 million; Canada, $38 million; and France, $25 million. Among the numerous development projects under way in Pakistan, two were completed early in the year: the Guddu Barrage in West Pakistan, in February; and the $73.5 million Karnaphuli Dam in East Pakistan, in March. While production of food grains improved during 1961 and 1962, considerable amounts continued to be imported (an agreement of October 1961 called for the purchase of United States surplus agricultural commodities worth $621,550,000 over a four-year period).

UPI

President Ayub Khan of Pakistan (right), on an unofficial visit to the United States, meets U.S. Secretary of State Dean Rusk at a luncheon in New York City on September 27.

Politically, the major events of 1962 were the proclamation of the new constitution on March 1 (see above, *Government*) and the election of the National Assembly on April 28. Elections for the two provincial assemblies followed on May 6. The constitution reflected President Ayub's distrust of traditional democracy. Not only was the National Assembly elected indirectly, but the powers of the presidency were extensive. Opposition to the constitution's provisions came from adherents of the various political parties, the revival of which was permitted in legislation approved on July 16. Meanwhile, on June 8, martial law was ended after 44 months. A former prime minister, Huseyn S. Suhrawardy, whose arrest on January 30 had been the pretext for student riots in East Pakistan, was freed on August 19.

Pakistan's relations with her neighbors, Afghanistan and India, continued to be unpleasant. At Pakistan's request, the UN Security Council considered the perennial question of Kashmir from April 27 to June 22, when the 100th veto of the USSR defeated an Irish resolution urging direct negotiations between Pakistan and India to settle the dispute. Meanwhile, the Pakistani government entered into negotiations with Communist China concerning its own Kashmiri frontier (an agreement in principle was announced on December 26). After Communist Chinese forces launched a strong attack against India on October 20, the United States and Great Britain urged Pakistan not to press the Kashmir issue. Pakistan, which had felt that the Western powers were not supporting her sufficiently against India, expressed concern over the military assistance now being rushed to New Delhi, and neutralist views were aired in the National Assembly.

Nevertheless, American-Pakistani relations remained cordial. Mrs. John F. Kennedy visited Pakistan in March, and President Ayub went to the United States in September. Later, on November 28, the good offices of Assistant Secretary of State W. Averell Harriman and of Duncan Sandys, British secretary of state for Commonwealth relations, produced the announcement of an agreement for Indo-Pakistani negotiations on Kashmir. Talks were held at the ministerial level in Rawalpindi on December 27–29.

On September 18, the Pakistani delegate, Muhammad Zafrulla Khan, was elected president of the UN General Assembly. Meanwhile, Pakistan furnished the United Nations with a force to keep order in West New Guinea during the transitional period between Dutch and Indonesian rule.

(See also FAR EAST.)

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PALEONTOLOGY. See Index entry.
PALESTINE. See Index entry.
PALMYRA. See PACIFIC ISLANDS.

PANAMA

Occupying the isthmus between North and South America, the Republic of Panama is divided by the 10-mile-wide Canal Zone, which was granted to the United States in 1903. The population (1961 est.) is 1,084,000 in an area of 28,576 square miles. About 44% of the population is concentrated in the central part of the country, in and around the cities of Panamá (271,425 in 1960) and Colón (59,360). Much of the population is of mixed European and Indian descent; there is also a large Negro population. Spanish is the official language.

Government.—Under the constitution of 1946, Panama is governed by a president and a unicameral National Assembly of 53 deputies, elected for 4-year terms by direct popular vote. The president (Roberto F. Chiari, who took office on Oct. 1, 1960) serves for four years and is not eligible for immediate re-election. The 9 provinces have governors appointed by the president.

Education and Religion.—Educational facilities have been expanded in recent years, but probably a third of the population remains illiterate. For the 1961–62 school year, enrollment in the public schools was a record 157,443 for primary classes and 24,000 for secondary; and some 4,500 students enrolled at the University of Panamá. Roman Catholicism is the predominant religion (over 90% of the population).

Finance.—The balboa, the monetary unit, is at parity with the U.S. dollar. The public debt has been growing rapidly for several years because of trade deficits (see below, *Foreign Trade*) and government spending in excess of

revenues, in the hope of expanding and improving national economic activity. By the end of 1961 the national debt stood at $95.2 million. There was considerable debate over the budget for 1962, finally set at $66.8 million, or $3.7 million more than the original ordinary budget figure for 1961. The high level of expenditures was defended by the imposition of new taxes, approval of legislation to increase the efficiency of tax administration, and expansion of the share of the budget devoted to social and economic development. As usual, the budget figures were revised upward during the year. Government receipts in 1961 were $82.89 million, and expenditures totaled $99.37 million (both sums include loan funds from outside the budget).

Transportation and Communications.—The total 335-mile length of the Inter-American Highway from Panama City to the Costa Rican border is open to all-weather traffic, but important sections are not yet paved. Passenger cars totaled 16,100 in 1960; commercial vehicles, 7,800. In October 1962 the high bridge over the Pacific end of the canal was opened, and may be expected to stimulate planning for extension of the Inter-American Highway into the roadless area between Panama City and the Colombian border. (See also BRIDGES.) The access road construction program, a necessity for economic development, received new financial aid from the United States in 1961 and 1962. Public railways, totaling 70 miles, connect the Atlantic and the Pacific. In 1961 the total gross tonnage of the large foreign-owned merchant fleet registered in Panama was 5.4 million. Telephones number 28,672 (1960); radios, 163,000 (1959); and television sets, 30,000 (1962).

Production.—Many Panamanians are engaged in agriculture at or near the subsistence level, and low agricultural productivity makes necessary imports of foodstuffs which constitute a substantial charge on the limited national resources. In 1961 insufficient production of rice and corn for domestic consumption made imports necessary. Manufacturing is growing slowly, but remains small. There is chronic heavy unemployment in the towns. The government subsidizes some agricultural and industrial production by means of price supports, tariff protection, and other measures.

In 1961, President Chiari announced a 4-year $206.7 million plan for economic and social development by participation in the Alliance for Progress. It was expected that only about $10 million of the cost of this program would be financed by foreign loans.

Electric power production in Panama City and Colón in 1961 was 206 million kw.-hr., compared with 180 million in 1960. Herds of livestock continued to increase (up 34% in the past 10 years), but export markets still could not be found for this product. (For export crops, see below, *Foreign Trade.*)

Economic Indicators.—Economic growth quickened in 1961. An increase of 8% in the gross national product gave a total of $460 million, or an annual national income of $415 per capita, a gain of 5% over 1960. The cost-of-living index (1958 = 100) in 1961 and the first half of 1962 was 101. The index of agricultural production (1952–57 = 100) in 1959–60 was 119. Building permits in Panama City totaled $9.2 million in 1961, down slightly from 1960.

Foreign Trade.—Panama's commodity exports always are much less than her imports, and the disparity has been increasing in recent years. In 1960 the apparent excess of commodity imports over exports reached a record $89.6 million; and in 1961 the imbalance ran even higher, at $100.3 million. Total imports in 1961 were $121.78 million ($109.19 million in 1960), while exports were $21.75 million ($19.5 million in 1960). The trade gap continued to grow during the first quarter of 1962, with imports at $33.4 million and exports at $8.5 million, for a deficit of $24.9 million, compared with the $21.9 million gap in the first quarter of 1961.

The increase in export values in 1961, due to improvement in the banana and shrimp trade, would have been much greater except for the sharp decrease in coffee exports. In 1961, bananas again accounted for more than one half the value of Panama's exports: 7.65 million stems, worth $13.38 million. Other exports in 1961: shrimp, $5.85 million ($4.99 million in 1960); cacao, $507,000 ($769,000); coffee, $258,000 ($1.1 million). Colón Free Zone operations in 1961 increased $24.91 million, or 19%, over 1960, to a total of $156.36 million (incoming and outgoing). The United States is Panama's principal trading partner.

The customary large visible trade deficit is narrowed considerably by tourist expenditures, income from ship registrations, Colón Free Zone operations, and, most important of all, from indirect benefits to the Panamanian economy derived from the Canal Zone—the wages of Panamanians working in the Canal Zone, and purchases in Panama by American residents and agencies in the Canal Zone. The United States calculates these indirect benefits to Panama at $50–$60 million annually. A final reason for revising downward the apparent international trade imbalance of Panama is her practice (according to the International Monetary Fund) of considerably undervaluing her banana exports.

Events, 1962.—Much Panamanian discussion in 1962 continued to revolve around the Panama Canal. There was speculation, as for several years past, about the possibility of construction of a sea-level canal (in Panama or elsewhere), and the probable effects on Panama. Of more immediate importance were the continuing demands in Panama for revision or abrogation of the Panama Canal Treaty of 1955 with the United States. In June, President Chiari conferred with President Kennedy in Washington. It was announced that the two presidents had agreed to arrange discussions on the treaty, and that they had found bases for the solution of some of the questions at issue: the flying of more Panamanian flags in the Canal Zone; the promotion of more Panamanian sales in the zone; the principle of equal labor opportunity and equal wages for Panamanians in the zone; and the withholding by the United States, in the Canal Zone, of income taxes from the wages of Panamanians, on behalf of the government of Panama.

On his return to Panama, President Chiari found that many political leaders considered that he had obtained too little in Washington. This criticism gave some stimulus to the already evident political maneuvering in preparation for the presidential election of 1964. On September 25, Panama's foreign minister, Dr. Galileo Solis, made a bitter and unexpected attack on the canal treaty in the UN General Assembly. He said, however, that his delegation would refrain from raising the question at the United Nations at that time because of President Kennedy's "high statesmanship" and willingness to pursue discussions for an equitable solution. The attack indicated that despite progress in the June talks and the agreements reached, the canal treaty remained a major source of friction in United States–Panama relations.

Also of concern to Panamanian political leaders were the costs (economic, social, and political) of implementing the economic and social reforms that the United States wished begun as a condition of Alliance for Progress aid. A considerable expansion of educational facilities was under way in 1962, with American financial aid. In February the minimum-wage law passed in 1961 went into effect for some industries in the provinces of Panamá and Colón. The law provides for hourly minimums ranging between 45 and 60 cents. On the other hand, the proposed agrarian reform remained stalled in 1962.

(See also PANAMA CANAL AND CANAL ZONE.)

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PANAMA CANAL and CANAL ZONE

The Panama Canal cuts across the Isthmus of Panama and connects the Atlantic and Pacific oceans. It extends 51.6 miles from deep water to deep water, and about 40.3 miles from shore to shore. The canal is within a 10-mile-wide strip of land known as the Canal Zone, which in 1903 was granted in perpetuity to the United States by the Republic of Panama. The United States was given the right to act as sovereign in the area "to the entire exclusion of the exercise by the Republic of Panama of any such sovereign rights." In return for the grant, the United States guaranteed the independence of the republic, paid $10 million, and agreed to pay an annuity of $250,000, which was subsequently increased to $1,930,000 per year.

Including tidal water, the Canal Zone covers 648 square miles. Only employees of the United States government may live within the zone, and no private businesses are permitted except those directly related to canal operations.

Population.—The 1960 census reported a population of 42,122, compared with 52,822 in 1950. Of the canal

organization's 14,000 employees, approximately 3,500 are United States citizens.

Administration and Government.—The Canal Zone government, created by Congress, maintains such functions as police and fire protection, schools, postal service, magistrates courts, and public health and sanitation facilities. Its net operating costs, amounting to about $12 million annually, are repaid to the U.S. Treasury by the Panama Canal Company. The company, which is a corporation wholly owned by the United States government, operates the canal. Although the company has not raised canal tolls, increased shipping traffic and the adoption of operating efficiencies have made possible a small operating net margin after paying the cost of the Canal Zone government plus interest of $10 million a year on the unrecovered United States investment in the Canal Zone, which is slightly under $500 million. Capital improvements in the waterway are financed by the margin structure.

The governor of the Canal Zone is appointed by the president of the United States and is automatically president of the Panama Canal Company. In 1962 Maj. Gen. Robert J. Fleming, Jr., was named governor by President Kennedy. Administrative headquarters for the company and government are at Balboa Heights.

Education.—School attendance is not compulsory for children living in the Canal Zone. Separate United States and Latin American school systems are maintained. The former, attended primarily by United States citizens, are modeled after school programs in the United States. Spanish is taught as a language course in every grade. The Latin American schools are attended by non-United States citizens and are comparable in curriculum with the schools in Panama. The curriculum is in Spanish.

Canal Traffic.—During the fiscal year ending June 30, 1962, there were 11,149 oceangoing transits of commercial vessels weighing more than 300 tons net, a new record for the 11th consecutive year. Cargo shipments totaled 67,525,000 long tons, and tolls amounted to $57,290,000, both also new records.

Events, 1962.—Extensive improvement projects continued in 1962. These included further widening of the eight-mile-long channel through Gaillard Cut from 300 to 500 feet ($47 million); illumination of Gaillard Cut; and installation of new electric towing locomotives at the locks ($8 million).

On October 12 the $20 million Thatcher Ferry Bridge across the Pacific entrance of the canal was dedicated in ceremonies jointly conducted by Panama and the United States. The bridge, built by the United States, serves as a major link between eastern and western Panama and will carry traffic using the Inter-American Highway. (See also BRIDGES.)

During the 1962 fiscal year, Canal Zone spending in the republic amounted to $75 million. Expanded emphasis was given to on-the-job and apprenticeship training for Panamanians employed in the Canal Zone.

In June, President Chiari of Panama met with President Kennedy to discuss Panama-Canal Zone relations. As a result of the talk, the Panamanian flag was flown side by side with the United States flag in all civilian areas, and a number of other concessions requested by Panama were granted.

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PAPER INDUSTRY

New highs in production, consumption, and dollar sales of paper and allied products were established in the United States in 1962. Consumption of paper and paperboard totaled about 42 million tons—an average of 450 pounds per person. Exports amounted to 1.2 million tons; imports totaled 5.8 million tons, of which 5.2 million tons represented newsprint from Canada.

Wood pulp production in 1962 totaled 28 million tons, which required 44 million cords of pulpwood. About 1.2 million tons of wood pulp were exported, and another million tons or so used for acetate, rayon, cellophane, and other nonpaper products. The domestic paper industry used 28 million tons of wood pulp, of which 2.8 million tons were imported. It used 9 million tons of waste paper and 900,000 tons of rags, straw, and other fibrous materials. It employed 600,000 persons, who were paid $3.9 billion. Corporate sales totaled a record $13.5 billion, on which earnings (after taxes) amounted to about 4.6%.

U.S. PAPER AND PAPERBOARD PRODUCTION
(In thousands of tons of 2,000 pounds)

Category	1959	1960	1961	1962[1]
Newsprint	1,924	2,004	2,054	2,100
Groundwood, uncoated	908	938	917	900
Machine coated, printing and converting	1,706	1,875	1,859	2,010
Book, uncoated	1,894	1,887	1,892	2,050
Fine	1,759	1,776	1,919	1,970
Coarse	3,999	3,957	3,977	4,060
Special industrial and absorbent	752	760	810	900
Sanitary tissue	1,882	1,964	2,079	2,160
Tissue, other	246	237	234	250
Total paper[2]	15,071	15,399	15,742	16,400
Container board	8,441	8,637	9,231	10,150
Folding boxboard	2,904	2,940	2,996	2,900
Special food board	1,447	1,466	1,523	1,660
Set-up boxboard	805	767	750	640
Cardboard	106	121	137	150
Other paperboard	1,776	1,746	1,807	2,200
Total paperboard[2]	15,480	15,676	16,443	17,700
Wet machine board	145	175	156	130
Construction paper	1,454	1,410	1,402	1,420
Construction board	1,905	1,784	1,842	1,840
Grand total[2]	34,054	34,444	35,585	37,490

[1] Estimates [2] Columns do not always add to totals shown because of rounding.

As of the end of 1962 the United States paper industry's investment in foreign enterprises was valued at about $940 million, of which $785 million were in Canada, $57 million in Latin America, and $73 million in Europe. The paper industry has demonstrated its ability to compete in foreign markets—particularly in Europe—provided no discriminatory tariff barriers are erected, and industry representatives so testified at various congressional hearings on the 1962 trade expansion bill.

The industry took a long step into the electronic age in 1962. Now in operation is at least one papermaking machine monitored by an electronic computer. This computer measures several variables of the paper-making process and types out readings on a remote reading board at regular and frequent intervals. One major computer manufacturer has in operation an 8-inch wide experimental papermaking machine fully controlled by a computer.

The year also saw the introduction into the United States of the Inverform, a machine which enables wood pulp fibers to be introduced at several places along the paper-forming wire screen, permitting better sheet formation and higher speeds.

(See also AGRICULTURAL RESEARCH SERVICE.)

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PAPUA AND NEW GUINEA

Comprising the eastern half of the island of New Guinea, the Territory of Papua and New Guinea consists of two distinct territories joined in an administrative union with a total area of 183,540 square miles and a population (1961 est.) of 1,972,361, of whom 25,330 are nonindigenous. The indigenous population comprises Papuans and Melanesians of many cultural and linguistic groups. There is also a small proportion of Negrito people. More than 700 distinct languages are spoken by the indigenous population; English is the official language. Administrative headquarters is at Port Moresby (1961 est., 28,000), Papua's chief port.

Papua, Territory of.—Papua (area, about 90,600 square miles; pop. est., 523,442) is an external territory of Australia. It comprises the southeastern portion of the mainland of the island of New Guinea (area, 87,806 square miles), and the offshore Trobiand Islands, Woodlark Island, D'Entrecasteaux Islands, and the Louisiade Archipelago (aggregate area, 2,794 square miles).

New Guinea, Territory of.—This trust territory of the United Nations (area, 93,000 square miles; pop. est., 1,448,919) comprises the northeastern portion of the island of New Guinea (area, 70,200 square miles), the Bismark Archipelago (New Britain, 14,100 square miles; New Ireland, 3,340 square miles; Lavongai, 460 square miles; and the Admiralty Islands, 800 square miles), and the northernmost Solomon Islands (Bougainville, 3,880 square miles; and Buka, 220 square miles), the rest of the Solomons constituting the Solomon Island Protectorate (see WESTERN PACIFIC ISLANDS, BRITISH).

The two territories are administered as a unit by Australia, acting through an administrator (Sir Donald M. Cleland, who took office in 1953). He is assisted by an Administrator's Council (which includes one indigenous and one nonindigenous elected member), and a 37-member Legislative Council (which includes 6 elected and 6 appointed indigenous members). The government budget for 1962 was estimated at £A28,680,000 (the Australian pound equals U.S.$2.24). In 1962 there were 3,348 schools, with 200,095 pupils. There are 6,686 miles of roads and 253 airfields and airstrips in the two territories.

Most of the population is engaged in primitive subsistence agriculture (sweet potatoes, taro, sugarcane, sago palm, cassava, and bananas). Of the major export crops, the indigenous population produces about 25% of the copra and cocoa, 33% of the coffee, and 15% of the peanut crop. Total exports in 1960–61 were valued at £A16,606,000; imports, £A26,738,423. Chief exports: copra and coconut products, £A7,770,000; cocoa beans, £A1,666,000; rubber, £A1,292,151; plywood and other timber, £A1,173,561; coffee, £A1,105,960; and gold, £A681,395.

In February 1962, disturbances over the refusal of natives to pay taxes broke out on Buka Island in the northern Solomons. More than 50 persons were injured and over 200 persons were arrested before the disturbances ended. The tax revolt was reportedly sparked by a bearded cult whose members have reverted to the ways of the islanders before the arrival of the Europeans a century ago.

PARAGUAY

Situated mainly in the temperate zone of South America and bounded by Argentina, Brazil, and Bolivia, the landlocked Republic of Paraguay occupies an area of 157,047 square miles. Its principal access to the Atlantic Ocean is the Paraguay River, which divides the country into two distinct regions: the almost uninhabited Chaco grassland of western Paraguay (95,338 square miles) and the fertile, well-watered sector of eastern Paraguay, where 95% of the estimated mid-1962 population of 1,857,000 live. The bilingual (Spanish and Guaraní) population is largely mestizo. The capital city of Asunción has an estimated metropolitan population of 300,000. Other leading cities are Encarnación (40,906), Coronel Oviedo (34,442), Concepción (32,556) and Villarica (27,795).

Government.—Paraguay is a unitary republic with a highly centralized presidential form of government. The 1940 constitution vests executive power in a president (Gen. Alfredo Stroessner, reelected to his third 5-year term on Feb. 10, 1963) and in a 10-member cabinet appointed by him. An appointed Council of State acts as an advisory body to the executive. The 60-member Chamber of Representatives is chosen by proportional representation (all 60 in 1962 were members of the president's Colorado Party).

Education and Religion.—School enrollment, 1961: 327,204 (about 50% of the school-age population). Number of schools (with enrollments), 1961: 2,040 primary (294,000); 97 secondary and technical (23,122); 34 teacher-training (7,100); the National University in Asunción (2,982). Principal religions: Roman Catholicism (89% of the population); Protestants, 25,000.

Finance.—Government revenue, 1961 est.: 2,654 million guaraníes (2,741 million in 1960); expenditure, 2,719 million guaraníes (2,741 million in 1960). (126 Gs. equal U.S.$1.) Estimated 1962 expenditure: 3,064 million Gs. Foreign exchange reserves on June 30, 1962: $3.5 million.

Transportation and Communications.—Transport networks (miles, 1962): railways, 713; roads, 4,584, of which 200 are paved; navigable waterways: 1,865. National airline: Corporación Paraguaya de Transportes Aéros; the principal airport is at Asunción, served by 7 foreign airlines. Other communications data, 1959: passenger cars, 5,800; commercial vehicles, 2,500; telephones, 9,883 (1961); radio stations, 9; radio sets, 105,000. The small state-owned merchant fleet carries 6% of Paraguay's total river traffic, with Argentinian craft carrying the remainder.

Economy.—Gross national product, 1960: 25,035 million guaraníes (23,284 million Gs. in 1959). Cost-of-living index (1953 = 100): 331 in June 1961. Unemployed and those with no job classification make up 16% of the total population.

Agriculture, animal husbandry, and forestry account for about 50% of the national income. About 2.5 million acres (1% of the arable land) are under cultivation; cattle grazing occupies 40 million acres, and forests cover 54 million acres. Chief crops (metric tons, 1961): manioc, 994,000 (978,000 in 1960); corn, 110,000 (143,000); sugarcane, 646,700 (609,000); peanuts, 9,000 (8,500); tobacco, 8,500 (9,500); cotton, 24,500 (14,000); rice, 16,000 (15,400). Chief industrial products (metric tons, 1960): meat (tinned), 15,800 (11,965 in 1959); quebracho extract, 30,100 (30,100); cotton textiles, 1,100 (2,700); and sugar, 30,000 in 1961.

Foreign Trade.—Total exports, 1961: $30.68 million; imports, $34.73 million. Principal exports in millions of U.S. dollars, 1961: lumber, 6.45 (5.03 in 1960); meat, 8.63 (7.14); cotton, 1.6 (0.3); quebracho, 2.65 (2.95); hides, 2.01 (2.2); oilseeds, 1.9 (1.54); tobacco, 1.53 (1.59). Principal imports: foodstuffs, vehicles, machinery, and petroleum products. Principal customers: Argentina, United States, and Great Britain. Principal suppliers: United States, West Germany, and Argentina.

Events, 1962.—The major barrier to President Alfredo Stroessner's bid for a third term was removed when his Colorado Party-controlled Congress, over the strenuous protest of opposition forces, interpreted the constitutional ban on more than two terms to mean two full terms. (He came to power in 1954 through a coup and filled the unexpired term of his predecessor.) The elections were scheduled to be held Feb. 10, 1963. Although the president declared that the elections would be completely free, the opposition parties announced they would not participate unless the government lifted its 8-year-old state of siege, thus restoring constitutional liberties, and proclaimed a general amnesty for all political exiles. President Stroessner refused the request, asserting that the parties had only themselves to blame since their papers were irresponsible and subversive, their leaders were linked to communism, and their members were participating in anti-government guerrilla activities. These charges were denied by opposition leaders. The principal opposition parties are the Liberal and the Febrerista, both of which have splinter groups. A Christian Democracy Movement composed of intellectuals, university personnel, and professionals was organized during the year.

About 1,000 Paraguayan exiles in Uruguay signed a Liberal Party petition asking the Organization of American States to convene in Paraguay its Committee on Human Rights to investigate the abuses of the Stroessner regime. An abortive military coup in May resulted in the arrest of several Liberal leaders. Further unrest flared in May when students were arrested for stoning the home of the president of the National University (who is also vice president of the Colorado Party) for being too pro-government. Students called a 24-hour strike in protest of the arrests. The disturbances gave the government an excuse for extending its state of siege for another 90 days.

The United States was criticized on several occasions during the year. Opposition elements

voiced resentment of United States financial and technical assistance to the regime as being contrary to the objectives of the Alliance for Progress, and they accused President Stroessner of taking credit for United States-financed roads and bridges in order to justify continued Colorado Party rule.

Labor received in 1962 a 15% increase in minimum wages, and mandatory contributions by labor and employers to social security were increased. The government established a Housing Institute to provide housing for low-income families. Highway construction was generally slowed down by dry weather, but work continued on the Trans-Chaco road (which will eventually link Asunción with La Paz, Bolivia) and on roads connecting Paraguay with Brazil. The Brazilian government resumed work on the International Bridge between Paraguay and Brazil after a year's delay. The Inter-American Development Bank extended a loan of $800,000 to assist in relocating 2,500 families on a 250,000-acre tract of land in Alto Paraná; West Germany granted a $3 million loan for the development of the export industry; and the United States and Paraguay agreed to spend $3 million each under the Alliance for Progress for the construction of schools. Paraguay received $16.3 million in Alliance funds from March 1961 to February 1962.

A new $8.5 million hotel was opened in Asunción on the occasion of the visit of Prince Philip of Great Britain in March.

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PARKS, National. See National Parks and Monuments.

PEACE CORPS

On March 1, 1961, President John F. Kennedy signed Executive Order 10924 creating the Peace Corps. On Sept. 21, 1961, Congress passed the Peace Corps Act (signed by the president on September 22), appropriating $30 million for the fiscal year 1962. The Peace Corps requested $63,750,000 for fiscal 1963.

By October 1962, there were 2,929 Peace Corps Volunteers serving 38 countries throughout Asia, Africa, and Latin America. Plans called for 5,000 volunteers to be in training or overseas in 42 countries by the end of 1962. Another 5,000 volunteers were scheduled to enter training and be sent overseas in 1963. There are no volunteers serving in any country which has not specifically requested their presence.

COUNTRIES SERVED BY THE PEACE CORPS
(As of October 1962)

Country	Volunteers	Project	Arrival Date
Afghanistan	9	multipurpose	Sept. 1962
Bolivia	36	health; sanitation	June 1962
Brazil	43	agriculture	March 1962
British Honduras	33	education	Aug. 1962
Cameroons	40	education	Sept. 1962
Ceylon	39	education	Sept. 1962
Chile	45	rural development	Oct. 1961
Colombia	100	rural development	Sept. 1961
Cyprus	22	rural development	Sept. 1962
Dominican Republic	21	rural development	June 1962
Ecuador	67	rural-urban development; education	Aug. 1962
El Salvador	24	agriculture	May 1962
Ethiopia	275	education	Sept. 1962
Ghana	119	education	Aug. 1961
Honduras	27	health; social work	Oct. 1962
India	76	agriculture; educ.	Dec. 1961
Ivory Coast	31	education	Sept. 1962
Iran	43	education	Sept. 1962
Jamaica	38	education	June 1962
Liberia	90	education	Aug. 1962
Malaya	115	multipurpose	Sept. 1962
Nepal	70	education; agriculture	Sept. 1962
Niger	7	education	Sept. 1962
Nigeria	189	education	Sept. 1961
N. Borneo, Sarawak	60	multipurpose	Aug. 1962
Pakistan	121	multipurpose	Nov. 1961
Peru	143	multipurpose	Sept. 1962
Philippines	537	education	Dec. 1961
St. Lucia	15	agriculture; health	Sept. 1961
Senegal	5	education	Sept. 1962
Sierra Leone	93	education	Jan. 1962
Somalia	45	education	July 1962
Tanganyika	62	public works; health	Sept. 1961
Thailand	99	education; health	Jan. 1962
Togo	18	education	Sept. 1962
Tunisia	66	public works; education	Aug. 1962
Turkey	32	education	Sept. 1962
Venezuela	68	multipurpose	June 1962

A Peace Corps volunteer instructs a citizen of Tanganyika in the use of surveying instruments at Dar-es-Salaam.

JOHN MOSS FROM BLACK STAR

The cost per volunteer per year is $9,000. The minimum age limit is 18, and there is no maximum. Length of service is two years. Married couples are eligible if both qualify and they have no dependents under 18. Volunteers receive a terminal allowance of $75 for each month of satisfactory service. An average of 12 weeks is spent in training for assignments. Two camps have been set up in Puerto Rico to introduce volunteers to community development activities and to improve their physical status.

Sargent Shriver,
Director of the Peace Corps.

PEACHES. See Fruits.
PEANUTS. See Nuts.
PEARS. See Fruits.
PEAS. See Vegetables.
PECANS. See Nuts.

PEDIATRICS

The special nature of the developing embryo and young infant has been emphasized during 1962 by instances of their great susceptibility to such drugs as thalidomide and such agents as quantities of salt. The study of the normal physiology of infants during this period and their peculiar susceptibilities has given rise to a new category of research workers particularly concerned with this period of life.

Thalidomide.—The tragedy in which thousands of babies were deformed by the drug thalidomide has focused attention on the problem of special drug effects on developing and newborn babies. Thalidomide is a sedative drug, the safety of which had been demonstrated in adults. Several months after its release for general use, it became apparent that some mothers using the drug in the seventh to eighth week of pregnancy later gave birth to infants with severe limb deformities. The drug resulted in the birth of an estimated 7,000–14,000 deformed children, mostly in Germany and England. This experience resulted in immediate tightening of legislation in the United States to remove potentially harmful drugs from the market, and it pointed to the need for testing drugs for toxic effects in pregnant and in newborn animals before the drugs are released for general use.

Thalidomide's effect classified it as a teratogen, a substance which can alter a developing embryo and lead to malformations. This drug has unique specificity in its effect on the limbs; effects on other organs have not been noted. It has been difficult to produce experimentally any effects on laboratory progeny when the drug is given to pregnant females.

Newborn Susceptibility.—Pediatricians have learned, particularly in the last decade, of many compounds that are safe in adults and older children but are harmful to newborn infants. Among these are such seemingly harmless agents as oxygen, which can cause blindness (retrolental fibroplasia) when given in excessive amounts to premature infants in incubators; vitamin K, which increases the hazard of kernicterus (a form of brain damage) in newborn babies prone to jaundice from blood incompatibility; and chloramphenicol, which can cause a shocklike state known as the gray syndrome in some babies in the first week of life. These and other agents may be required by newborn infants, but they must be given with caution because the newborn infant is susceptible to harm where older children and adults are not.

Another example of this peculiar susceptibility received national recognition in March 1962 when infants in the Binghamton (N.Y.) General Hospital were mistakenly given salt instead of sugar in their formulas. The salt, instead of inducing vomiting or rejection as it would in an older infant, was retained and led to death in the newborn infants. Because of the tolerance of their stomachs and the immaturity of their brains and kidneys in coping with the effects of the extra salt, six babies died.

Lung Surfactant.—Recent reports of research on the newborn have been concerned with the finding of special cells in the lung which secrete a substance that is essential to the normal expansion of the lung. This substance, called a surfactant, or surface-active agent, assures the lungs an even expansion with inhalation. A relationship between the production or failure in production of this compound and respiratory distress in the newborn[1] is not known but investigation is in progress. (See also Respiratory Diseases.)

Pediatric Trends.—The changing nature of medicine as it applies to children was evident in the symposia scheduled for the annual meeting of the American Academy of Pediatrics. The four principal symposia were concerned with the molecular physiology of the placenta through which the infant is nourished in the uterus; the impact of radiation and radioisotopes on children and research related to children; the physiology and sociology of obesity; and the yet unconquered pest of man, the common respiratory infection. Three of these problems concern the chemistry of living and emphasize the ever-increasing interest of medicine in basic chemistry and physics. One of these, the social implication of obesity, emphasizes the recognition of the role that sociological environment plays in determining the health and welfare of growing children.

Malcolm A. Holliday,
Associate Professor of Pediatrics,
University of Pittsburgh School of Medicine.

[1] See The Americana Annual, 1962, p. 586.

PENGHU (PESCADORES) ISLANDS. See Taiwan.

PENNSYLVANIA

A Middle Atlantic state of the United States, Pennsylvania ranks 33d among the states in area (land, 45,007 square miles; inland water, 326) and third in population (11,376,000 on July 1, 1962, an 0.5% increase from the 1960 census figure of 11,319,366). Urban townships (UT) and other urban places with populations above 25,000 in 1960:

Abington (UT)	55,831	Millcreek (UT)	28,441
Aliquippa	26,369	Mount Lebanon (UT)	35,361
Allentown	108,347	New Castle	44,790
Altoona	69,407	Norristown	38,925
Bethlehem	75,408	Penn Hills (UT)	51,512
Bristol (UT)	59,298	Philadelphia	2,002,512
Cheltenham (UT)	35,990	Pittsburgh	604,332
Chester	63,658	Pottstown	26,144
Easton	31,955	Reading	98,177
Erie	138,440	Ridley (UT)	35,738
Falls (UT)	29,082	Ross (UT)	25,952
Harrisburg (*capital*)	79,697	Scranton	111,443
Haverford (UT)	54,019	Sharon	25,267
Hazleton	32,056	Springfield[2] (UT)	26,733
Hempfield (UT)	29,704	Upper Darby (UT)	93,158
Johnstown	53,949	West Mifflin	27,289
Lancaster	61,055	Wilkes-Barre	63,551
Lebanon	30,045	Wilkinsburg	30,066
Lower Merion (UT)	59,420	Williamsport	41,967
McKeesport	45,489	York	54,504
Middletown[1] (UT)	26,894		

[1] Bucks County. [2] Delaware County.

Government.—Chief executive and judicial officers in 1962 were David L. Lawrence (Democrat), governor, serving a four-year term; John M. Davis, lieutenant governor; E. James Trimarchi, Jr., secretary of state; Grace M. Sloan, treasurer; Thomas A. Minehart, auditor; David Stahl, attorney general; Charles H. Boehm, superintendent of public instruction; and John C. Bell, chief justice of the 7-member Supreme Court.

The Pennsylvania General Assembly, which convenes annually, comprised 25 Democrats and 25 Republicans in the Senate in 1962 and 109 Democrats and 101 Republicans in the House of Representatives.

Legislation, 1962.—The second even-year session of the Pennsylvania General Assembly convened on January 2. (All regular sessions in even years are limited to consideration of revenue and appropriation measures.) Governor Lawrence submitted a budget calling for general fund and highway expenditures for the fiscal year ending May 31, 1963, of $1,497,939,941, of which approximately one third was for public education and one fifth for public welfare. The governor reported that the end of the fiscal year 1961–62 was expected to show a surplus of $8.9 million, and that no new taxes for fiscal 1962–63 would be necessary.

Owing to pressures for congressional reapportionment and redistricting, and for proposed amendments to the Pennsylvania constitution, Governor Lawrence issued an unusual call for a special session of the General Assembly for the week of January 22, to run concurrently with the regular session. During the special session the General Assembly redistricted the state for the 1962 election, reducing the number of congressional districts from 30 to 27 in accord with the reapportionment of House membership following the 1960 census.

The General Assembly also approved three resolutions to amend the state constitution. If approved by the next legislature and a statewide referendum, the first proposal would authorize a $70 million bond issue for state parks, reservoirs, and other public uses; the second proposal would change the time for the beginning of the terms of the state treasurer and the auditor general and permit them to hold office for two successive terms; and the third would reduce the residence requirement for voting from one year to 90 days.

Finance.—In the fiscal period June 1, 1961, to June 30, 1962, revenue of $2,549,245,625 included $1,650,518,256 from state taxes and $280,878,990 in federal

funds. Chief tax yields were the 4% general sales tax ($422,474,428) and taxes on corporate incomes ($284,192,004) and motor fuels ($239,450,167). Spending of $2,542,369,441 included $472,963,204 for education, $407,510,396 for health, welfare, and safety, and $427,293,566 for highways.

Education.—In the fall of 1962, public elementary schools staffed by 40,413 teachers enrolled 1,163,749 pupils; secondary schools with 37,422 teachers enrolled 895,662; and (fall 1961) private and parochial schools with 17,450 teachers enrolled 614,023. College enrollment (fall 1961) totaled 204,401 in 130 institutions, including 14 junior colleges and 116 senior colleges and universities.

Estimated public school spending in the 1961–62 school year totaled $886.4 million, including current expenditures of $815.4 million ($436.67 per pupil) and capital outlays of $22 million (an additional $130 million was derived from other sources). Revenue of $998 million was drawn chiefly from state funds ($423,712,000) and local districts ($496,788,000). Teachers' salaries averaged $5,470 (high school, $5,545; elementary, $5,433). Actual operating expenditures for higher education (1961 fiscal year) totaled $43,157,064.

Public Assistance.—In the fiscal period June 1, 1961, to June 30, 1962, public assistance payments to a monthly average of 429,274 persons totaled $206,939,098. This amount included $109,625,451 for dependent children and $40,583,199 for the aged.

Transportation and Communications.—With 437 miles of highway construction and reconstruction completed in the 1962 fiscal year, *highways and roads* on July 1, 1962, totaled 109,523 miles. These served 3,785,771 *motor vehicles* (as registered in July 1962), including 3,283,962 automobiles. Operating in the state in 1962 were 56 *railroads* (using, in 1961, 9,126 line miles of track); 16 regularly scheduled *airlines;* and 161 commercial and municipal *airports,* 16 heliports, 7 seaplane bases, and 1 helio-courier airport.

UPI

William Scranton, governor-elect of Pennsylvania, and his wife, Mary, appear at a victory celebration on the day after the November 6 election.

Communications media included (1961) 153 AM and 64 FM *radio stations;* 10 VHF and 11 UHF *television stations;* 120 *newspapers* (circulation, 4,200,802); and (Jan. 1, 1962) 1,285,500 business and 3,970,700 residential *telephones.*

Labor Force.—The state's labor force on June 15, 1962, included 143,500 agricultural workers. Nonagricultural employment stood at 4,205,200, compared with 4,151,600 for the previous June 15, and an average of 4,161,500 for the 12 intervening months. Of nonfarm employees, 33.5% were in manufacturing, 16.4% in trade, and 12.5% in service industries. Unemployment in mid-December 1962 totaled 383,000, an increase of 9,000 from the previous month, compared with 471,000 for mid-December 1961.

Manufacturing.—Manufacturing engaged an average of 1,369,508 persons in 1961 and provided a payroll of $6,926,969,600. Value added by manufacture amounted to $12,507,579,500.

Mining.—In 1961, Pennsylvania ranked fourth among the states in the value of its mineral output, with 4.37% of the national total. The value decreased 3% because of declines in the output of fuels and some major nonmetallic industries. The state was first in the production of cobalt and stone; second in cement, coal, and graphite; third in tripoli; and fourth in lime. Anthracite, bituminous coal, clay, sand and gravel, and stone declined drastically. Iron ore, portland cement, and lime were the only major industries to increase.

Agriculture.—Cash farm income for the first nine months of 1962 (excluding government payments) totaled $592,722,000, compared with $594,678,000 for the corresponding period of 1961. For the full year 1961, income comprised $582,600,000 from livestock, $210,747,000 from crops, and $18,798,000 in government payments. Principal income sources in 1961 were wholesale milk, $303,968,000; eggs, $107,697,000; cattle, $89,171,000; and greenhouse and nursery products, $66,894,000.

The state's 100,000 farms in 1959 had an acreage of 11,862,000 (4,854,000 in harvested cropland). Livestock on farms on Jan. 1, 1962, included 1,971,000 cattle, 483,000 hogs, and 19,133,000 chickens, and (1961) 38,849,000 commercial broilers. An average of 152,000 family and 33,000 hired workers engaged in farming in 1961.

LEADING PENNSYLVANIA MANUFACTURES, 1961

Industry group	Average no. of employees	Salaries and wages (in thousands)	Value added by mfr.[1] (in thousands)
Primary metals	208,214	$1,367,194	$2,277,122
Electrical machinery	129,718	752,042	1,291,026
Food and kindred products	119,921	542,357	1,281,740
Nonelectrical machinery	110,274	649,510	1,061,657
Fabricated metals	108,581	585,721	942,007
Chemicals and products	50,187	298,305	846,984
Apparel and related products	169,634	468,001	727,467
Transportation equipment	60,995	383,052	587,439
Printing and publishing	65,691	342,716	575,542
Stone, clay, glass products	60,406	306,202	569,197
Textile mill products	75,032	262,810	451,573

[1] Value of product less cost of materials, supplies, fuel, electrical energy, and contract work. (Source: Bureau of Statistics, Pennsylvania Department of Internal Affairs.)

PENNSYLVANIA MINERAL PRODUCTION, 1961

(In short tons, except as noted)

Mineral	Quantity	Value
Cement:		
Portland (376 lb. bbl.)	36,635,000	$124,506,000
Masonry (280 lb. bbl.)	2,678,000	7,232,000
Clays[1]	2,999,000	14,402,000
Coal, anthracite	17,446,000	140,338,000
Coal, bituminous	62,652,000	323,758,000
Cobalt (pounds)	...[2]	...[2]
Coke	13,774,855	221,254,000[3]
Ferroalloys	439,360	100,344,000[3]
Iron, pig	15,272,274	908,363,000[3]
Lime	1,124,000	16,896,000
Natural gas (1,000 cu. ft.)	100,427,000	29,526,000
Petroleum (bbl.)	5,622,000[4]	26,480,000[4]
Sand and gravel	12,594,000	19,766,000
Stone	41,834,000	71,344,000
Zinc (recoverable content of ores)	23,428	5,408,000
Other minerals	...	25,840,000
Total	...	$791,648,000[3,5]

[1] Figure excludes certain clays, value for which is included in "Other minerals." [2] Figure withheld to protect individual company's confidential data. [3] Values for processed materials are not included in the total. [4] Preliminary. [5] Total adjusted to eliminate duplication in the value of clays and stone. (Source: U.S. Bureau of Mines.)

PENNSYLVANIA CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Apples (1,000 bu.)	7,028	9,800	8,700
Beans, snap (1,000 cwt.)	101	90	95
Cabbage (1,000 cwt.)	993	893	919
Corn, sweet (1,000 cwt.)	868	850	900
Corn for grain (1,000 bu.)	51,537	59,965	44,128
Grapes (tons)	24,400	40,000	31,000
Hay (1,000 tons)	3,549	4,123	2,518
Maple sirup (1,000 gal.)	96	90	94
Oats (1,000 bu.)	28,926	29,140	25,542
Peaches (1,000 bu.)	2,666	2,400	2,700
Potatoes (1,000 cwt.)	8,133	8,241	7,148
Tobacco (1,000 lb.)	47,357	53,475	52,700
Tomatoes (1,000 cwt.)	328	396	408
Wheat (1,000 bu.)	17,184	15,720	12,628

(Source: U.S. Department of Agriculture.)

Events, 1962.—Of most interest in Pennsylvania in 1962 was the election of U.S. Rep. William W. Scranton as the first Republican governor of the state in eight years. Representative Scranton defeated the Democratic candidate for governor, former Mayor Richardson Dilworth of Philadelphia, by a margin of 486,291 votes. Democratic Sen. Joseph S. Clark, however, was reelected over his Republican opponent, U.S. Rep. James E. Van Zandt, by 103,734 votes. The only other Democrat to win a statewide contest was incumbent Secretary of Internal Affairs Genevieve Blatt, who defeated her Republican opponent, Audrey R. Kelly, by the paper-thin margin of 1,200 votes. The newly elected governor appointed his campaign manager, Walter E. Alessandroni, as attorney general.

After years of controversy and conflict over the use of the waters and resources of the Delaware River Basin, an interstate compact was consummated by Pennsylvania, New York, New Jersey, and Delaware, and was put into effect in 1962 after approval by Congress and the president. Governor Lawrence was chosen as the first chairman of the Delaware River Basin Commission, the agency created to administer the compact. Other members of the commission are the governors of New York, New Jersey, and Delaware, and the United States secretary of the interior. James F. Wright, formerly chief deputy of the California Department of Water Resources, was named executive director of the Delaware River Basin Commission, as of April 16.

The Allegheny Reservoir (more commonly known as the Kinzua Dam), which will cover 21,175 acres, was under construction in Warren County. When completed, it will be the largest man-made body of water in the East. On September 15, embittered Iroquois Indians gathered along the Allegheny River to protest the project, which would take away the land forever pledged to them by the United States in the Treaty of 1794.

At Valley Forge, the General Electric Company completed a $32 million space technology center, one of the world's largest and best-equipped facilities for research and space programs. A new $13.5 million hospital for the mentally ill was dedicated by Governor Lawrence in Haverford Township, Delaware County, on September 12.

Nineteen persons were killed and 116 injured on July 28 in the derailment of a Pennsylvania Railroad excursion train near Harrisburg. Three of the cars plunged down an embankment into the Susquehanna River. An explosion December 6 at the U.S. Steel Corporation's Robena No. 3 mine, near Carmichaels, trapped and killed 37 men. As the state opened a public hearing into the disaster on Jan. 3, 1963, some 600 miners refused to work at Robena until the conclusion of the inquiry and the adoption of safety measures to prevent future accidents.

(See also PHILADELPHIA; PITTSBURGH.)

"Legislation" and "Events" by:
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PENOLOGY. See PRISONS.
PENSIONS. See Index entry.
PEPPER. See SPICES.
PEPPERS. See VEGETABLES.
PERIODICALS. See MAGAZINES.
PERSIA. See IRAN.
PERSIAN GULF STATES. See ARABIA.

PERU

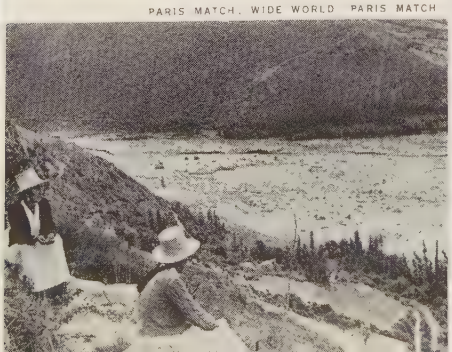
Exceeded in size in South America only by Brazil and Argentina, the Republic of Peru is bounded by Ecuador and Colombia on the north, by Brazil and Bolivia on the east, by Chile on the south, and by the Pacific Ocean on the west. It has an estimated area of 514,059 square miles and a population (1961 census) of 10,364,620. Lima, the capital, has a metropolitan population (1961 census) of 1,729,982. Other leading cities with populations (Dec. 31, 1958 est.) include Arequipa (121,896), Callao (129,365), Chiclayo (54,390), Cuzco (68,483), Huancayo (47,486), Iquitos (54,286), and Trujillo (60,427). Official estimates of ethnic distribution are: white and mestizo, 53%; Indian, 46%; and Asian (mainly Japanese) and Negro, 1%. Although the official language is Spanish, it is estimated that about 51% of the people speak the Indian languages, Quechua or Aymará.

Government.—Under the amended 1933 constitution, Peru is a unitary republic with a semiparliamentary system of government. The president (Manuel Prado y Ugarteche, elected June 17, 1956) is elected for a 6-year term and cannot be re-elected until the succeeding presidential period has passed. The cabinet (usually 12 members) is headed by a prime minister and is accountable to the Chamber of Deputies of 186 members and the Senate of 55 (all elected by direct suffrage for 6 years). There are two vice presidents elected by direct suffrage, and a judiciary headed by a Supreme Court of 16 members elected by the Congress. Voting is obligatory for all literate citizens between 21 and 60 years of age, and voluntary for all citizens over 60.

On July 18, 1962, the armed forces overthrew President Prado following the elections of June 10 (see below, *Events, 1962*). A military junta was formed with Maj. Gen.

An avalanche in the Peruvian Andes on January 10 destroyed several villages and killed about 3,500 persons. (*Left*) Refugees await transportation to aid stations in Lima. (*Center*) Survivors gaze at a sea of mud and rock covering a valley in which a village was buried. (*Right*) A mother and child are given food and shelter in the town of Hungay.

PARIS MATCH. WIDE WORLD PARIS MATCH



Ricardo Pérez Godoy at its head. In September, the junta decreed a new electoral law to govern the scheduled elections of June 9, 1963. Under the new statute, parties must present a petition signed by a minimum of 60,000 voters. Senators (47) will be elected by the departments and deputies (104) by electoral districts.

Education and Religion.—All recent governments have seen the need to improve and expand educational facilities. In 1962 public education was allocated 20% of the total budget. Although schooling is free and compulsory for children between the ages of 7 and 16, only 39% of the school-age population attends school. More than 50% of the population over the age of 10 is illiterate. In 1959 there were 14,102 primary schools, with 1,391,952 pupils; secondary schools in 1958 numbered 441 and enrolled 122,221 students. In addition to the University of San Marcos, which has an enrollment of over 11,000, there are small public universities in Arequipa, Cuzco, and Trujillo, and a Roman Catholic university at Lima.

The constitution declares that "the state protects the Apostolic Roman Catholic religion," but freedom of worship is legally guaranteed. The Catholic Church enjoys maximum influence in social, economic, and political affairs.

Finance.—The budget for 1962 was balanced at 11,291 million soles (26.81 soles equal U.S.$1), compared with 9,890 million soles in 1961. Since the end of World War II, Peru has experimented with various financial policies. An effort was made to achieve prosperity through price controls, government regulations and subsidies, deficit financing, and printing more paper money. The major consequences of these measures were inflation and a retardation of growth. The government reversed these policies in 1959 and endeavored to free the economy from governmental intervention and controls. In the first half of 1962, Peru's financial condition continued to be characterized by an overall balance in international accounts, steadiness in foreign exchange rates, a surplus in the government budget, and moderate credit and monetary expansion. From March 3, 1961, to July 1962, the United States authorized nearly $90 million in Alliance for Progress aid to Peru.

Transportation and Communications.—Inadequate transportation and communication facilities have impeded economic development in Peru. The railroad system (2,262 miles) is made up of a number of nonintegrated lines that provide service mainly between the coast and the population centers of the Sierra. Of some 18,600 miles of roads, only 11,700 are classified as improved, and only 1,700 miles are paved. In 1960 there were 79,800 passenger cars and 64,000 commercial vehicles.

The government owns a shipping line (Compañía Peruana de Vapores) which transports about 90% of the total cargo carried in Peruvian ships, and accounts for about 60% of the Peruvian merchant marine (136,000 gross registered tons in 1961). Expansion of the Callao port, which handles 75% of Peru's imports, was initiated on June 1, 1962, with the signature of a $4.2 million contract for the construction of ore- and petroleum-handling additions. The Lima-Callao International Airport is served by Aerolinas Peruanas and Compañía de Aviación Faucett, and by 12 foreign airlines.

About 75% of Peru's 108,657 telephones (1960) are located in Lima. The government operates the domestic telegraph system, which was slated for a $21 million expansion and reorganization program beginning in 1962. There are 40 radio broadcasting stations and some 820,000 radio receivers (1959), and 5 television stations and 75,000 television sets (1962).

Manufactures and Minerals.—About 17% of the labor force is engaged in industrial activities, which account for about 18% of the gross national product (an estimated $2.2 billion in 1962). Manufacturing industries are devoted principally to the production of consumer goods for domestic consumption—food, tobacco, rubber, leather, metals, paper, textiles, and chemicals. There are also shipbuilding and construction industries.

With the emphasis on private enterprise, industrial production increased 80% from 1950 to 1959. In 1960 and 1961, 740 new firms were established, with an investment of 834 million soles leading to the creation of 15,000 new jobs. A decree of May 2, 1962, authorized the expansion of the government-owned Santa Corporation steel plant at Chimbote from 60,000 metric tons annually to 350,000 tons of finished steel products, with an eventual increase to a 600,000-ton capacity. The project, costing an estimated $130.5 million, is to be carried out by a consortium of West German firms, with machinery and installations to be supplied by Germany, France, and Belgium.

In 1961, mining accounted for 15% of real national income. Between 1958 and 1961, mining revenue increased by 41.5%, due mainly to increased copper and iron production. Principal minerals (metric tons, 1961): petroleum, 2,592,000; copper ore, 196,800; iron ore, 5,376,000; lead, 76,080; zinc, 32,280.

Agriculture.—Peru's principal economic activities are agriculture and forestry, which employ about 62% of the population. Agriculture earned 23% of the national income in 1961. However, with only about 4.7 million acres under cultivation (out of about 27 million acres available), Peru must import foodstuffs each year. Cotton is the country's most important crop; estimated production in 1962 was 600,000 bales. Sugar production for 1962 was estimated to be 4–5% above the 1961 yield of 893,000 tons. Agricultural production for internal consumption includes wheat, corn, barley, and rice.

Favored by the Peru Current, the nation is rapidly developing its fisheries. Fishmeal production increased from 12,100 metric tons in 1953 to 520,000 metric tons in 1960, making Peru the world's primary fishmeal producer.

Foreign Trade.—Total exports, 1961: 13,248 million soles (11,725 million in 1960); imports, 12,550 million (10,168 million). Principal exports (in million soles, 1961): fishmeal, 1,329 (1,338 for all fish products in 1960); cotton, 2,140 (1,997); sugar, 1,721 (1,299); copper, 2,808 (2,580); iron ore, 909 (1960). Principal imports include machinery and vehicles, foodstuffs, tobacco, metals, chemicals, and textiles. The United States accounts for about 40% of Peru's total trade.

Events, 1962.—On January 10, the Andean village of Ranrahirca and surrounding communities near Mt. Huscarán were buried in an avalanche of ice, boulders, and mud, resulting in between 3,500 and 3,800 deaths.

Nearly 1.7 million voters out of the 2.2 million registered voted in the elections of June 10. The results for president were: Víctor Raúl Haya de la Torre of the American Popular Revolutionary Alliance (APRA), 557,524 (32.97% of the total vote); Fernando Belaunde Terry of the Popular Action Party, 543,322 (32.13%); and Manuel A. Odría of the Odría National Union, 481,039 (28.45%). Four other candidates participated in the election but received little support. The new Congress consisted of 114 APRA members, 78 representing the Popular Action Party, 42 from the Odría National Union, and 7 others.

As the constitution provides that a winning presidential candidate must obtain "not less than one third of the valid votes," and since no candidate received the required percentage, the newly elected Congress was entrusted with the task of selecting a president from among the three candidates with the largest number of votes. However, no single party held sufficient seats to elect a president.

Before the new Congress could convene, the armed forces on July 18 deposed President Manuel Prado y Ugarteche and annulled the elections on the grounds of alleged electoral irregularities. The armed forces formed a junta of four officers, each of whom assumed in turn the title of president. On July 24, Maj. Gen. Ricardo Pérez Godoy assumed the traditional powers of the presidency "as the junta member who has been longest in military service."

The United States suspended diplomatic relations with Peru within hours of the coup d'état of July 18, and cut off all economic and military aid. However, as the junta governed without recourse to terror and promised democratic elections, the United States resumed diplomatic relations on August 17, and on October 12 resumed military aid. On Jan. 5, 1963, the junta proclaimed a nationwide state of siege to break up what it called a revolutionary plot planned in Moscow and Havana.

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PERUTZ, Max Ferdinand. See NOBEL PRIZES.
PESCADORES (PENGHU) ISLANDS. See TAIWAN.

PETROLEUM

The petroleum industry appeared to be passing through a transitional period in 1962, although it was still suffering from the effects of an excess of supply over demand. World proved reserves increased. Production expanded at a higher rate, and the search for oil spread to new areas. The continued emphasis on operating efficiency was re-

flected in an overall improvement in the financial outlook despite generally depressed prices.

Production.—World production of crude petroleum rose from an average of 22,556,300 barrels daily in 1961 to 24,298,000 barrels daily in 1962, or 7.7%. In the Eastern Hemisphere output increased by 1,149,500 barrels daily, as compared with 592,200 barrels in the Western Hemisphere. The output of Algeria, in what was formerly the French Saharan departments, increased by 29.9%,

WORLD CRUDE OIL PRODUCTION
(Thousands of barrels daily)

	1959[1]	1960[1]	1961[2]	1962[2]
North America:				
Canada	506.2	517.9	604.0	677.7
Mexico	264.1	270.6	292.6	335.0
United States	7,053.7	7,035.3	7,182.9	7,331.0
Total	7,824.0	7,823.8	8,079.5	8,343.7
outh America and West Indies:				
Argentina	122.5	175.5	232.9	265.0
Bolivia	8.7	9.8	8.2	8.1
Brazil	64.6	80.9	95.4	91.7
Chile	17.6	19.8	25.4	31.5
Colombia	146.8	152.4	144.9	136.0
Cuba	0.6	0.3	0.2	0.6
Ecuador	7.6	7.5	8.0	8.0
Peru	48.6	52.6	53.1	61.0
Trinidad and Tobago	112.1	115.7	124.8	132.0
Venezuela	2,771.1	2,846.2	2,920.0	3,207.0
Total	3,300.2	3,460.7	3,612.9	3,940.9
Total, Western Hemisphere	11,124.2	11,284.5	11,692.4	12,284.6
Europe (excluding USSR and satellites):				
Austria	46.4	46.1	44.5	45.5
France	32.0	39.0	42.7	47.9
Germany, West	101.3	109.8	123.2	132.6
Italy	31.6	37.2	36.8	35.4
Netherlands	33.9	36.6	39.1	41.1
United Kingdom	1.7	1.8	2.2	2.2
Yugoslavia	11.5	18.2	26.0	29.4
Total	258.4	288.7	314.5	334.1
USSR and satellites:				
Albania	9.6	11.1	11.4	11.4
Bulgaria	4.9	5.0	4.0	4.2
Czechoslovakia	2.7	2.6	2.7	2.7
Germany, East	0.1	0.1	0.1	0.1
Hungary	19.5	20.0	29.3	24.5
Poland	3.6	3.7	4.0	4.0
Rumania	233.6	234.0	237.7	231.0
USSR	2,577.9	2,900.0	3,304.5	3,645.0
Total	2,851.9	3,196.8[3]	3,745.2[3]	3,922.9
Africa:				
Algeria[4]	28.0	184.7	337.3	438.0
Angola	1.0	1.3	2.1	3.5
Gabon	14.5	16.4	16.9	16.2
Libya	...	...	18.2	234.0
Morocco	2.0	1.9	1.6	2.2
Nigeria	11.1	17.9	46.0	67.9
Total	56.6	222.2	422.1	761.8
Middle East:				
Abu Dhabi, Trucial Oman	...	...	...	29.7
Bahrain	45.1	45.1	45.1	45.1
Iran	944.7	1,054.0	1,182.6	1,312.5
Iraq	852.6	966.8	1,001.3	1,020.0
Israel	2.5	2.5	2.7	2.7
Kuwait	1,383.2	1,623.7	1,644.5	1,850.0
Neutral Zone	116.3	136.1	176.5	235.0
Qatar	168.3	172.4	176.4	186.5
Saudi Arabia	1,095.4	1,247.1	1,392.5	1,514.7
Turkey	7.4	7.2	8.4	11.3
United Arab Republic	58.4	65.5	71.3	77.8
Total	4,673.9	5,320.4	5,701.3	6,285.3
Far East and Oceania:				
Brunei and Sarawak	109.8	92.9	83.7	85.0
Burma	10.9	11.1	11.5	11.5
Communist China	40.5	103.5	123.4	115.0
India	9.3	9.2	9.2	13.0
Indonesia	380.9	418.0	429.7	460.0
Japan	7.8	10.0	12.6	14.9
New Guinea	4.5	4.1	3.0	1.9
Pakistan	6.4	7.2	7.7	8.0
Total	570.1	656.0	680.8	709.3
Total, Eastern Hemisphere	8,410.9	9,684.1	10,863.9	12,013.4
World total	19,535.1	20,968.6	22,556.3	24,298.0

[1] Final. [2] Preliminary. [3] Because of the use of several sources for data on the USSR and its satellites, the figures given for the individual countries for 1960 and 1961 do not add up to the totals for the group. [4] Formerly listed as Saharan departments. (Sources: U.S. Bureau of Mines and *World Petroleum*.)

to 438,000 barrels daily. Two new pipelines, completed in 1961 and 1962, carried crude oil from recently discovered fields in Libya to tanker terminals on the Mediterranean Sea, and the country's production averaged about 234,000 barrels daily.

In the Middle East production rose by an average of 584,000 barrels daily. Of this increase, 35.2% came from Kuwait, 22.2% from Iran, and 20.9% from Saudi Arabia. The first shipments were made from a new offshore oilfield at Abu Dhabi in Trucial Oman. Of the Communist countries, only the USSR raised crude production materially, by an average of 340,500 barrels daily, or 10.3%. It remained the world's second largest producing nation, supplying 3,645,000 barrels daily, or 15% of the 1962 total.

In the Western Hemisphere, Canadian production continued to increase in 1962, rising by 12.2%, to 677,700 barrels daily. The output of the United States showed about the same rate of growth as in 1961, or 2.1%, reaching an average of 7,331,000 barrels daily. A presidential proclamation of November 30 tightened restrictions on oil imports east of the Rocky Mountains. During the year, Argentina and Venezuela registered substantial gains of 13.8% and 9.8%, respectively, and renewed activity halted the decline of production in Colombia.

Although fewer rigs were operating throughout the world in 1962, exploration generally continued at a high level and extended into many new areas. Of especial interest was the first commercially significant discovery of oil in Australia, at Moonie, Queensland. The world's proved reserves of crude oil rose by 4.3%, or 11,440 million barrels, during 1961, to reach a level of about 277,120 million. The Middle East, particularly offshore discoveries in the Persian Gulf, accounted for most of the increase. In the United States a downward trend was reversed as crude reserves rose by 145.3 million barrels, to 31,758.5 million.

U.S. CRUDE OIL PRODUCTION BY STATES
(Thousands of barrels)

State	1960[1]	1961[1]	January–September 1962
Alabama	7,329	6,932	5,095
Alaska	559	6,327	7,586
Arkansas	30,117	29,249	20,684
California	305,352	300,062	221,184
Colorado	47,469	46,746	31,988
Florida	369	371	315
Illinois	77,341	79,387	57,859
Indiana	12,054	11,152	8,874
Kansas	113,453	112,241	83,627
Kentucky	21,147	18,643	13,367
Louisiana	400,832	424,962	354,530
Michigan	15,899	18,898	12,933
Mississippi	51,673	54,492	40,046
Montana	30,240	30,907	23,648
Nebraska	23,825	24,396	18,788
New Mexico	107,380	112,083	80,905
New York	1,813	1,715	1,354
North Dakota	21,992	23,568	18,529
Ohio	5,405	5,161	3,846
Oklahoma	192,913	191,834	148,754
Pennsylvania	6,009	5,622	3,964
Texas	927,479	938,017	703,682
Utah	37,594	33,118	22,532
West Virginia	2,300	2,703	2,583
Wyoming	133,910	142,589	108,729
Others[2]	479	583	359
Total, United States[3]	2,574,933	2,621,758	1,995,761

[1] Revised. [2] Arizona, Missouri, Nevada, South Dakota, Tennessee, Washington, and Virginia. [3] Includes some field condensate. (Source: U.S. Bureau of Mines.)

Consumption.—World demand for crude oil and for liquid hydrocarbons derived from natural gas increased by 6.3% in 1962, to about 24,463,000 barrels daily. Consumption in the Western Hemisphere rose by 4.4%, and in the Eastern Hemisphere by 9.5%. A general improvement in the

economy of North America helped to raise the rate of growth, particularly in the United States, where demand increased by about 4%, as compared with 1.4% in 1961. Canada's consumption showed a more modest gain of 3.1%, as compared with over 7% in the previous year.

The growth in the volume of demand in western Europe and the Far East continued strong in 1962, although rates of increase declined as a natural consequence of the attainment of larger bases. Japan remained the fastest-growing nation in oil consumption. By 1963 it will quite likely reach a daily consumption level of 1,000,000 barrels, becoming the fourth-ranking nation, after the United States, the USSR, and Great Britain.

Perhaps the most significant effect of consumption trends on the international movement of oil was the rapid rise of exports from North Africa, almost all of which were shipped to Europe. These exports increased to 435,000 barrels daily in 1961, or about 84% above the 1960 level. Exports from Soviet bloc nations rose by nearly 40%, to 615,000 barrels daily, about two thirds of which were shipped to western European nations. As a result, the Middle East's share of the European market dropped from 69% in 1960 to 64% in 1961. At the same time, the North African portion of this trade rose from 6% to 9.6%.

Transportation.—Although the tanker construction industry continued in a slump in 1962 because of the worldwide surplus of vessels, a number of supertankers of 100,000 tons or more were still being built, and others were planned. Meanwhile, pipelines were being constructed at a high rate, with almost $5 billion worth of new lines planned or being laid. The Eastern Hemisphere accounted for more than $3 billion of the total, major lines being scheduled for western Europe and the USSR.

A fundamental change was taking place in the transportation pattern in western Europe and in the location of manufacturing to serve interior markets. Formerly, refiners had found it more profitable to build their plants on the coast, receive crude oil by ship, and move products inland by rail, highway, and canal or river barge. Now, with four major crude oil lines originating at Mediterranean and North Sea ports, Europe soon was expected to have a crude pumping capacity of about 700,000 barrels daily. Most of these lines were to feed into the rich industrial centers of West Germany. In the USSR the principal pipeline was a 1,000-mile system designed to bring crude oil from the Urals to the eastern European countries of the Soviet bloc in 1963.

The biggest project in the Western Hemisphere, and one of the largest single pipeline projects ever undertaken, was the $350 million products system being constructed between Houston, Texas, and New York. Comprising a 1,600-mile main line and 1,000 miles of branches, it was scheduled for completion in 1963.

Refining.—World crude oil refining capacity increased by about 5%, to an average of almost 26 million barrels daily, during 1962. Growth in the Eastern Hemisphere, where capacity rose by 978,500 barrels daily, or 9.2%, continued to be much larger than that of the Western Hemisphere, in which capacity grew by 284,000 barrels, or 2%. By the end of the year there were 638 refineries in the free world.

Natural Gas.—As of the end of 1961 world reserves of natural gas were estimated at 721,450 billion cubic feet, of which the United States had 38%, the Middle East nearly 25%, the USSR 10.4%, and Africa 7.5%. The proximity of rich North African fields, especially those of Algeria, has resulted in a major project to move this gas, in liquefied form in tankers, to Great Britain. Within a few years, however, the huge gas deposits discovered in 1962 in the Netherlands might command a major share of the European market.

(See also ARABIA; CHEMISTRY; GAS; GEOGRAPHY AND EXPLORATION; MINING.)

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PHILADELPHIA

The nation's fourth largest city, with a population of 2,002,512 (1960 census), Philadelphia, Pa., is the central city of a rapidly growing eight-county metropolitan area of 3,549 square miles and a population in 1960 of 4,342,897.

Philadelphia completed its 10th year under home rule charter in January 1962. The charter provides for a modified "strong mayor" plan with a mayor and a City Council of 17 members, all elected for four-year terms. In accordance with the charter, the mayor appoints and may remove a managing director who assumes much of the day-to-day responsibility for administration through his (the managing director's) power to appoint, remove, and supervise the activities of the 10 most important "line" departments.

A record general fund budget of $259,104,000 was submitted to the City Council for 1963, but no new taxes were deemed necessary. The Philadelphia Board of Education also proposed a record budget of $118,770,307 for 1963 without recommending additional taxes. City public school enrollment as of Oct. 1, 1962, was 256,555.

Building permits issued in the first 10 months of 1962 totaled $152,207,393 (up 3% from the same period of 1961). Unemployment in the Philadelphia metropolitan area for the first half of 1962 was down 14.5% from the same period of 1961; bank debits were up 14.5%; department store sales were up 5%; and exports for the full year 1961 were up 25.5% over 1960. Total cargo shipped through the port in 1961: imports, 40,481,353 short tons; exports, 3,400,306 short tons.

In the November 1962 election, limited primarily to the choice of state officials and members of Congress, the voters of Philadelphia elected one Democratic councilman-at-large and one Democratic and one Republican district councilman—all three to fill vacancies. As of December 1962, the Democratic Party had 13 of the 17 members on the City Council, the Republicans had 3 members, and 1 seat was vacant.

Philadelphia lost one of its six congressional seats as a result of reapportionment and redistricting, and in the November election all five seats were retained by Democrats. All statewide Democratic candidates carried Philadelphia, but only Sen. Joseph S. Clark and Secretary of Internal Affairs Genevieve Blatt were successful in the state. Three loan proposals, covering a wide range of capital improvements in the city and totaling $37,480,000, were approved by both political parties prior to the election and were supported by overwhelming majorities of the voters.

One of the most important events of 1962 in Philadelphia was the resignation in February of Mayor Richardson Dilworth, who first won the Democratic nomination for governor in the spring primary but then lost the November election to his Republican opponent, Congressman William W. Scranton, by a majority of more than 470,000 votes. Mayor Dilworth was succeeded by Council President James H. J. Tate, also a Democrat, who is to serve as acting mayor until January 1964.

An event of historical importance to Philadelphia and the nation was the city's year-long celebration of the 175th anniversary of the birth of the United States Constitution. There were special festivities on July 4 and on Constitution Day, September 17, when rehabilitated Congress Hall was dedicated.

A badly needed new police administration building was completed in 1962 and made ready for occupancy on November 1. The new eight-

story Charles Patterson Van Pelt Library of the University of Pennsylvania, with a capacity of 1,500,000 volumes, was dedicated on October 22, and the $1,300,000 Annenberg Communications Center on the University of Pennsylvania campus was dedicated on November 8.

For the third time in the past nine years, the City of Philadelphia received the Grand Award of the National Fire Protection Association as "the Nation's leading city in the field of fire prevention, education, and promotion."

A disastrous fire—described as the worst in the city's history—swept through a section of North Philadelphia on Jan. 1, 1963, razing a nine-story warehouse, destroying about 40 homes, and disrupting commuter service on the Reading Company's main-line tracks. A 10-block neighborhood affected by the conflagration was declared a disaster area by the federal government.

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PHILANTHROPY

The most recent estimates for total private philanthropy in the United States are based mainly on federal tax returns for 1958. The value of gifts in that year has been estimated at between $8 and $10 billion. A projection of the rising trend in giving suggests that by 1962 contributions may have reached $10 to $12 billion.

About 80% of the 1958 amount came from living persons, 7% from charitable bequests, 6% from foundations, 5% from corporations, and 2% from the endowment earnings of educational, health, welfare, and religious organizations. If these latter organizations were required to pay rent on their libraries, laboratories, hospitals, churches, and other buildings made possible by earlier gifts, they probably would have to spend an additional $1 billion a year; so this unseen income is also an important part of present philanthropic support.

Since the summer of 1961, philanthropic foundations have been under the scrutiny of Congressman Wright Patman of Texas. He obtained information on the 1951–60 assets, income, and expenditures of 524 foundations, accounting for about nine tenths of all foundation assets in the United States. Detailed statistical tables were published in the July 23 and Aug. 20, 1962, issues of the *Congressional Record,* and more were expected.

In 1959, corporate contributions reported on tax returns exceeded by over $60 million the amount contributed in any year except 1953, when taxes on excess profits caused many companies to establish and endow foundations. The $482 million reported in the normal tax year of 1959 reflects the apparently continuing upward trend in corporate giving since the 1930's. Part of the rise is due to the increase in corporate income, from which gifts may be made and deducted up to 5% of net income for tax purposes. However, the percentage of income given has also risen. Tax deductibility explains part of this rise, because a corporation can give much more for the same net after-tax cost than it could in the 1930's when tax rates were much lower. However, even after allowing for the rise in corporate incomes and the rise in income tax rates, an increase in giving has been detected.

A 1961 study by the Boston Fund reported that the total endowment of 65 of the more highly endowed colleges and universities was $4.5 billion. The United States Office of Education has estimated that 1958 endowment earnings for all colleges and universities was about $182 million. By 1962 this figure had probably risen to close to $200 million.

Precise data on fields served by philanthropy in 1962 are not available. Rough estimates suggest that about 61 cents of the philanthropic dollar goes to religious organizations and church-supported private education, about 13 cents goes to higher education, about 22 cents to health and welfare not supported by religious organizations, and 4 cents to all other recipients, including cultural services, museums, libraries, and outright charity rackets. The year 1962 was notable for an intensification of interest in support of the arts by both government and private organizations. The Ford Foundation voted a substantial expansion in its arts program, and one of its acts was to award $6.1 million to nine regional nonprofit repertory theaters.

New estimates of the amount of giving to religious organizations have been made recently. For 1960 it has been estimated that religious organizations received about $5.4 billion in contributions: $3.6 billion to Protestant, $1.7 billion to Roman Catholic, $150 million to Jewish, and $50 million to other religious bodies. Of the total donated to Roman Catholic churches, about $700 million was applied to cover the operation of churches and about $1 billion to support their extensive primary and secondary school systems.

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PHILATELY

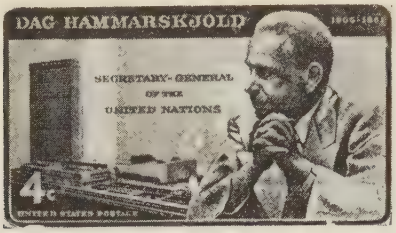
Manned conquest of space was a major theme of stamps issued in 1962, although issues commemorating the emergence of independent nations also attracted philatelic interest. An error of inversion on a United States stamp created a sensation when it was discovered and a great furor when Postmaster General J. Edward Day ordered 10 million of the errors printed to deflate their potentially high rarity value.

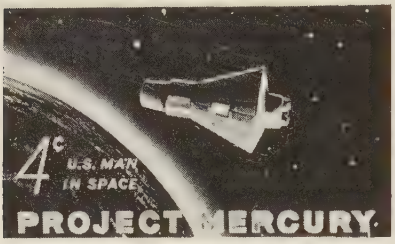
The error, consisting of the inversion of a yellow panel on the commemorative stamp released October 23 honoring the late UN Secretary General Dag Hammarskjöld, was found by several collectors, one complete pane of 50 being held by a New Jersey collector. His threatened court test of Mr. Day's authority to reprint the error was halted when postal officials authenticated his "discovery" pane. Court action delayed a Canal Zone decision to deliberately reprint a misprinted stamp, when a stamp supplier had found the bridge missing in a pane of 50 of the stamps issued for the opening on October 12 of the Thatcher Ferry Bridge spanning the Panama Canal.

Space Stamps.—The United States issued a stamp commemorating the feat on the very day, February 20, that Lt. Col. John H. Glenn, Jr., made three earth orbits in the *Friendship 7* capsule of the Project Mercury program. Within minutes after Glenn had been pulled safely aboard the destroyer *Noa* in the Atlantic, the stamp was on sale at more than 300 United States post offices. Some 300 million copies of this stamp were issued, as well as 3 million first-day covers canceled "Cape Canaveral, Fla.," the point from which the capsule had been launched.

On April 12, 1961, the Soviet Union had issued a stamp to mark the first manned orbital flight of Maj. Yuri Gagarin on that day. Soviet stamps also appeared on Aug. 15, 1962, the day of the successful landings of Maj. Andrian Nikolayev and Lt. Col. Pavel Popovich from their dual orbital flights.

The successful orbiting of the United States Telstar communication satellite on July 10 made possible television broadcasts between the United States and Europe, as well as transmission of news matter and photographs between the continents. France participated in the Telstar programs and was quick to issue stamps to signalize the event.





POST OFFICE DEPARTMENT; UPI

(Top) Misprints of the Dag Hammarskjöld commemorative stamp, in which one color plate was reversed, lost their value when the Post Office Department deliberately repeated the error and sold the misprints to the public. (Bottom) "Man in Space" stamp went on sale February 20, the day of John Glenn's flight.

Stamps of New States.—The states which became independent—not all of them new to philately—included the Republic of Rwanda and the Kingdom of Burundi, from the former United Nations trust territory of Ruanda-Urundi, administered by Belgium; and Jamaica, Cyprus, Algeria, Trinidad and Tobago, and Uganda. All issued stamps commemorating their new status.

U.S. Program.—Although congressional approval was not obtained to raise domestic postal rates in 1962, increases took place on Jan. 7, 1963—to 5 cents for surface mail and 8 cents for airmail. Values issued to accommodate to these new rates were a 5-cent blue stamp, carrying a reproduction of a 1785 bust of George Washington by the French sculptor, Jean Antoine Houdon, for first-class mail; an 8-cent red stamp for airmail; and a 4-cent postcard, 5-cent envelope, and 8-cent air-mail envelope.

The most unusual United States issue of 1962 was its first Christmas stamp, a regular 4-cent issue, with wreath, bow, and lighted candles in traditional red and green; the initial printing order of 500 million, the largest ever placed for a United States stamp, was increased to approximately 1 billion because of demand. Collectors also discovered a flaw in the printing—missing plate numbers, caused when the Bureau of Engraving and Printing had to use small sheets for printing the stamps, the original supply of larger sheets having been exhausted.

The 15-stamp commemorative program continued, all being of 4-cent denomination. They were as follows, with the place and date of first-day issue:

New Mexico Statehood, Santa Fe (January 6).
Arizona Statehood, Phoenix (February 14).
Project Mecury, at more than 300 cities (February 20).
Malaria Eradication, Washington, D.C. (March 30).
Battle of Shiloh, Civil War Centennial series, Pittsburg Landing, Tenn. (April 7).
Charles Evans Hughes, Washington, D.C. (April 11).
Seattle World's Fair, Seattle, Wash. (April 25).
Louisiana Statehood, New Orleans (April 30).
Homestead Act Centennial, Beatrice, Nebr. (May 20).
Girl Scouts of America, Burlington, Vt. (July 24).
Brien McMahon, Norwalk, Conn. (July 28).
Apprenticeship, Washington, D.C. (August 31).
Sam Rayburn, Bonham, Texas (September 16).
Dag Hammarskjöld, New York, N.Y. (October 23).
Higher Education, Washington, D.C. (November 14).
Winslow Homer's *Breezing Up*, Gloucester, Mass. (December 15).

DAVID LIDMAN,
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PHILIPPINES

The Republic of the Philippines, comprising about 7,100 islands and islets, lies north of Indonesia. It has a total area of 115,707 square miles. The largest islands are Luzon (40,420 square miles), Mindanao (36,537), Samar (5,050), Negros (4,905), Palawan (4,550), and Panay (4,446).

Population.—Total population: 27,455,799 (1960 census); 29,698,000 (mid-1962 est.). Most densely populated provinces (1960): Rizal (1,463,530), Cebu (1,340,439), Negros Occidental (1,332,017), Leyte (1,177,407), Cotabato (1,152,474), and Pangasinan (1,124,846). Principal cities (1960): Manila, the former capital (1,145,723); Quezon City, the new capital (397,374); Cebu City (259,194); Davao (231,833); Basilan City (156,046); and Iloilo (150,976).

Government.—The chief executive during 1962 was Diosdado P. Macapagal; the vice president and secretary of foreign affairs, Emmanuel Pelaez. The two men were elected on the Liberal Party ticket for 4-year terms on Nov. 14, 1961. There is a bicameral Congress, consisting of a Senate of 24 members elected at large for overlapping 6-year terms, and a 104-member House of Representatives chosen by congressional districts for 4-year terms.

Education and Religion.—Enrollment, 1960–61 school year: 5,239,604 (including 952,411 in private schools). The state-supported University of the Philippines had a 1961–62 enrollment of 35,334. English is the medium of instruction, but Tagalog, basis of the national language, is taught in all schools.

The constitution guarantees freedom of worship and permits religious instruction in the public schools. Religious affiliation (1948 census): Roman Catholic, 83%; Aglipayan (Philippine Independent Church), 8%; Muslim, 4%; Protestant, 2%; other, 3%.

Finance.—Government revenue (1961): 1,351 million pesos; expenditures, 1,184 million. National public debt: 1,579 million pesos in January 1961 (1,432 million, January 1960). Foreign exchange holdings of the Central Bank and commercial banks: $103.34 million at the end of 1961 ($192.06 million a year earlier).

Transportation and Communications.—Scheduled operations of Philippine railways in the first 11 months of 1961: 9,886,000 passengers and 1,046,000 tons of freight (Manila Railroad Company); 1,644,000 passengers and 190,000 tons of freight (Philippine Railway Company). Road mileage (June 30, 1960): 23,085 (national, 9,080; provincial, 12,011; city, 1,994). Philippine Air Lines scheduled operations (1961): 9,549,000 miles flown; 790,000 passengers carried; 26,546,000 pounds of freight.

Licensed radio stations (1960–61 fiscal year): 3,746; television stations, 4; registered motor vehicles, 173,399; periodical publications, 878 (combined circulation, 5,780,707). Telephones (1961): 113,440.

Economic Indicators.—Gross national product: 13,123 million pesos in 1961 (up 6.7% from 1960); national income, 11,518 million (up 6.8%). Index of industrial production (1958 = 100), 1961: metal mining, 114; manufacturing (excluding basic metal industry), 120. Cost-of-living index (1941 = 100) for low-income Manila families: 350.8 in 1961.

Manufactures and Minerals.—Value of manufactured products: 2,015 million pesos in 1961 (up 11% from 1960). Increases were registered by metal products and transport equipment, 52 million pesos; chemical products, 19 million; and petroleum and coal products, 50 million. Gross value of mineral production in 1961: 320.4 million pesos, including 423,000 fine ounces of gold, 1,170,000 metric tons of iron ore, 152,400 tons of coal, and 1,018,800 tons of cement. In 1961 the Manila Electric Company produced 1,937 million kw.-hr. of electricity.

Agriculture.—Gross value of agricultural production in 1961: 4,019 million pesos, to which palay (rough rice) contributed 39.3%; copra, 13.7%; sugarcane, 9.8%; corn, 8.8%; and root crops, 5.4%. Production of leading crops in 1961 (thousands of metric tons): rice, 3,992; corn, 1,228; sugar, 1,490; abacá, 90; tobacco, 60; sweet potatoes (1960), 738.

Foreign Trade.—Exports, 1961: 1,071 million pesos ($499.5 million); imports, 1,244 million ($611.3 million). Principal exports (in million pesos): sugar and sugar preparations, 281; logs and lumber, 194; oilseeds, oil nuts, and oil kernels, 192; metalliferous ores, 138; textile fibers, 63; fruits and vegetables, 53; vegetable oil and fats, 30.9; clothing, 30.4; wood manufactures, 23; and gold, 19.9. Principal imports: machinery, 201; transport equipment, 137; iron and steel, 103; petroleum and petroleum products, 98; textile yarn, thread, and cloth, 71; cereals, 56.8; textile fibers, 56.7; electrical machinery, 55; dairy products,

49; and paper and paper manufactures, 44. Leading trading partners and share of each in Philippine foreign trade (October–December 1961): United States, 51.1%; Japan, 20%; West Germany, 4.1%; Netherlands, 3.9%; Great Britain, 2.5%; and Indonesia, 1.4%.

Events, 1962.—President Macapagal, in his state-of-the-nation address at the opening session of the 5th Congress on Jan. 22, 1962, discussed the critical condition of the economy. He proposed adoption of an integrated five-year development program having for its objectives: "immediate restoration of economic stability; alleviation of the plight of the common man; establishment of a dynamic basis for future growth." As a step toward these goals, the president had ordered (effective January 22) the lifting of foreign exchange controls (except for 20% of the proceeds from exports and capital transfers). His action was designed to allow the peso to seek its true level and, at the same time, to remove what he called "a vital source of graft." As of October 1, the free selling rate of the peso was 3.90 to the U.S. dollar.

As a result of the 1961 elections, the Nacionalista Party retained control of both houses of Congress. On March 10, 1962, however, a new working majority made up of Liberals and a group of Nacionalistas gained control of the House of Representatives and proceeded to reorganize it. Daniel Z. Romualdez (Nacionalista) was ousted from the speakership, and Cornelio T. Villareal (Liberal) was elected to succeed him. Under the new leadership some important measures recommended by the president were approved. Among them were bills stabilizing the price of palay, rice, and corn; creating an emergency employment administration; providing for the construction of housing for the poor; and seeking to promote cottage industries.

President Macapagal's first year in office was marked by a vigorous campaign against graft and corruption. A major event of this campaign was the deportation of Harry S. Stonehill and Robert P. Brooks, American businessmen. In ordering their deportation on August 3, Macapagal stated that "their presence was an immediate and continuing menace to the peace, welfare and security of the country."

On several occasions during the year, President Macapagal reiterated the anti-Communist objectives of Philippine foreign policy. Speaking to the Manila Overseas Club on September 4, he said: "The Philippine policy toward communism is straightforward and unequivocal. We are inflexibly opposed to communism. . . . We have no relation with any Communist state, and we do not propose to have such relations in the foreseeable future."

The rejection by the U.S. House of Representatives on May 9 of an administration-sponsored bill for the payment of Philippine war damage claims had a temporarily adverse effect on Philippine-American relations. President Macapagal postponed a projected visit to the United States, and the date of the Philippine Independence Day was changed from July 4 to June 12, the anniversary of the proclamation of independence from Spain by Gen. Emilio Aguinaldo in 1898. A new bill, authorizing payment of $73 million in additional war damage compensation to Philippine claimants, was passed by the U.S. Congress on August 24. News of its approval by President John F. Kennedy on August 30 was received enthusiastically in the Philippines, where it was taken as fresh evidence of the existence of a reservoir of goodwill toward the Philippine people on the part of the United States.

On June 22, President Macapagal formally laid claim on behalf of the Philippine government to British North Borneo, which, he stated, a former sultan of Sulu had leased (rather than sold) to British subjects. "We take this step without any feeling of unfriendliness to the United Kingdom, but solely in the peaceful pursuit of our national interest." Later, on July 27, he suggested the substitution of a Confederation of Greater Malaya for the Federation of Malaysia being formed under British sponsorship.

Between June 29 and July 17, the president visited Spain, Italy, and Pakistan. As a result, he reported on his return, the Philippines "acquired a new look abroad and, in turn, won a new prestige abroad."

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PHILOSOPHY

Alexis de Tocqueville observed in the early 19th century that in no country in the civilized world was less attention paid to philosophy than in the United States. In 1962 the contrary might be claimed; for the United States in its maturity shows among the highest rates of philosophical interest in the world. This philosophical interest continues to grow at a rapid pace. In 1962 over 565 philosophy books were published (an increase of 18% over the previous year). Philosophy departments were reported in approximately 1,304 colleges and universities. Over 80 regional and national philosophical societies held meetings; and new groups, such as the Philosophical Society for the Philosophical Study of Dialectical Materialism, were established. Five new philosophical journals were added to the already impressive list: *The Monist; The Pacific Philosophy Forum; The International Philosophical Quarterly;* the Canadian *Dialogue*, and *Soviet Studies in Philosophy: A New Journal of Translation from Soviet Sources.*

American philosophy is diverse, but the primary bent is naturalistic, analytic, pragmatic, and positivistic. In the philosophy of science, Herbert Feigl and Grover Maxwell edited *Minnesota Studies in the Philosophy of Science,* vol. 3, *Scientific Explanation, Space, and Time;* and Ernest Nagel, Patrick Suppes, and Alfred Tarski edited *Logic, Methodology, and Philosophy of Science.* The frontier field of decision making has also been of considerable interest to technical philosophers. Russell L. Ackoff's *Scientific Method: Optimizing Applied Research Decisions* and C. West Churchman's *Prediction and Optimal Decision; Philosophical Issues of a Science of Values* (late 1961) were both concerned with the methods of effective decision making.

The influence of British analytic philosophy continued to be felt in the United States. Max Black, in *Models and Metaphors; Studies in Language and Philosophy,* used linguistic analysis to deal with problems of logic, causation, and induction. The posthumous works by the English ordinary-language philosopher J. L. Austin, *Philosophical Papers* (1961) and *Sense and Sensibilia,* were received with interest. Brand Blanshard, however, published in 1962 *Reason and Analysis,* a devastating critique of logical positivism and analytic philosophy, and a defense of rationalism.

In a sense the current analytic scene is still reacting to the positivistic verifiability principle which rejected emotive and metaphysical language as meaningless. Problems of meaning and semantics thus are central in present-day inquiry, as philosophers attempt to discover the different uses and functions of various kinds of sentences. A topic of some interest in this connection is the place of metaphors in aesthetics and metaphysics. Philip Wheelwright published *Metaphor and Re-*

ality, and Colin Turbayne, *The Myth of Metaphor.* The American Philosophical Association, Western Division, devoted a special meeting to this topic in May. Some analytic philosophers have turned their attention to religious discourse, claiming to have found a special kind of significance and use here. Among them are Paul F. Schmidt (*Religious Knowledge*) and Federick Ferré (*Language, Logic, and God*). Many American philosophers, however, have been skeptical of these analyses. In the symposium *Religious Experience and Truth* (late 1961), edited by Sidney Hook, there were critical discussions by some 30 writers of the claims of some modern theologians.

Since the early 1950's Asian philosophy, especially Zen Buddhism, has had an impact on the popular Western mind. D. T. Suzuki published another book in 1962, *The Essentials of Zen Buddhism.* That American philosophers have been rather dubious of the merits of such philosophizing was seen in Van Meter Ames' *Zen and American Thought* and Dale Riepe's *The Naturalistic Tradition in Indian Thought* (late 1961), which points to the usually overlooked nonmystical aspects of Asian thought.

In the traditional areas of inquiry, Charles Hartshorne published *The Logic of Perfection and Other Essays in Neo-Classical Metaphysics.* John H. Randall, Jr., published *The Career of Philosophy: From The Middle Ages to the Enlightenment,* a full-scale history of modern philosophy. In ethics, Henry D. Aiken published *Reason and Conduct; New Bearings in Moral Philosophy;* and in the philosophy of art, Albert W. Levi published *Literature, Philosophy, and the Imagination.* A much-awaited translation of the important book by the German existentialist Martin Heidegger, *Being and Time,* also appeared in 1962.

The 10th International Congress for the History of Science met at Cornell University (August 1962), the topic being the relations of history and philosophy of science. The International Institute of Philosophy met at Oxford University (September 1962), continuing in its attempt to further international philosophical understanding.

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PHOSPHATES. See Index entry.

PHOTOGRAPHY

Several new photographic products and processes were introduced in 1962, and sales of photographic films, papers, chemicals, and equipment were reported higher than in 1961. It was reported that amateur photographers alone in the United States made over 2⅓ billion photographs; that 12% of American families own movie cameras; and that 99% of home movies are in color.

Some statistics indicate a substantial increase in the use of photography in industry and business and by the government. Total sales of photographic merchandise have increased 37% since 1954, including an increase of 270% for photocopying equipment, 22% for microfilming equipment, and 25% for blueprint and diazo equipment.

Similar growth was evident throughout the world, especially in Europe where the European Economic Community (Common Market) has been a factor in the record production and sales of camera equipment in West Germany and France. One of the key photographic markets in Europe is developing rapidly in Italy. The Soviet Union produced approximately one fifth of the cameras manufactured by the larger countries of the world.

Still Photography.—Practically all 35-mm. cameras introduced in 1962 were automatic, whether or not they were equipped with rangefinders. Many of the new cameras had built-in cadmium sulfide (CdS) exposure meters. These included the Nikon F, Minolta SR-7, Yashica Pentamatic S, Miranda DR f/1.9, Canon 7 with f/0.95 lens, and the Taron Marquis, said to be the first CdS rangefinder camera. Several new cameras—among them the Alpa 6C and Minolta SR-1—had f/1.8 lenses. The Kodak Motormatic 35F and Kodak Automatic 35F featured built-in "pop-up" flash units. The motorized Agfa Selecta M permits 30 pictures per minute. The Nikkorex 35 Reflex-Zoom camera is the first single-lens reflex (SLR) camera with built-in zoom lens (43–86-mm. f/3.5).

A diaprism finder on the Miranda DR and Mamiya C-3 cameras has a grid pattern which fractures the picture when out of focus and is claimed to be better than ground-glass plates for accurate focusing.

The Servo-Baldamat has an electric motor drive, powered by six small batteries that permit 20–25 shots per minute with Baldamatic cameras.

The Minolta SR-7 35-mm. camera is equipped with a cloth focal frame shutter. The Fujica Auto-M has a computer electric eye that can automatically change the selected shutter speed. The Zeiss Ikon Company made available interchangeable backs using rolls of 35-mm. film for the Contarex and Contaflex cameras.

The Nikon F 35-mm. camera is now available with a Photomic System which consists of a prism finder plus a CdS exposure meter. The acceptance angle of the meter is 75°, which is correct for normal and wide-angle lenses under normal conditions; and there is a converter tube that reduces the angle to 15° for use with telephoto lenses. The Nikkor Perspective Control (P.C.) f/3.5 wide-angle lens for this camera permits displacement of the lens in all directions parallel to the film plane on a front mounting plate.

The Widelux Super Wide-Angle camera Model F VI covers an angle of 140° and produces eleven 24 x 60-mm. exposures on a standard 20-exposure roll. The Rolleicord Vb is claimed to be the world's only five-format camera in which pictures from 35-mm. to 2¼ inches square can be made.

At least three new half-frame cameras were described: the Olympus Pen EE-S, the Petri 17, and the motor-driven Yashica Sequelle that gives 65 frames on a 36-exposure roll at rates as fast as two per second.

In the "aim-and-shoot" approach to simplification, the Brownie Fiesta camera appeared and, in Europe, the Voigtlander Vito Automatic II and the Rollei Magic II equipped with the Prontormat-S fully automatic shutter that sets the camera for lens aperture and shutter speed.

A picture width set for any number of degrees up to 360° can be obtained on the Cinerama Panoramic 35-mm. camera with automatic exposure and camera rotation.

A number of larger format cameras were introduced, including some automated single- and double-lens reflex 2¼ x 2¼ cameras such as the Praktisix, Bronica P, and Semflex Studio. Two new press cameras became available: the Mamiya 2¼ x 3¼ Press C and the Horseman 2¼ x 3¼ Press 960, which may represent a trend toward a compromise between the 4 x 5 and the 35-mm. formats. The Linhof 70-mm. Rollex 2¼ x 2¾ has a 53-exposure magazine. Benson-Lehner announced a

wide-angle 70-mm. camera providing a 160° field of vision in any plane. Identification-type cameras in 1962 included the 35-mm. Color Tran FotoSure ID camera and the Itek QUAD camera for taking one to four simultaneous identical photographs on Polaroid-Land film with 10-second processing. The Polaroid-Land MP-3 industrial view camera became available for industrial use.

Although little occurred in the subminiature field in 1962, two unique cameras were described: an ultraminiature panoramic camera, the Viscawide 16, forming a ⅖ x 2-inch picture on 16-mm. film; and a microminiature stereoscopic camera, manufactured by the Cam Corporation, designed for completely automatic operation, useful in the inspection of inaccessible areas and medical research.

The Fotron Model 360 camera marketed by the Traid Corporation automatically performs all operations, including electronic flash. Color-negative film (24 x 24 mm.) is introduced into the camera in preloaded, 10-exposure magazines.

More and more automatic cameras have exposure meters with CdS cells. These cells are considered the most significant advance in exposure meters in more than 25 years because of their greater sensitivity, especially at low light levels. Typical meters include the Sekonic Super Microlite, Spectra Combi-500, and the Honeywell Pentax.

Nickel-cadmium and silver-cadmium power supplies for electronic flash units have become very popular, but there is a trend indicating that small, leak- and spill-proof, rechargeable wet-cell batteries are being more widely used. As part of the "aim-and-shoot" trend, very small nickel-cadmium, battery-operated flash units are being incorporated into small and inexpensive cameras. Some of these units are the Braun-F-20, Monojet SP, and the PCA X-100. The Monojet UM is claimed to be the smallest nickel-cadmium electronic flash, giving 70–80 flashes per charge with a recycling time of 8–12 seconds. A close competitor is the Metz 109 nickel-cadmium flash, with 50 flashes per charge, which is claimed to be the lightest and most compact electronic flash available.

The Bell & Howell Tandem-Matic Professional unit is claimed to be the first innovation in still-picture projection since the invention of the slide projector. It gives the "lap dissolve" effect used in professional motion pictures, by means of two optical systems housed side by side. Otherwise, most new slide projectors are equipped with zoom lenses, sophisticated slide-changing mechanisms, and improved projection lamps.

Motion Picture Photography.—Major advances in amateur motion pictures have been made in the 8-mm. field, and other significant changes can be expected in the future. Now that improved films, cameras, and lenses are available, the 8-mm. system needs improvement to make it economical, as compared with the 16-mm. for professional and commercial use—especially with sound.

The year 1962 was highlighted by automation in motion picture equipment and simplified operation, particularly in the 8-mm. field. The single-lens reflex principle for viewing and focusing through the lens virtually eliminates parallax and focusing error. Zoom lenses were introduced on a wide scale with a significant increase in the usual zoom ratio of 1:3. The Cinemax 85E Auto Zoom, with a 1:5 ratio, and the Schneider Variogon Zoom lens, with 1:6 ratio, were adaptable to several cameras. Many cameras have through-the-lens exposure control, using the sensitive CdS photocells, in combination with zoom lenses; among them are the Fujica EE Power Zoom, Optronic Eye Reflex, Ricoh Zoomlex, Canon Reflex Zoom 82, and Keystone Horizon K-808.

The Bell & Howell Dual Electric Eye consists of two photocells, an "eye-within-an-eye," in which the second cell compensates for underexposure effects produced by backlighting. Introduced for the first time was continuous automatic exposure adjustment to the changing light on zooming, featured in the Sekonic Dual Run camera, which also has a flip-over film chamber to permit exposure of 50 feet of film without opening the camera. Some cameras, such as the Kodak Electric 8 automatic camera, eliminate conventional film threading by means of a drop-in film cassette.

Stereoscopic screen pictures have been demonstrated in England without special glasses or viewing aids, using the "Stereorama" attachment for 8-mm. cameras and projectors with a special wire grid placed in front of the screen. The Stereorama consists of a segmented plate and two supplementary lenses which in combination with the grid produce left-and-right-eye aspects, a visual three-dimensional effect.

In the professional field two new portable 16-mm. reflex cameras were announced: the Debrie Simmor 16-mm. magnetic-sound single-system camera and the Pathé-Products, Inc. Webo-M16-mm. reflex camera.

Motion picture projectors have been streamlined and automated with such features as automatic threading and rewind, zoom lenses, remote control, reverse operation, and editing facilities. The Leitz Cinovid features push-button operation and self-threading; the Keystone K-107R zoom projector has a small editing viewer; and the Kodak Analyst 8 projector, Model A75 is fully automatic with total remote control. The Kodak Chevron 8 projectors come with and without zoom lenses, and represent a completely new low-format design. The Technicolor 800 8-mm. projector operates with film cartridges loaded with 50-foot continuous loops by Technicolor, thereby eliminating threading and rewinding.

New 8-mm. sound projectors include the Videotronic 8, the Cinephonic 881 and 882, and the Fujica Zoom 8 sound projector, said to be the first such projector with a tonal range greater than commercial 35-mm. sound film. Bell & Howell introduced the Specialist Autoload Filmosound projector, said to be the first automatic-threading 16-mm. sound projector.

A liquid immersion gate for the projection of 35-mm. motion picture film was demonstrated by the Eastman Kodak Company. The film frame is held in sharp focus from center to edge.

Lenses.—Many new lenses were introduced as integral parts of equipment. The developments in zoom lenses were outstanding, particularly the power-zoom-operated or continuously variable zoom lenses. The Schneider f/1.8 Variogon 8–48-mm. lens has two attachments to increase its versatility: a power-zooming-operated attachment run by two small batteries, and the Vario Curtar 75x attachment that makes it possible to zoom from a true wide angle of 6 mm. to 48 mm. telephoto, a ratio of 1:8.

Other lenses introduced included the super-wide-angle Fisheye Nikkor lens for 35-mm. cameras, covering an angle of 180°; the 55-mm. f/3.5 Micro-Nikkor lens, which focuses from 4 inches (with a reproduction ratio of 1:1) to infinity; a series of Soligor telephoto lenses ranging from 135 mm. to 450 mm.; a Tele-Xenar 200-mm., f/4.8 lens for Kodak Retina cameras; Summicron f/2.0 lenses of 35-, 50-, and 90-mm. focal lengths; a 270-mm. f/6.5 Tele Optar lens for the Speed

UPI

Assembled by the Army Map Service from several hundred individual photographs, this composite photo of the moon is designed to help scientists in mapping the lunar surface.

Graphic; and two Leitz lenses especially designed for the wide-angle projection of slides.

The Barnes Engineering Company designed a special lens for ultraviolet studies in meteorology and space exploration; its elements are made of lithium fluoride and fused silica. The lens has a focal length of 105 mm., and a viewing angle of 40° while maintaining a flat focal plane. The Widt concern in Germany has made infrared-corrected lenses for aerial photography.

Sensitized Materials.—Several improved sensitized products were introduced for use in a variety of photographic applications. In the photocopy field, new diffusion-transfer copying machines and products appeared, such as the Transcribe and Transcribe Deluxe by Transcopy, Inc. The Verifax Fine-Line Matrix CS for single copy, and CM or "Magic Matrix" for multiple copies, were introduced for copying fine-screen magazine illustrations, fine-line detail, and similar material on improved equipment, using an automatic solution cartridge. In the related field of drawing reproduction, an improved Kodagraph autopositive film on Estar base with three times the speed of the former product was marketed.

New products for use in instrument recording included Kodak Linagraph Shellburst Film on Estar base for use in hydrogen bubble chamber and cinetheodolite photography; a rapidly processible two-color photographic paper (Kodak Kind 1613) designed to give maximum color discrimination; and two new direct-print papers, Linagraph 591 and 592, for use in direct-writing, high-intensity oscillographs providing high-contrast traces within 1 second.

Reduction of the exposure time in industrial radiography can be attained to a larger degree with Kodak Industrial X-ray film, Type F, which is 30–50% faster than other films of this kind with little, if any, change in other film properties.

Two improved products were also introduced by the Eastman Kodak Company for use in aerial photography: a Process E-3 Ektachrome Aero Film with increased speed and improved sharpness and gradation, said to be the only color film designed to magnify the short brightness range existing through aerial haze; and three improved glass-base plates for making diapositives of superior sharpness from aerial negatives.

Many color products described or introduced during 1962 included a reversal Agfachrome CT-18 film with a daylight exposure index equivalent to 50 ASA; Perutz color slide film rated at 50 ASA; Mercury Cinechrome 8-mm. movie film; and three new Ferraniacolor products—N27 negative roll film rated at 40 ASA, Reversal Double-8 cine film rated at 25 ASA, and P24 film rated at 16 ASA with a claimed resolving power in excess of 100 lines per millimeter. In addition to new sizes for some color products, Kodak introduced Ektacolor Professional film, Type S, with a speed of 80 ASA; 35-mm. Kodachrome II Professional film rated at 40 ASA with increased sharpness; finer-grained Eastman color negative film, Type 5251; and 35-mm. Kodachrome-X film with a daylight exposure index of 64 ASA and little, if any, change in sharpness and graininess from Kodachrome II film.

Photo Processes.—A number of nonsilver processes were described in 1962. The Minnesota Mining and Manufacturing Company announced a new type of electro-photographic system that automatically produces enlarged color prints from color negatives in less than 5 minutes. A new type of color print material, specially developed dyes and chemicals, and a newly designed automated machine are involved.

The National Cash Register Company described its Photochronic Micro-Image direct-positive technique, using light-sensitive dyes which permit image erasure by light of a different wavelength than that of the original source. To obtain permanent records it is necessary to print on a silver halide material.

Xerox Inc. and Technical Operations, Inc., plan to market a vacuum-evaporated silver bromide film which has no gelatin. It may be useful where high resolution and acuity, as well as rapid and simple processing, are desired.

The Dietzgen Company introduced its Ricopy diazo materials for document copying; these materials are developed by heat instead of by ammonia vapor or dilute carbonate solution.

The thermoplastic tape system of the General Electric Company consists of a positively charged layer overcoated with a thermoplastic layer that assumes a negative charge in the image areas when exposed to an electron beam. The tape is processed by heat, which softens the upper layer and allows the negative charges to be attracted to the positively charged underlayer, thereby producing a deformation read-out in a Schlieren optical system.

Kodak Ortho Resist, a new resin having a variety of uses including reticle making, printed circuits, and other microminiaturization applications, relies on light exposure to form an image by polymerization of the resin.

Photographic Procesing.—The need for simplified and rapid processing to provide data more quickly for interpretation was more apparent during 1962. Many companies not usually concerned with this aspect of photography designed processors to fit in their photographic systems, and others marketed unique processing devices for use in a wide range of applications. Many improved conventional processors were also marketed.

The basic roller-transport principle of the Kodak X-Omat processors has been used in machines marketed by the Pako Corporation and the Carr Company. The Versamat Film Processor, Model 11-M for sheet and roll films, and the Kodalith Film Processor, Model 324, for graphic arts use, were introduced by the Eastman Kodak Company.

The Picker X-Ray Corporation marketed a processor for 16-, 35-, and 70-mm. roll film with

machine speeds of 4, 3.2, 2, and 1.6 feet per second. Kodak described an experimental processor for either negative or reversal processing of 16- and 35-mm. films, consisting of a series of drums that rotate at about 300 revolutions per minute with their lower portions immersed in small solution tanks. A layer of processing solution is carried around the drum surface to process the film drawn over the upper part of each drum. With the solutions at 120°F., some films can be processed to a negative in 5 seconds or reversally processed in 8–9 seconds, exclusive of washing and drying.

The Filmsort 1000 Camera: Processor demonstrated by the Minnesota Mining and Manufacturing Company exposes and processes microfilm frames mounted in aperture cards. The entire operation requires approximately 30 seconds.

The Mauer-Matic portable processors for 16-, 35-, and 70-mm. films utilize specially formulated monobaths at 90°F. with machine speeds up to 15 feet per minute. A monobath is also employed in the Recordak PES Reader-Printer and in the "PoroMat" web process. PoroMat, manufactured by Photo Dynamics, Inc., is a highly absorbing, flexible material saturated with a monobath solution.

Diffusion-transfer chemistry for the processing of continuous-tone films was the basis for two new processing systems. The Anken Chemical and Film Corporation demonstrated its Ank-a-Matic processor for processing a new roll film at a speed of about 120 ASA. The film and print paper travel together automatically through the machine when the image transfer occurs. As the sandwich leaves the device, the paper is pulled away from the negative to produce a roll of prints in less than 2 minutes. Kodak described a simplified method called "web processing" which involves bringing film in contact with a web of water-receptive material soaked in processing solution. After the correct time of contact, the two are separated and the developed negatives are dried.

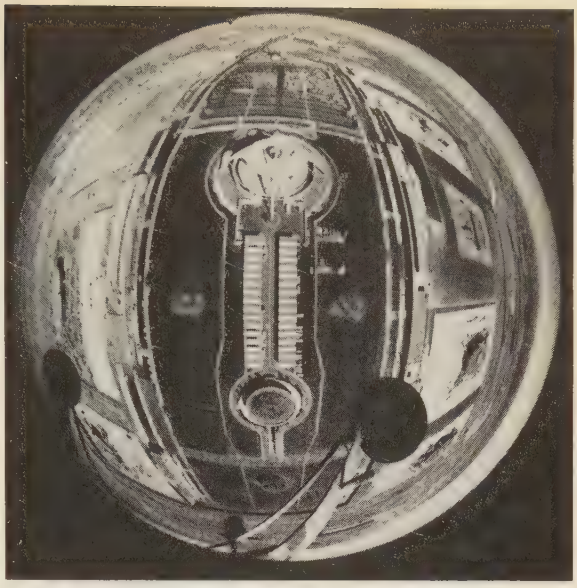
The Pavelle Corporation introduced its P-100 Automatic Daylight Color Printer-Processor, which produces color prints from a color negative in about 3 minutes.

High-speed processing of test and performance data on everything from a rocket to a pulse beat can be obtained in the Kodak Ektaline System, which uses special sensitized papers and a unique machine design to provide data at 200 feet per minute with a 6-second processing cycle.

Documentary and Industrial Photography.—Photocopy is a major growth field with many improved products, expanding markets, and increased competition; several significant mergers were realized during 1962. The market for copying equipment and supplies was estimated in 1962 at over $400 million. A series of new machines based on the use of the electrostatic process was demonstrated and/or marketed: Smith-Corona Marchant, Bruning Copytron 2000, Savin, Bohn, Old Town, Copyscope (Magnefax Corporation), and Apeco.

Microfilming, once used primarily for storing information, has developed into a versatile tool for a wide range of business and engineering applications. The reader-printer and aperture card have increased the utility of microfilm records. A "micro-strip reader" demonstrated by Recordak permits a telephone operator to locate one number out of a million in as little as 4 seconds. The video transmission system of Television Utilities Corporation provides transmission for miles of microfilm without camera or lights, and enlargement up to 60 times. The "Microscan" information system employs a uniform arrangement of 0.001-inch-diameter dots 1 one-hundredth of an inch apart to "pile" pages upon pages of material on top of one another on the same sheet of film.

Some other interesting applications of photography in industry include flash photographs made of a model screw propeller under test to show the areas of laminar and turbulent flow in the boundary layers over the blades; the use of high-speed Schlieren photography in diesel-engine combustion studies; a three-dimensional study of the flow pattern around the stern of a ship; a Waddell 16-mm. high-speed photo-instrumentation camera to investigate



UPI

This horizon-to-horizon view, with the Los Angeles International Airport in the center, was taken with a camera equipped with a special lens covering 187° field of view.

malfunctions in a heavy paper machine and check the pattern of chemical fluids forced under high pressure into nozzles; and photographing the simulated flow of gases in a chamber as it relates to the flow of hot gases in a brick kiln, the mixing of gases in a coke oven, or the evaluation of the effects of buoyancy on the paths taken by flames in furnaces.

Scientific and Applied Photography.—In the field of nuclear physics, a new elementary particle of matter, the omega meson, was discovered in the world's largest liquid hydrogen "bubble chamber." The omega meson weighs 1,540 times as much as the electron and, like the neutron, has no electrical charge. It has a lifespan of about one ten-thousand-billion-billionths (10^{-22}) of a second and only its track through the bubble chamber can be photographed.

Several research problems and related photographic equipment were described, including a heavy-duty impact-resistant Photo Sonics 1F rotary prism recording camera; the Royco Instruments Inc. Model 500 airborne-particle recording camera, for air-pollution studies, capable of recording particles 1 micron in size or larger; a Northrop Aviation 600-mm. f/2 lens with which the location of a missile in flight at a camera distance of 1,000 miles can be determined to within 25 feet; the Fairchild F-415A rotary-prism panoramic camera for horizon-to-horizon coverage at an altitude of 500 feet and an air speed of 600 knots; the Chicago Aerial Industries, Inc., aerial camera system with special wide-angle lens, designed to outrace supersonic reconnaissance aircraft while taking intelligence photographs day or night at virtually any altitude and speed; two techniques of shock-wave photography designed to detect and locate in space and time the various shock phenomena associated with nuclear bursts; and photographic recording of the earth's surface motion during nuclear blasts.

Special photographs were made in Dakar, Senegal, of the annular solar eclipse, July 31, 1962, to obtain information about the moon's shape and gravitational field. Project Celescope was described as a new satellite payload intended to give astrophysicists their first fine-grained look at distant galaxies in the ultraviolet portion of the spectrum.

In medicine, flash photographs have been made, without surgery, of the upper chamber of the human heart. A telescope with a right-angle lens system is attached to the eyepiece of a modified cardiac catheter for photography, and a thin rubber bladder and light bulb are inserted into the heart chamber. The Optiscan Eye Marker camera photographs both the eye motion and the object that the eye is observing. The luminescence emitted in the near infrared wave bands by substances irradiated with blue-green light has been photographed.

Some interesting developments in high-speed photography were reported. The KSC-600 Keer Cell framing camera has a capability of six frames at a rate of 100 million frames per second and exposure periods as brief as 5 one-billionths of a second. Six Kerr cells and a multifaced prism produce six images of the same event, from the same aspect, through the same optics. The major applications are in the recording of phenomena in hydrodynamic explosives, arc and plasma gas discharges, exploding wires, explosive detonations, hypervelocity impact, shock-wave studies, and nuclear detonations.

The National Research Council of Canada described a multistreak camera for studying two-dimensionally con-

verging gaseous detonation waves. The Beckman and Whitley Inc. Model 364 high-speed drum-type camera records nonperiodic wave forms with a total writing time of 6.99 milliseconds at top drum speed of 8,600 rpm. (400 feet per second). The Naval Ordnance Laboratory designed a camera for filming and timing fast action simultaneously in color and black-and-white, recording single-frame action at a shutter speed of one 20-billionth of a second, while operating at a speed of 1 million frames per second.

The English firm of Newman and Sinclair Ltd. introduced a portable electrically-driven 35-mm. camera capable of speeds up to 120 frames per second. A dissection-type high-speed camera produced by J. Langham Thompson Ltd. forms the image on a lenticular plate which breaks the image into dots. A series of such images is formed on a rotating disc which for read-out is rotated slowly to provide a slow-motion picture of an event. The framing rate is variable from 1,000 to 15,000 frames per second. A stereoptican camera made by Bensen-Lehner Corporation records two views from different angles, side-by-side on 35-mm. film, at rates as high as 15,000 pictures per second.

A fiber optics image-dissection camera has been described for recording sequences of pictures at rates up to 100,000 per second with visible light, and a few thousand per second using repetitive flash X-rays. There are 1,800 fibers in the fiber optics dissecting back, and therefore 1,800 image elements per picture. Optics Technology Inc. marketed a fiber probe inspection camera for the investigation of interior surfaces of channels carrying coolant through a pressurized water-type nuclear reactor, and of other inaccessible interiors or contour surfaces. Two 5-inch ribbons of fiber carry light from a 1,000-watt projection lamp to a tiny mirror at the end of a probe. About 2,500 fibers .002 inch in diameter placed side by side make a 5-inch ribbon.

(For additional references, see the Index entry, *Photography.*)

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PHYSICS

Despite the publicity surrounding space technology and science, most physics research during 1962 continued in the familiar categories of nuclei and particles, the structure of matter, and the physics of the universe.

Particle Accelerators.—A new large machine, the Cambridge Electron Accelerator (CEA), was completed. Financed by the Atomic Energy Commission (AEC), it was built by the Massachusetts Institute of Technology and Harvard University, and others will share its use. The accelerator gives energies of 6 billion electron-volts (Bev.) to bunches of electrons driven through a tube forming a circle 236 feet in diameter. This energy is small as compared with the 30 Bev. of two proton accelerators; but electrons, rather than the much heavier protons, form the beam of CEA. Electrons in close collision with nuclei, protons, or neutrons do not experience the enormous though highly localized "nuclear forces," but much weaker electromagnetic influences. Experiments with electron beams of high energy, therefore, are not so much "atom-smashing" as "atom-probing."

Studies have gone on for some years, with electron beams of much less energy, to determine the inner structures of the proton and neutron, the primary building blocks of atomic nuclei. More such work was done in 1962, marked by the greater reliability to be expected from the growing mass of data. The CEA can add to these data and make possible other quite different experiments.

In the spring of 1962, the Atomic Energy Commission (AEC) awarded funds to Stanford University to build the world's largest linear electron accelerator, in the range of from 10 to 20 Bev., designed for later increase to 40 Bev. This project has suffered from changes of plans and vicissitudes of national policy for some years. The straight (hence, linear) tube for the beam will be underground, nearly two miles long.

Seven very large accelerators are now in operation—two in western Europe, one in the Soviet Union, and the rest in the United States. Several other large machines in design or construction include a 50-70-Bev. proton accelerator of the Soviet Union in Moscow and a 300-Bev. proton synchrotron for which the preliminary planning has been done by the European Council for Nuclear Research (CERN); it is reported that machines up to 1,000 Bev. are under consideration in the United States and elsewhere. (See also ELECTRICAL INDUSTRIES.)

Newly Discovered Particles.—The discoveries of several more light or heavy nuclear particles have been announced. The anti-xi-minus hyperon, with a lifetime less than 10^{-9} second, was detected independently at the world's two largest accelerators, the Alternating Gradient Synchrotron (AGS) of Brookhaven National Laboratories, New York, and the Proton Synchrotron (PS) of CERN, near Geneva, Switzerland. The charge of this anti-particle equals that of the proton, and its mass is about 40% greater. Such a particle had been hypothesized for some time, to round out a class of heavy particles.

Other physicists, also using the AGS, detected an f-zero meson, electrically neutral, 30% heavier than the proton, and short-lived (10^{-23} second). It seems to resemble what was predicted by some theoretical physicists. The uncharged eta-meson, another discovery, somewhat resembles the rho- and omega-mesons discovered in 1961. The eta-meson's mass is about half the proton's; its life is about 10^{-15} second. A separate experiment showed its spin to be zero.

French and Belgian scientists reported tentative identification of a zeta-meson, electrically charged and a little more massive than the eta-meson. The debate continues as to whether these various new mesons are more properly regarded as elementary particles or as resonance states of other, previously known, particles.

Probably most interest was aroused by detection—again at the AGS—of a second kind of neutrino and its mirror-image counterpart, an anti-particle. Neutrinos were postulated by theorists a generation ago to account for the otherwise inexplicable behavior of beta particles (electrons emitted in radioactive decays). The neutrino has no electrical charge and no rest mass, resembling photons of light in these respects though not otherwise. A neutrino can penetrate all the way through the earth with slight chance of collision or deflection. Hence detection is difficult; it was achieved only a few years ago. The new neutrino seems to be associated with mu-mesons much as ordinary neutrinos are with electrons.

The theory of elementary particles and their interrelations grows still more abstract and complex. A technique much exploited during 1962 is that of Regge poles, associating particles with the behavior of mathematical poles displayed by the complex angular-momentum function. Evidently the method is useful and significant, but its scope and meaning are still debated. (See also ATOMIC ENERGY.)

Solid-State Physics and Superconductivity.—A great deal of research has continued on widely varying solid-state problems. The stimulus of Advanced Research Projects Agency (ARPA) funds is probably beginning to show results, although the aim was a long-term expansion of research in materials science.

The superconductivity displayed by certain metals at very low temperatures has come to be

much better understood recently, thanks to a wealth of experimental and theoretical research. More attention was given to superconductivity in alloys and mixtures during 1962. The behavior of thin superconducting films on nonsuperconducting material, the reverse arrangement, and various "sandwich" structures particularly were studied.

Properties of Liquid Helium.—The gas helium (He) can be liquefied, for example, at atmospheric pressure and about 4°K. (roughly 7°F. above absolute zero). For decades liquid helium has been useful as a powerful refrigerant in experiments, but its own properties have fascinated both experimentalists and theorists. When liquid helium He^4 is cooled below its lambda point, about 2.2°K., it behaves like a normal fluid intermixed with a superfluid which has negligible viscosity. The fraction of superfluid rises toward unity (1) at absolute zero.

Liquid helium carries ordinary compressional sound waves, and the characteristics of such so-called first sound are still being studied. For some years the propagation of second sound has been known; there is no compression but an interchange of normal and superfluid components, while a wave of temperature change moves along, rather slowly. Third sound and fourth sound, phenomena peculiar to thin films and narrow tubes of liquid helium, respectively, were demonstrated three years ago. In 1962, fourth sound, characterized by both pressure and temperature waves, was studied in some detail. It requires temperatures below the lambda point, as do second and third sound; its propagation speed rises toward that of first or ordinary sound as the temperature falls.

The theory of liquid helium's properties appears to be in fairly good but not definitive shape. It is a many-body problem, akin to the theory of superconductivity in solids.

Optical Masers.—Much experimentation has been done with lasers (light amplification by stimulated emission of radiation).[1] Solids other than rubies, including glassy organic materials, have been shown to produce optical maser (microwave amplification by stimulated emission of radiation) effects. The duration of the flash, its delay after triggering, and its wavelength can now be chosen from a fairly wide range.

A spectacular application was the reception of bursts of light directed from earth and reflected from dark parts of the moon. A ruby optical maser was used; each pulse of red light had an energy of 50 joules and lasted 0.0005 second. Less than a billionth of a billionth of each pulse—about a dozen photons—returned to a receiving telescope, but the signal could be reliably detected and timed.

Many applications of lasers in research and industry are being explored. The General Electric Company has cut diamonds with the intense light beam of lasers, and the feasibility of arrays of synchronized lasers as high-energy radiation weapons is being studied. A calcium-fluoride laser has been developed by the Radio Corporation of America to convert sunlight directly into a coherent infrared beam which may prove useful for space communications and satellite tracking.

Another outcome of maser techniques was a demonstration of nonlinear optics. Sound waves in matter are nonlinear (though negligibly so at low intensities) because Hooke's law of elasticity is not exact. A single-frequency signal under nonlinear conditions gives rise to harmonics of itself at twice, thrice, etc., the original frequency; the strength of each harmonic depends on that of the original signal. Ordinarily, light and associated optical radiations have been considered strictly linear, except for small corrections based on general relativity. Certain crystals such as quartz, however, have a slightly nonlinear optical polarizability. Light of sufficiently high intensity, now available from lasers, produces second harmonics.

Renascence of Optics.—A decade or two ago most physicists would have agreed that optics was a dead branch of pure science. Optical techniques remained essential tools in research and technology, but it was assumed that all the interesting fundamentals were known. More recent developments have altered the situation. The human eye is no longer an integral part of, and limitation on, many instruments. Light amplifiers can produce true images brighter than the original object, which lenses or mirrors could not do. Fiber optics, in which various parts of a light beam are transmitted along flexible transparent fibers, greatly loosened the old restricted relations between object and image. Optical masers have opened new avenues also. The Optical Society of America, a member of the American Institute of Physics, is re-examining the role of optics in college curricula and research programs, and the need for scientists and engineers specializing in optics.

Physics of the Universe.—The outer space probed by optical and radio telescopes, and the near space explored by satellites, have been found to be far from empty. Vast numbers of almost undetectable neutrinos, emitted by stars, rush through space. Far fewer but easily detected cosmic rays—heavy particles such as protons—have various energies, some far exceeding those achieved by accelerators. Although our sun is probably one source, the origins of cosmic rays are still undetermined. In 1962, "cosmic" electrons were identified in space and attributed to solar flares.

Other "tourists" in space may be helium nuclei, He^3—which is an isotope of ordinary He^4—according to an interesting combination of astrophysical, nuclear physical, and space research. The abnormally magnetic star, 3 Centauri, is found to contain little He^4 but much He^3, as compared with ordinary stars. Bombardment by magnetically energized protons within such a star is a plausible mechanism for the conversion of He^4 to He^3. Solar flares are strongly magnetic and might cause a similar reaction, with expul-

[1] See THE AMERICANA ANNUAL, 1962, p. 602.

(Left) **Five optical maser tubes, each containing one of the "noble" gases (helium, neon, argon, krypton, and xenon), are checked by technicians. These five tubes emit continuous beams of coherent radiation in 14 infrared wavelengths. *(Right)* A new type of laser is the first man-made device to use sunlight directly without conversion to another type of energy. The 12-inch reflector gathers the sun's rays and focuses them on the crystal rod, which then gives off infrared emissions.**

BELL TELEPHONE LABORATORIES; RADIO CORPORATION OF AMERICA

sion of the He^3 nuclei. As possible confirmation of this phenomenon, parts of a recovered earth satellite, orbited when a solar flare occurred, appeared to have picked up much He^3 in space. (See also ASTRONOMY.)

A. O. WILLIAMS, JR.,
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PICCARD, Auguste

Swiss physicist and engineer: b. Lutry, Switzerland, Jan. 28, 1884; d. Lausanne, Switzerland, March 24, 1962.

An adventurous spirit in both thought and action, Auguste Piccard first designed new equipment and then employed it in explorations of the stratosphere and ocean, pointing the way to new fields of scientific endeavor. These pioneering efforts are described in his book, *Earth, Sky and Sea* (1956).

The brother of Jean Piccard, who also won fame as an aeronautical explorer, Auguste Piccard studied mechanical engineering at the Swiss Federal Institute of Technology in Zurich and later taught physics at the institute (1913–20) and at the University of Zurich (1920–22). In Zurich he collaborated with Albert Einstein in designing instruments for electrical measurements. Subsequently Piccard served as professor of applied physics at the Polytechnical School of the Free University of Brussels from 1922 until his retirement in 1954.

Piccard designed a sealed aluminum gondola which could be lifted by a large balloon, and on May 27, 1931, he astounded the world when he ascended from Augsburg, Germany, with Charles Kipfer, an assistant, to a record height of 51,775 feet, landing on a glacier near Obergurgl, Austria. Ascending from Zurich with another assistant, Max Cosyns, he was carried to another record altitude of 53,152 feet on Aug. 18, 1932. By 1946, Piccard had made some 28 balloon ascensions, carrying out many observations of atmospheric electricity and radioactivity in the stratosphere. He opened the study of high-altitude cosmic ray activity and predicted the feasibility of travel in the stratosphere.

After World War II, Piccard turned his energies to the development of his bathyscaphe (from the Greek, meaning "depth ship"), a free-floating, gasoline-ballasted undersea blimp with a stout steel observation gondola underneath. On Sept. 30, 1953, with his son Jacques, he descended off the west coast of Italy to a record depth of 10,330 feet. (On Jan. 23, 1960, Jacques and Lt. Don Walsh of the U.S. Navy went down in an improved model of the bathyscaphe to a record depth of 35,800 feet in the Marianas Trench off Guam in the Pacific.) In his later years, Piccard carried out a number of deep-sea studies for the U.S. Navy.

PINEAPPLES. See FRUITS.

PITCAIRN ISLAND

Pitcairn Island (area, 2 square miles) is a British colony situated in the Pacific Ocean between Tahiti and Easter Island. The uninhabited island was settled in 1790 by mutineers of H.M.S. *Bounty* and Tahitian women. Its population (1961 est.) is 126. Pitcairn and the uninhabited islands of Henderson, Ducie, and Oeno are administered from Fiji by the British high commissioner for the Western Pacific (Sir Kenneth P. Maddocks), assisted by a chief magistrate and four other members of a local council. Principal sources of revenue are the sale of local postage stamps, curios, fruits, and vegetables.

PITTSBURGH

Pittsburgh, Pa., ranked 16th among United States cities in the 1960 census, with a population of 604,332. The city (area, 54.1 square miles) is the center of an area comprising Allegheny, Beaver, Washington, and Westmoreland counties (3,051 square miles), standing eighth in population and economy among such areas in the nation. Pittsburgh's population has decreased by 72,474 since the 1950 census (when it ranked 12th in the nation), but that of the metropolitan area has risen by 236,464 to 2,449,700.

City government in 1962: a mayor (Joseph M. Barr) and a nine-man City Council, all Democrats. Budget (1962): $59,375,000. Real estate tax: 3.7% of assessed land valuation ($421,836,281, a decrease of $2,314,058 from 1961) and 1.85% of assessed building valuation ($803,139,481, up $11,259,288 from 1961). Other taxes include a 1% city wage tax, 10% amusement tax, 0.2% retail and 0.1% wholesale mercantile tax, and 0.2% personal property tax.

School budget (1962): $31,271,651. School tax: 1.6% on both lands and buildings, 0.4% personal property tax, 0.1% wholesale mercantile tax, 1% real estate transfer tax, and 0.5% wage tax. Value of bonds retired in 1961: $4,671,700; new bonds issued: $5,220,000.

Total public school enrollment (1962–63): 81,572; teachers and other professional staff: 2,812.

Transportation data (1961): freight by river, 41,783,144 tons, a decrease of 2,718,142 from 1960; by rail through the city, 60,168,882, a loss of 14,668,310 from 1960. Air cargo (mail, express, freight): 42,764,141 pounds, up 4,899,423. Air travel: flights, 274,250; passengers, 2,332,398.

Steel output in the Pittsburgh district (1961): 21.4% of total United States production. Coal production: in metropolitan area, 18,874,479 tons; in western Pennsylvania, 34,754,479 tons.

Employment (metropolitan area, September 1962): 852,400, of whom 387,100 were in manufacturing, mining, and primary metals; 109,400 in retail trade; and 204,000 in services, government, and miscellaneous employment. Unemployment stood at 8.7% of the total civilian labor force.

Other metropolitan area economic data: estimated per-family income (1962), $7,051; home construction (1961), 5,869 dwelling units ($84,865,715); estimated industrial capital expenditures (1961), $213,322,500.

Major developments of 1962 included the resignation of Gordon Bailey Washburn after 12 years as director of fine arts of Carnegie Institute and its international exhibitions, and his replacement by Gustav Von Groschwitz of the Cincinnati Art Museum; completion of steelwork on the new Federal Building; and the opening of the new Graduate Library School of the University of Pittsburgh.

Highway developments included the opening of the $13 million Etna bypass and interchange and the five-mile eastern extension of the Penn-Lincoln Parkway, connecting downtown Pittsburgh directly with the Pennsylvania Turnpike. Work was continued on the Crosstown Boulevard and Golden Triangle approaches to the new Fort Duquesne Bridge.

Pittsburgh's "renaissance," begun in 1946, reached its fastest pace with several new developments. Chief among these was the organization of the $250 million Oakland Corporation (including the University of Pittsburgh; Carnegie Institute of Technology; Mount Mercy College; Mellon, Carnegie, and Catholic Institutes; four local foundations; and several large insurance companies) to redevelop the entire Oakland area as a cultural center. Other forward steps included demolition for a new municipal stadium; completion of the frame of the revolutionary truss-wall Gateway Five building; beginning of work on a $2.3 million Point Park improvement program; and groundbreaking for a new parkside $25 million apartment building in the Gateway Center.

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PLANTS. See AGRICULTURAL RESEARCH SERVICE; BOTANY; HORTICULTURE AND GARDENING; and the Index entry, *Plant Research.*

PLASTICS

Automobile bodies made of plastics reinforced with glass fiber were used on the 1962 futuristic Studebaker Avanti model and on 11,000 Chevrolet Corvettes. The lighter cars have faster acceleration, better braking, and fuel savings. The plastic body weighs about 300 pounds less than a comparable one made of steel, but the force needed to fracture it is considerably greater than that needed to dent a steel body. A cost analysis indicates that taking into consideration tooling, materials, assembly, and labor, up to 100,000 units of a given model car can be made more economically of reinforced plastics than of steel.

The building construction industry of the United States used 1.5 billion pounds of plastics in 1961, 9% more than in 1960. Protective and decorative coatings accounted for about 400 million pounds; flooring materials, 370 million pounds; adhesives for plywood and hardboard, 142 million pounds; and wire insulation, 186 million pounds. Moisture barriers, weather stripping, piping, lighting, and paneling were other major applications.

U.S. PRODUCTION OF PLASTICS, 1961–62

Material	1961[1]	1962[2]
	(Millions of pounds)	
Polyethylene	1,606	1,950
Vinyl resins (chloride, acetate, etc.)	1,260	1,500
Styrene resins (including copolymers)	1,145	1,250
Phenolic resins	665	700
Alkyd resins	541	550
Urea and melamine resins	440	450
Coumarone-indene resins	281	300
Polyesters	193	200
Cellulose plastics	148	150
Miscellaneous resins	578	650
Total	6,857	7,700

[1] Source: U.S. Tariff Commission. [2] Estimate on basis of first six months.

Polyethylene is rapidly supplanting wax, which flakes, in coating paperboard cartons for milk and juice containers. Cartons replaced 50% of glass bottles in this market in the past 10 years. It is estimated that 24 billion containers of milk alone are now sold each year—about 500 per family. The cartons required 26 million pounds of polyethylene in 1961 and are expected to consume at least 100 million pounds by 1965.

Plastics are currently being used by the U.S. Navy for: (1) dielectrics for wire insulation, panel boards, and electronic equipment; (2) foams for buoyancy, thermal and sound insulation, and void filling to keep water, vermin, and trash from accumulating; (3) fibers for protective covers and rope; (4) pipes for wash-down and ventilating systems; and (5) structural members, such as boats up to 57 feet long, submarine fairwaters (protective shields), tanks, propeller shaft coverings, and sonar domes.

(See also AGRICULTURAL RESEARCH SERVICE; CHEMISTRY.)

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PLATINUM METALS. See MINERAL PRODUCTION.
PLAYS. See THEATER.
PLUMS. See FRUITS.
PNEUMONIA AND INFLUENZA. See RESPIRATORY DISEASES.
POETRY. See the Index entry, *Literature.*
POISONS. See the Index entry, *Toxins and Antitoxins.*

POLAND

A country of east-central Europe, fully independent before World War II, Poland was taken over by the Communists in 1944–45 and made a people's republic dependent on the USSR. The largest of the Soviet satellites, it has an area of 120,359 square miles and a population (est. mid-1962) of 30,324,000. The principal cities, with their 1960 census populations, are Warsaw, the capital, 1,136,000; Łódź, 708,400; Kraków, 479,000; Wrocław, 429,200; Poznań, 407,800; and Danzig (Gdańsk), the chief port, 286,500.

Government in Exile.—Safeguarding the constitutional continuity of Free Poland, the legal wartime government still resides in London. It is recognized by the Vatican, Ireland, and Spain. August Zaleski is president of the republic, and Antoni Pająk is premier. A Council of Three, composed of Generals Władysław Anders and Tadeusz Bór-Komorowski and Ambassador Edward Raczyński, represents the union of democratic political parties.

Warsaw Government.—Within Poland actual power is exercised by the Polish United Workers' (Communist) Party, whose membership (1962) is reported to total 1,300,000. Władysław Gomułka, first secretary of its Central Committee, directs both domestic and foreign policy. The departments of the party parallel the ministries of the government; on March 3, 1962, Ryszard Strzelecki, a strict Communist, was placed in charge of cultural affairs, replacing Edward Ochab.

Aleksander Zawadzki, as president of the 17-member Council of State, is nominal chief of state, and Józef Cyrankiewicz has been premier since 1947. To the five existing vice premiers, a sixth was added on July 30, 1962, when Franciszek Waniołka was appointed. He was succeeded as minister of heavy industry by Zygmunt Ostrowski. Since the elections of April 1961, the 460-member Sejm (Parliament) has been composed of 255 representatives of the United Workers' Party, 117 of the United Peasant Party, 39 of the Democratic Party, 5 Znak Catholics, and 44 independents. Its powers are very limited. On May 30, 1962, the speaker of the Sejm, Czeslaw Wycech, became chairman of the United Peasant Party, replacing Vice Premier Stefan Ingar, who had been criticized for inefficiency.

Religion and Education.—The overwhelming majority of the Polish people are Roman Catholics, and the universally respected leader of the nation is the primate of Poland, Stefan Cardinal Wyszyński, archbishop of Gniezno and Warsaw, whose courageous struggle for religious freedom and human rights is described below (see *Events, 1962*).

In 1961 there were 7,149 kindergartens (395,100 pupils), 26,152 primary schools (4,827,600), 841 secondary schools (260,400), 417 schools for the handicapped (48,600), 917 adult primary schools (87,800), 220 adult secondary schools (76,200), 5,728 vocational schools (784,200), and, in 1962, 75 institutions of higher education (172,400).

Financial and Economic Indicators.—Budgeted revenue, 1962: 248.8 billion zlotys (at the tourist rate, 24 zlotys equal U.S.$1); expenditure, 245.2 billion. Net material product at market prices, 1961: 416 billion zlotys (up 40 billion from 1960). General industrial production index (1958 = 100), 1961: 134 (122 in 1960; average of 140, first 6 months of 1962). Consumer price index (1958 = 100), 1961: 104 (103 in 1960; average of 107, first 6 months of 1962).

Transportation and Communications.—Transport networks (miles, 1960): railways, 16,717; hard-surfaced roads, 64,895; navigable waterways, 4,350. Merchant marine (1961): 148 ships with an aggregate tonnage of 835,000. National airline: Polski Linie Lotnicze (LOT). Communications facilities: telephones (1961), 881,394; radio sets (1961), 5,268,000; television sets (1962), 900,000.

Industrial Production.—During the first year of the Third Five-Year Plan (1961–65), industrial production is estimated to have risen by 10.3%. Some newer industries failed to fulfill their planned goals, however, and the targets for 1962 were less ambitious. Nevertheless, production rose by 9.7% in the first half of the year, although the rate of increased industrial investment was only 6%, as compared with 14.5% in the first half of 1961. Chief industrial products (thousand metric tons, 1961, with 1960 figures in parentheses): coal and lignite, 126,592 (113,760); crude petroleum, 203 (194); iron ore, 2,386 (2,184); cement, 7,356 (6,588); pig iron and ferroalloys, 4,764 (4,560); crude steel, 7,236 (6,684); electrolytic copper, 22 (20); zinc, 182 (175); lead, 40 (40); cotton and mixed yarn, 164 (154); wool and mixed yarn, 60 (58); rayon and acetate filament yarn and staple,

74 (70); natural gas, 733 million cubic meters (550 million); electricity, 32 billion kw.-hr. (29 billion); and motor vehicles, 38,880 units (36,-720).

Agriculture.—Polish agriculture, which is still based largely on private ownership, was generally successful in 1961. Chief crops (thousand metric tons, with 1960 figures in parentheses): barley, 1,323 (1,310); oats, 2,965 (2,774); potatoes, 45,-318 (37,855); rye, 8,374 (7,878); sugar beets, 11,-550 (10,262); and wheat, 2,814 (2,303). On March 25, 1962, the 3,584,100 private farmers, who produce 90% of the total output, were subjected to a 16% increase in the land tax. Later, on June 28–29, the Sejm adopted seven laws affecting agriculture. One favored members of the unpopular collective farms, while the others were generally directed against private owners. Floods in May and June cut the 1962 harvest. On August 21, an agreement was signed with Canada for the purchase of from 300,000 to 500,000 tons of wheat, but conclusion of a new agreement with the United States remained in abeyance (see below, *Events, 1962*).

Foreign Trade.—Total exports, 1961: 6,014 million zlotys (5,302 million, 1960; 2,997 million, first half of 1962); imports, 6,747 million (5,980 million, 1960; 3,525 million, first half of 1962). Percentage distribution of exports (with imports in parentheses), 1961: machinery, industrial equipment, and transport equipment, 28.0 (29.1); fuels and industrial raw materials, 39.1 (49.7); agricultural products and foodstuffs, 21.4 (15.3); and industrial consumer goods, 11.5 (5.9). Chief customers (with percentage of total Polish exports received, 1961): USSR, 32.3; Czechoslovakia, 9.8; East Germany, 7.3; Great Britain, 6.9; West Germany, 5.7. Principal suppliers (with percentage of total Polish imports provided, 1961): USSR, 29.0; East Germany, 12.0; Czechoslovakia, 9.7; United States, 7.2; Great Britain, 6.0.

Events, 1962.—During the year the Polish Communist Party recognized the necessity of making some concessions to the liberal trends apparent in Polish life. A bill adopted by the Sejm on February 15 reorganized the Supreme Court into four chambers, dealing not only with civil but also with military, labor, and social insurance cases, which heretofore had been handled by separate administrative courts. Nevertheless, the ministers of justice and national defense retained the power to interfere with the court's decisions. Compulsory courses in Marxism, which had failed to indoctrinate the students, were dropped by both secondary schools and universities. Worker councils, formed originally in the factories in 1956, were to be revitalized, and elections within the Communist Party were to be conducted under more liberal rules. At the same time, however, beginning in January with the condemnation of Jerzy Kornacki to a year in jail on the charge of writing offensive anonymous letters to senior officials, the freedom of expression of Polish writers and correspondents was restricted.

Meanwhile, there was growing tension in church-state relations. In November 1961, Cardinal Wyszyński had written to Speaker Wycech of the Sejm, requesting the appointment of a mixed commission to investigate oppressive measures directed against the Roman Catholic Church in violation of agreements. Wycech's reply, delayed until Feb. 15, 1962, rejected the request as unnecessary and serving only propaganda purposes. In a letter of March 29, Cardinal Wyszyński repeated his request and reiterated the church's opposition to state control of religious education, the eviction of nuns from hospitals, interference with processions and religious meetings, and financial measures directed against the Catholic University of Lublin. Receiving a curt rebuff, he warned the faithful in his Lenten sermons against the spread of atheistic doctrines with official support. Although the cardinal was violently attacked in the Communist press, he did not hesitate to renew his criticisms of atheism in a pastoral letter, written on May 15, and read in the churches a few weeks later despite the attempts of the government to withhold it. In July, there was a new wave of hostile action against the church, leaving only four schools in which religious instruction is given, eliminating Catholic organizations from charitable activities, and increasing discriminatory taxes.

The primate could, however, make two trips to Rome, first in February to participate in preparatory work for the Second Vatican Ecumenical Council (see RELIGION—*Catholicism*), and then in October for the opening of the council. On both occasions he was received with particular cordiality by Pope John XXIII, who in March elevated Bishop Bolesław Kominek to the rank of archbishop of Wrocław (formerly Breslau), a gesture highly appreciated by the Poles, who await recognition of their western boundaries. Having succeeded in obtaining passports for 16 other members of the Polish hierarchy to accompany him to the opening of the council, Cardinal Wyszyński was waiting for similar permissions for 16 more; half of them eventually arrived.

Even the Communist regime finally realized that prominent Polish participation in the Ecumenical Council could strengthen the country's position in international affairs. Otherwise its foreign policy, strictly coordinated with that of the USSR, continued without change. Only the fact that, in contradistinction to other members of the Soviet bloc, Poland did not sever diplomatic and trade relations with Albania could be interpreted as evidence of a little more independence from Moscow. The Polish proposal for a zone in central Europe free from atomic weapons was renewed on March 3 by President Zawadzki and, as usual, at the UN General Assembly by Foreign Minister Adam Rapacki, author of the plan, who also served as leader of the Polish delegation to the Geneva Disarmament Conference. Of significance was Secretary Gomułka's visit to East Berlin on October 15. While the visit had been long delayed and began in a cool atmosphere, the final communiqué (October 21) emphasized the solidarity of the two regimes and echoed the Soviet point of view on the question of Berlin. The urgency of concluding a peace treaty with East Germany was stressed once more.

In view of such a persistent attitude concerning all controversial international questions, relations between Poland and the United States remained strained. In order to develop at least commercial exchanges, the minister of foreign trade, Witold Trąmpczyński, visited the United States in May, but the trip of Foreign Minister Rapacki to Cuba in June hampered the delicate negotiations for new Polish purchases of United States surplus farm commodities. In approving appropriations for the foreign aid program on October 8, the U.S. Congress authorized President John F. Kennedy to waive a ban on aid to Communist countries, thus permitting Poland to make such purchases.

Meanwhile, making a sound distinction between the Polish people and the Communist regime forced on them, the United States continued to promote cultural relations with Poland. Numerous American visits to Poland and invitations to Polish scholars to visit the United States contributed to intellectual cooperation, and in March

the United States decided to finance a $2,000,000 medical research program by Polish and American scientists. The agreement, announced on April 1, was prepared by long negotiations between the U.S. Public Health Service and the Polish Ministry of Health and Social Welfare.

OSCAR HALECKI,
Professor Emeritus of History, Columbia and Fordham Universities.

POLAR EXPLORATION. See ANTARCTICA; GEOGRAPHY AND EXPLORATION.

POLICE

New headquarters for the International Association of Chiefs of Police was formally opened by the board of directors in Washington, D.C., on May 14, 1962, housing together for the first time all of the association's divisions and operations. The association's 69th annual conference was held October 6–11 in St. Louis, Mo. The International Juvenile Officers Association also held its annual conference in St. Louis.

Marking the first attempt to bring together at the international level the police profession and the professions of law, medicine and science, the First Inter-American Conference on Legal Medicine and Forensic Science was held at the School of Law, University of Puerto Rico, Rio Piedras, P. R., November 29–December 1.

Traffic Control.—In 1962 motor vehicle registration was expected to exceed 78 million. Expressing concern over the approximately 40,000 traffic deaths during the year, the President's Committee for Traffic Safety urged that specific measures be taken on national, state, and local levels to reduce the toll. Aerial techniques, including the use of the helicopter, were invoked. More than 36 states have authorized the use of chemical tests to determine the sobriety of drivers.

Hours.—A pronounced trend toward reduction of the workweek for policemen is observable. During 1959–62, more than 300 cities had reduced police hours from 45 to 40 per week.

Recruiting and Training.—The recruiting problem became more acute in 1962. An increasing number of police departments turned to the police cadet program, under which high school graduates may be appointed to the force at the age of 18 to perform clerical and other tasks until the age of 21, when they take the qualifying examination for regular appointment.

New police training programs were reported at New Haven College, the University of Oklahoma, and the University of Kansas City. The University of Oklahoma has been designated as the official training center for Oklahoma law-enforcement officers by resolution of the state legislature. Approximately 90 institutions were offering law-enforcement training at the university and college level, ranging from those with two-year programs offering a certificate or associate arts degree to those offering the doctoral degree.

Detection.—The Metropolitan Police Department of Washington, D.C., was among those departments turning to color photography as a tool of criminal investigation and identification. More than 30,000 35-mm. color slides of known criminal offenders are now in the files of the department. The same department inaugurated a two-way radio system on an experimental basis for foot patrolmen. Ridgefield and Hillside in New Jersey conducted 12-week courses in scientific hypnosis as an aid in interrogation, lie detection, and amnesia breaking.

St. Louis police in 1961 created a special tactical squad of judo-trained officers who pose in crime-ridden areas as women, derelicts, and drunks to combat attackers. The operation was so successful at apprehending hoodlums that New York City initiated a similar program in August 1962.

V. A. LEONARD,
Professor of Police Administration, Washington State University.

POLIOMYELITIS. See Index entry.

POLITICAL PARTIES. For political parties in the United States, see DEMOCRATIC PARTY; ELECTIONS, U.S.; REPUBLICAN PARTY; SOCIALISM; and UNITED STATES. For parties in other countries, see articles on those countries.

POLITICAL SCIENCE

In 1962, political science continued its rapid development both as a discipline and as a profession. Confirmation that the gradual recent reorientation of political science as a discipline has had wide impact is to be found in two significant studies—*Essays on the Behavioral Study of Politics,* edited by Austin Ranney, and *The Limits of Behavioralism in Political Science,* edited by James C. Charlesworth—and by the increased number of scientific contributions to the knowledge of government and politics published during the year. The two studies mentioned are valuable examples of the self-conscious examination by political scientists of the state of the discipline, and make clear the substantial changes that have been taking place in the discipline in recent years. One such change has been the integration of the characteristic "behavioralist" approaches, procedures, and goals into the discipline, which has, however, remained predominantly institutional in focus.

Significant developments are indicated in the profession by the rapid growth of the American Political Science Association, by increased services of the association to its members, by new programs for improving the professional qualifications of political scientists, by increased attention to teaching government and politics in the secondary schools, and by increased use of political scientists in important positions in government and industry.

The American Political Science Association is the official national professional organization of political scientists. At its 58th annual meeting, held in Washington, D.C., Sept. 5–8, 1962, papers were presented and discussions held on all major fields and on several special fields of political science. The retiring president, Prof. Charles S. Hyneman of Indiana University, delivered the presidential address, under the title, "Free Speech: At What Price?" The delegates were also addressed by Secretary of Agriculture Orville Freeman and Senator Jacob Javits of New York. Carl J. Friedrich of Harvard University succeeded to the presidency of the national association, and C. Herman Pritchett of the University of Chicago was named president-elect.

At the annual meeting, the Woodrow Wilson Foundation Award for the best book published in 1961 in the field of government, politics, and international affairs was presented to Robert A. Dahl of Yale University for *Who Governs? Democracy and Power in an American City.* The Leonard D. White Memorial Award was presented to Simon D. Perry for his doctoral dissertation, *Conflict of Expectations and Roles in Policy Science Behavior;* and Theodore J. Lowi received the James Kimbrough Owen Award for his dissertation, *At the Pleasure of the Mayor.* For the first time, the association presented the Atherton Press Political

Science Award for the best original manuscript in the field of political science. The prize was shared by Dan D. Nimmo for *News Sources and News Channels: A Study in Political Communication* and Frank J. Sorauf for *Party and Representation.*

In 1962 the national association continued to publish *The American Political Science Review.* It again conducted the Congressional Fellowship Program, enabling more than 25 young political scientists, journalists, and law professors from the United States, Asia, and the Middle East to spend a year as participant observers of the U.S. Congress; the Public Affairs Reporting Awards Program, which rewards young journalists for excellence in reporting state and local government and politics; and the Regional Seminars Program for teachers of political science in small colleges and universities throughout the United States.

An Internship Coordination Program was set up under the joint sponsorship of the national association and the Citizenship Clearing House. On an experimental basis during its first year, the program is designed to coordinate the activities of the increasingly large number of men and women working in congressional offices on internships from various colleges. The Committee on Comparative Politics of the Social Science Research Council conducted three seminars during the year as the first of a series of "Studies in Political Development."

A meeting of the Executive Committee of the International Political Science Association and a round table dealing with constitutionalism and the political role of the courts was held in Freudenstadt, Germany, Sept. 10–15, 1962.

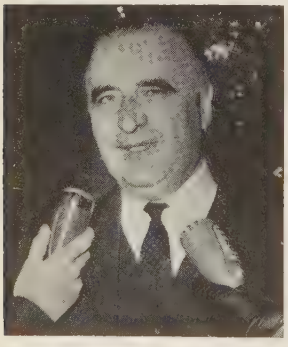
EVRON M. KIRKPATRICK,
Executive Director,
The American Political Science Association.

POLO. See SPORTS, GAMES, AND SHOWS.

POMPIDOU, Georges Jean Raymond

Premier of France: b. Montboudif, Cantal, France, July 5, 1911.

Educated in the humanities, Georges Pompidou became a professor of literature at lycées in Marseilles and Paris, and has published several works on French literature. He became active in the French underground during



Georges Pompidou answers newsmen's questions on April 14 after his appointment as premier of France by President de Gaulle.

AFP FROM PICTORIAL PARADE

World War II, and in 1944 joined Charles de Gaulle's provisional government in Paris, serving as a policy adviser on information and education until the general's withdrawal in 1946. Pompidou remained in the French administration until 1954 when he joined the banking house of Rothschild Frères, later becoming director general, and continuing in finance until 1958 when de Gaulle returned to power as a result of the Algiers revolt. From June 1, 1958, to Jan. 7, 1959, Pompidou was president of the Council of Ministers, and after de Gaulle became president of the Fifth Republic in January 1959, Pompidou was appointed a member of the Constitutional Council.

Pompidou was designated as premier following the resignation of Michel Debré on April 14, 1962, and his cabinet won the approval of the National Assembly on April 27. The government was overthrown by a vote of censure in the Assembly on October 5, but after the Gaullist victory in the general elections, Pompidou was renamed premier on November 27. Only three new members appeared in the new cabinet which he announced on December 6. A long-time admirer of de Gaulle, he is unreservedly committed to the president's policies, and his place in the government removes the last vestige of ideological divergence between the premier and the chief executive. (See also FRANCE.)

POPOVICH, Pavel Romanovich. See biographical sketch under SPACE FLIGHT.

POPULATION STUDIES. See CENSUS DATA, U.S.; POPULATION TRENDS; and the Index entry, *Population Studies.*

POPULATION TRENDS

The population of the world passed the 3-billion mark in 1961 and, at an average rate of increase estimated at 1.8% or 55 million annually, totaled more than 3.1 billion as of mid-1962, according to United Nations population studies. The population growth was most pronounced among the areas of the world in Central America and Southeast Asia, where the annual rate of population increase is 2.7% and 2.6%, respectively. The area of least population growth is northwestern Europe, where the rate of increase is only 0.7%.

Table 1—WORLD POPULATION ESTIMATES
(Estimates are as of midyear of dates shown.)

Region	1950	1960	1961	Annual % increase, 1950–60
	(in millions)			
World	2,518	2,995	3,061	1.8
Africa	209	254	261	2.0
North America	219	265	273	2.1
South America	112	140	148	2.3
Asia[1]	1,389	1,679	1,714	1.9
Europe[2]	395	427	430	0.8
Oceania	13	16.5	16.8	2.4
USSR	181	214	218	1.7

[1] Excluding USSR but including Asiatic Turkey. [2] Excluding USSR but including European Turkey. (Table based on sources from the Statistical Office of the United Nations.)

United Nations statisticians found that birth rates have increased and death rates have decreased in nearly all countries, the only exceptions where the population has declined being East Germany, Ireland, and North Vietnam. It was found that in highly industrialized nations more than half of all deaths are caused by heart disease or cancer, and that in 40 of 47 countries for which relevant statistics are available, accidents result in more deaths than any other single cause. Married persons live longer than single persons in all parts of the world, according to the studies.

The so-called population explosion of recent years is due chiefly to improved standards of medical care, nutrition, and sanitation throughout the world. Countries having the highest rates of population growth are mainly those where birth rates have continued at high levels while death rates have declined because of recently introduced public health measures, as is indicated in Table 2 (on the following page). The accelerated population increase in recent decades has caused concern to many statesmen, scientists, and long-term planners, who fear that the world's population will outstrip the available food supply. (If the present population trends continue, the world's population is estimated to double every 35 years, and is pro-

Table 2—VITAL STATISTICS FOR SELECTED COUNTRIES

(Data are for 1961, unless otherwise indicated. For countries marked with an asterisk (*), data for birth, death, and infant mortality rates are provisional. *Estimated Population*—figures are for mid-1961, as reported by the United Nations. *Birth Rate*—crude rate (number of births per 1,000 persons). *Death Rate*—crude rate (number of deaths, exclusive of stillbirths, per 1,000 persons). *Infant Mortality Rate*—deaths of infants under one year of age per 1,000 live births, excluding stillbirths. *Annual Increase*—average percentage increase of total population. *Life Expectancy*—average expectation of length of life (in years) at birth, based on mortality conditions of period indicated. *Population Per Sq. Km.*—total area, including inland water (1 sq. km. = 0.3861 sq. mi.). Sources: *Statistical Yearbook 1961; Population and Vital Statistics Reports, July, 1962,* Statistical Office of the United Nations.)

Country	Estimated population ('000)	Birth rate	Death rate	Infant mortality rate	Annual increase (%) 1953–60	Life expectancy male	Life expectancy female	Life expectancy period	Population per sq. km. 1960
Africa									
Algeria	11,240	36.4[1]	14.6[1]	113.3[1]	2.3	...			5
Congo (Léopoldville)	14,450	43[4]	20[4]	104[4]	2.2	...			6
Egypt	26,578	48.5[2]	16.1[2]	130.5[2]	2.4	35.7	41.5	(1936–38)	26[3]
Ghana	6,943	55.8[2]	25.6[2]	113.1[2]	6.2	...			28
Malagasy Republic*	5,577	32.8[2]	12.2[2]	67.8[2]	2.6	...			9
Morocco	11,925	31.1[5]	12.0[5]	71.1[5]	3.0	...			26
Sudan	12,109	51.7[6]	18.5[6]	93.6[6]	...	...			5
Tunisia	4,198[2]	43.7[2]	10.1[2]	109.5[2]	1.5	...			33
Asia									
Cambodia	4,952[2]	41.4[1]	19.7[1]	...	...	44.2	43.3	(1958–59)	29
Ceylon*	10,167	37.0[1]	9.1[1]	57.5[1]	2.7	60.3	59.4	(1954)	151
China	716,000	34[7]	11[7]	...	2.0	...			68[7]
Hong Kong	3,178	34.2	5.9	37.7	4.1	...			2,891
India	440,316	21.9[1]	9.2[1]	86.7[1]	1.9	32.5	31.7	(1941–50)	136
Indonesia	96,385	29.5[1]	11.9[1]	84.1[1]	2.2	...			62
Iraq	7,085[2]	11.8[8]	4.1[8]	39.0[8]	2.9	...			16
Israel*	2,183	24.9	5.9	29.8	3.6	69.5	72.5	(1958)	102
Japan*	94,053	16.9	7.4	28.6	1.0	65.0	69.6	(1958)	252
Jordan*	1,690	40.3	7.0	60.4	3.2	...			18
Korea, South	25,378	36.6[9]	21.2[9]	...	2.0	47.2[10]	50.6[10]	(1938)	250
Malaya, Federation of	7,137	40.9[2]	9.5[2]	68.9[2]	3.0	...			53
Outer Mongolia	937[2]	39.2[8]	11.2[8]	...	2.2	...			1
Philippines	29,207	29.2[2]	7.7[2]	73.1[8]	3.8	48.8	53.4	(1946–49)	92
Singapore*	1,687	35.5	6.0	32.3	4.6	...			2,813
Syria	4,930	25.3	4.9	53.6	3.5	...			25
Taiwan	10,971	38.3	6.7	30.5	3.6	41.1	45.7	(1936–41)	295
Thailand	27,181	39.4[1]	9.4[1]	47.1[1]	4.0	48.7	51.9	(1947–48)	50
Vietnam, South	14,520	31.0[1]	6.6[1]	34.4[1]	5.4	...			83
North America									
Canada*	18,269	26.0	7.7	27.3	2.6	67.6	72.9	(1955–57)	2
Costa Rica*	1,225	55.4	7.9	80.3	4.1	54.7	57.1	(1949–51)	23
Dominican Republic	3,098	39.8[1]	10.5[1]	113.2	3.5	...			61
El Salvador*	2,501	49.6	11.4	69.9	3.5	49.9	52.4	(1949–51)	122
Guatemala	3,868	49.5[2]	17.5[2]	91.9[2]	3.0	43.8	43.5	(1949–51)	35
Honduras	1,892	44.6	9.5	52.0[2]	2.5	...			17
Mexico*	26,091	44.9	10.6	70.2	3.2	37.9	39.8	(1940)	18
Nicaragua	1,502[2]	43.2	8.6	70.2	3.4	...			10
Panama*	1,084	42.4	8.6	57.1	2.7	60.4	63.1	(1952–54)	14
Puerto Rico*	2,406	31.0	6.7	41.3	1.1	45.1	46.9	(1939–41)	265
United States*	183,650	23.4	9.3	25.2	1.7	66.5	73.0	(1959)	19
South America									
Argentina*	21,078	22.3[2]	8.1[2]	60.7[2]	1.2	56.9	61.4	(1947)	7
Bolivia*	3,509	26.5	8.5	90.7[11]	1.4	49.7	49.7	(1949–51)	3
Brazil	73,088	43[12]	20.6[12]	170[12]	2.4	49.8[13]	56.0[13]	(1949–51)	8
Chile*	7,802	35.4[2]	11.9[2]	127.9[2]	1.8	49.8	53.9	(1952)	10
Colombia*	14,443	42.5	12.0	99.8[2]	2.2	...			12
Ecuador	4,455	45.9[8]	14.3[1]	105.8[8]	3.2	50.4[14]	53.7[14]	(1949–51)	16
Peru*	10,365	32.5[2]	11.3[2]	103.4[2]	2.7	46.1[15]		(1940–43)	8
Uruguay*	2,846[2]	21.3[2]	8.1[2]	49.1[2]	1.6	...			15
Venezuela*	7,590	49.6[2]	8.0[2]	45.1[2]	4.3	...			8
Europe and USSR									
Austria*	7,081	18.5	12.0	32.9	0.2	61.9	67.0	(1949–51)	84
Belgium*	9,229	17.0	11.7	26.2	0.6	62.0	67.0	(1946–49)	300
Bulgaria	7,906	17.8[2]	8.1[2]	45.1[2]	1.0	...			71
Czechoslovakia*	13,776	15.8	9.2	22.7	0.9	66.7	71.6	(1956)	107
Denmark*	4,617	16.6	9.5	22.5	0.7	66.9	72.6	(1951–55)	106
Finland*	4,467	18.4	9.0	19.8	1.0	63.4	69.8	(1951–55)	13
France*	46,219	18.3	10.0	25.8	0.9	65.0	71.2	(1952–56)	83
Germany, East*	16,120	17.4	12.8	33.3	−0.7	66.3	70.0	(1956–57)	150
Germany, West	54,399	18.3	11.0	31.7	1.2	64.6	68.5	(1949–51)	215
Greece*	8,387	17.9	7.6	40.1	0.9	...			64
Hungary*	10,028	14.0	9.6	43.9	0.6	65.0	68.9	(1955)	107
Iceland*	179	27.4	6.6	13.3	2.2	66 1	70.3	(1941–50)	2
Ireland, Republic of	2,815	21.3	12.3	30.5	−0.6	64.5	67.1	(1950–52)	40
Italy*	49,455	18.8	9.4	40.1	0.5	65.8	70.0	(1954–57)	164
Luxembourg	316	16.0[2]	11.8[2]	31.5[2]	0.7	61.7	65.8	(1946–48)	121
Netherlands*	11,637	21.2	7.6	15.4	1.3	71.0	73.9	(1953–55)	342
Norway*	3,611	17.5	9.1	18.7	0.9	71.1	74.7	(1951–55)	11
Poland*	30,133	20.7	7.6	54.9	1.8	62.8	68.1	(1958–59)	95
Portugal*	9,146	23.6	10.7	88.5	0.5	59.8	65.0	(1957–58)	97
Rumania*	18,567	17.5	8.7	71.0	1.3	...			77
Spain*	30,559	21.3	8.6	46.8	0.8	58.8	63.5	(1950)	60
Sweden*	7,542	13.9	9.8	15.5	0.6	70.9	74.4	(1956)	17
Switzerland*	5,470	18.1	9.3	20.8	1.3	66.4	70.9	(1948–53)	130
USSR	218,000	24.9[2]	7.1[2]	35[2]	...	63	69	(1955–56)	10
United Kingdom*	52,925	17.8	12.0	22.1	0.5	68.0[16]	73.7[16]	(1958)	215
Yugoslavia*	18,607	22.6	9.0	82.2	1.1	56.9	59.3	(1952–54)	72
Oceania									
Australia	10,604	22.8	8.5	19.5	2.2	67.1	72.8	(1953–55)	1
New Zealand	2,463	27.1	9.0	22.8	2.1	68.3	72.4	(1950–52)	9

[1] 1959. [2] 1960. [3] 745 in inhabited and cultivated area. [4] 1955–57 estimate for indigenous population, based on sample survey. [5] 1955 estimate for northern part of former Spanish Protectorate; excludes infant deaths within 24 hours of birth. [6] 1956 estimate based on sample census. [7] 1957. [8] 1958. [9] 1955. [10] For what is now North and South Korea. [11] 1954. [12] Estimate based on 1940 and 1950 census. [13] For federal district only. [14] For Quito. [15] Both sexes, for Lima. [16] England and Wales.

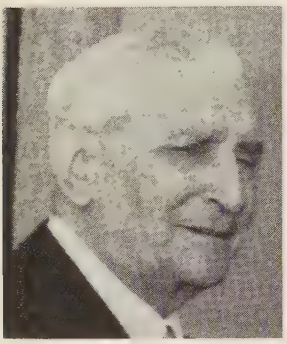
jected at 3.8 billion in the year 1975 and 6.9 billion in the year 2000.)

(See CENSUS DATA, U.S.; FOOD SUPPLY.)

PORTS AND HARBORS. See Index entry.

PORTUGAL

Portugal is a corporate republic on the Atlantic coast of the Iberian Peninsula in southwestern Europe. Including the Azores (888 square miles) and Madeira (305 square miles), metropolitan Portugal has an area of 35,598 square miles and a total population of 9,190,000 (1961 est.). The island population (1960 census): Azores, 336,933; Madeira, 282,678. Principal cities and populations (1960 est.): Lisbon, the capital, 818,382, and Oporto, 310,474. Portuguese is the official language.



Premier António Salazar of Portugal faced increasing opposition to his regime and to Portuguese colonial policies during 1962.

WIDE WORLD

Government.—Under the 1933 constitution, the government consists of a president (Américo Deus Rodrígues Tomás, elected June 8, 1958); a 130-member National Assembly, elected by direct suffrage for a four-year term; and an appointed 185-member Corporative Chamber, representing administrative, economic, and cultural corporations. The government is under the personal control of Premier António de Oliveira Salazar (assumed office July 5, 1932), who is assisted by a 14-member cabinet and a State Council. Premier Salazar is the leader of the only legal party, the National Union, which in the election of Nov. 12, 1961, won all seats in the National Assembly.

Education and Religion.—Number of schools (with enrollments), 1959–60: 18,743 primary (908,990); 344 secondary (194,910); Technical University at Lisbon (3,077); special (1,322); 3 universities (14,973). An estimated 80% of the population over 7 years of age is literate. Principal religion: Roman Catholicism.

Finance.—Government revenue, 1961 est.: 11,787 million escudos (11,404 million in 1960); expenditures, 11,780 million (11,337 million). The escudo fluctuated between 28.73 and 28.83 to the U.S. dollar during the first seven months of 1962. National debt: 13,192 billion escudos at the end of 1960. Gold and foreign exchange holdings: $743 million as of Aug. 1, 1962 (up $92 million from September 1961).

Transportation and Communications.—Transport networks (miles, 1960): railways, 2,235; main roads, 17,178. Merchant marine tonnage (January 1961): 570,583. Airlines carried 113,854 passengers in 1960. Motor vehicles: 247,065 (1960), including 25,421 motorcycles and 8,782 tractors; telephones, 394,824 (1960); radio receivers, 848,000 (1960); television sets, 90,000 (1962).

Economic Indicators.—Gross national product: $2.1 billion in 1961. Index of industrial production (1953 = 100): 182 in 1961 (185 in May 1961). Index of agricultural production (1952–57 = 100): 94 in 1959–60. Cost-of-living index (1958 = 100): 105 on July 1, 1962 (101 on July 1, 1961).

Manufactures and Minerals.—Chief industrial products (metric tons, 1961): cotton fabrics, 36,360 (34,600 in 1960); cotton yarns, 56,400 (51,400); wool yarn, 4,800 (4,920); cement, 1,248,000 (1,202,000); coal, 470,000 (434,000); iron ore, 242,400 (228,000); lignite, 158,400 (156,000); electric power, 302 million kw.-hr. (270 million).

Agriculture and Fisheries.—Chief crops (metric tons, 1961–62 est.): wheat, 404,000 (492,063 in 1960–61); maize, 539,000 (466,423); rye, 98,000 (138,404); rice, 179,000 (151,156); potatoes, 1,079,000 (1,041,315); wine grapes, 675,000 (1,146,000); olive oil, 91,000 (84,000). Other products (metric tons, 1960): cork, 179,210 (185,022 in 1959); resin, 76,250 (68,424); turpentine, 8,765 (8,829). The sardine catch totaled 139,304 metric tons in 1960 (121,394 in 1959).

Foreign Trade.—Total exports, 1961: 9,372 million escudos (9,407 million in 1960); imports, 18,857 million (15,681 million). Principal exports (in million escudos, 1961): cork, 1,384; fish, 1,268; wine, 767. Principal imports: iron and steel, raw cotton, motor vehicles, crude oil. Chief customers (with total Portuguese exports received, 1960, in million escudos): Great Britain (1,284); Angola (1,237); United States (1,049); West Germany (857); Mozambique (844). Principal suppliers (with total imports provided, 1960, in million escudos): West Germany (2,677); Great Britain (1,868); France (1,306); United States (1,152); Mozambique (1,156); Belgium (935); Angola (850).

Events, 1962.—The Portuguese government was beset by disorders within the country as well as revolts in the overseas territories as the new year began. On January 1, a band of rebels stormed a military barracks in Beja. Lt. Col. Jaime da Fonseca, undersecretary of state for the army, was fatally wounded in the attack. Forty rebels, including João Mariá Paula Varela Gómes, suspended army captain and left-wing political leader, were captured in the abortive coup. The army charged the Communist Party with having inspired the attack on Beja. The outbreak occurred as rumors circulated that Capt. Henrique Galvão, hijacker of the Portuguese liner *Santa Maria* in 1961, was on his way to Portugal from exile in Brazil (Galvão and 25 confederates were sentenced in absentia on February 7–11 to prison terms of from 15 to 22 years).

On January 31, in Oporto, 18 persons were injured when police fired on a crowd demonstrating against the Salazar regime. On March 27, the minister of education was forced to approve a rally of Lisbon University students three days after an earlier demonstration had been dispersed. The students declared a day of mourning and boycotted classes before Minister Manuel López de Almeida relented under pressure from the unanimous support given the students by the rector, Dr. Marcelo Caetano, and the 200 members of the university Senate. The opposition to the rally was indicative evidence of official hypersensitivity to Communist subversion.

Although the government prohibited May Day demonstrations, there were a number of casualties in clashes between the police and demonstrators in Lisbon and Oporto. The government charged the demonstrations were inspired by Communists as part of a plan to create widespread disorders. A total of 143 persons were reported arrested in the two cities. There was more sporadic shooting a week later in Lisbon. The appearance of clandestine leaflets appeared to substantiate charges of Communist responsibility for the disturbance. Another demonstration occurred at Lisbon University on July 1, to force the approval of free student associations by the premier.

These disorders appeared to be part of a resolute campaign of Portuguese Communists to assume the leadership of the political groups opposed to the Salazar regime. Reports circulated that Portugal was a principal Communist political target. Although Socialists and Democratic Christians had previously rejected Communist leadership, the overseas difficulties in Angola, the loss of Goa, and increasing criticism of Portugal in the United Nations caused the Communists to intensify their activity, both to create martyrs and to harden public opinion against Salazar by violence and sabotage. Moscow radio and other Soviet-bloc transmitters also increased their propaganda broadcasts to Portugal.

Incensed by the failure of the United States to support Portugal in the United Nations against India and the critics of her African policies, Premier Salazar began openly to attack the United States. On May 23 he assailed both the United States and the USSR as responsible for the trou-

bles besetting the Portuguese empire. When U.S. Secretary of State Dean Rusk arrived in Lisbon on June 27, he was courteously but coolly received. He assured Lisbon of United States friendship, and negotiations to extend American military rights to bases in the Azores Islands for five more years were resumed. However, the Portuguese were slow in agreeing to the extension as they bargained for United States support and understanding in the United Nations.

Despite the nation's internal and overseas problems, Portuguese economic expansion continued at the same rate in 1961 as in 1960, and authorities planned larger expenditures in 1962. Heavy military spending in Angola, however, had placed a severe strain on the economy, while the loss of the Indian enclaves (see INDIA) deprived Portugal of valuable iron deposits. As a result, the government was forced in 1962 to levy additional taxes on luxury items, gasoline, property sales, and higher incomes.

In May, Minister of State Dr. José Gonçalo Corrêa de Oliveira announced that Portugal would apply for admission to the European Economic Community (EEC), although membership for the overseas provinces was considered impracticable until such time as their economies had become more fully developed.

To finance the second six-year development plan, Portugal resorted to external loans totaling $157 million from the Export-Import Bank of Washington and other American, West German, and French banks. An additional $55 million loan was extended by the Export-Import Bank to purchase United States materials, equipment, and services for the construction of a $75 million bridge across the Tagus River at Lisbon (see also BRIDGES). A further stimulus to economic expansion was created by the formation of a consortium of ten Spanish and Portuguese bankers, with the tacit approval of the governing regimes in the two countries. With approval of Portugal's application for membership in the EEC, this association appeared to mark a trend toward a more liberal political and economic policy.

In October, the government began to consider granting greater administrative autonomy to Portugal's overseas territories. On December 3, however, a major reshuffle of the Portuguese cabinet was announced by Premier Salazar. The replacement by a naval officer of Professor Adriano José Alves Moreira, minister of overseas territories since April 1961, resulted primarily from his long-smoldering conflict with the armed forces over Angola. A slowdown or reversal of Moreira's policy of cautious reforms and especially limited autonomy in the overseas territories was widely predicted, although the Portuguese foreign minister declared on December 5 that Portugal did "not intend to change in any way its policy with regard to our overseas territories." (See also PORTUGUESE TERRITORIES.)

The cabinet reorganization apparently had the effect of strengthening the role of the military in the Portuguese government, as well as tightening the premier's control. Salazar's relinquishment of the defense ministry reflected the calmer atmosphere prevailing in Angola. Some liberal trends were apparently not reversed. New appointees to the ministry of economics were described as favoring Portuguese collaboration with the EEC, and the appointment of a liberal who had opposed repression of the student spring riots was regarded as an effort to establish better relations with student groups.

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PORTUGUESE TERRITORIES

The overseas territories of Portugal total approximately 806,944 square miles in area (more than 22 times that of metropolitan Portugal) and have a total population (1960) of 12,943,657 (45% more than Portugal). Constitutionally, the territories are overseas provinces of Portugal, with representation in the National Assembly in Lisbon. The territories are under the control of the Ministry of Overseas Provinces and are administered by appointed governors.

The territorial economies are closely integrated with that of Portugal, and together they account for 29% of all Portuguese exports and 14% of all imports. In an effort to develop the territorial economies, Portugal has allocated $300 million as part of its second six-year development plan (1959–64) for new iron ore, manganese, aluminum, ceramic, rubber, sugar, soap, tobacco, and textile industries.

Events, 1962.—Premier Salazar's threat, on January 3, to withdraw Portugal from the United Nations was but one indication of Portugal's determination to defend its overseas territories. On January 30, the UN General Assembly warned Portugal in a resolution, passed 99–2, to cease "repressive measures against the people of Angola." Sponsored by 45 Asian and African nations and opposed only by Spain and South Africa, this resolution was denounced by Portuguese authorities as unwarranted interference in a domestic matter. The UN Committee on Territories under Portuguese Administration, however, continued its investigation of conditions in Angola and Mozambique and, on August 8, recommended that the UN General Assembly request immediate independence for all Portuguese overseas territories.

Confronted with this international censure, the Portuguese began, on August 15, to implement a law of Nov. 8, 1961, which aimed at the full economic integration of the overseas provinces with metropolitan Portugal by Jan. 1, 1972. Dr. Adrian Moreira, minister of overseas provinces, had already announced, on April 26, the promulgation of a new rural labor code for Portuguese territories, effective October 1, which aimed at the elimination of distinctions between cultural and ethnic groups and guaranteed equal rights to women.

Although the Portuguese reported the surrender of 80,000 Angolan rebels between Oct. 31, 1961, and Jan. 5, 1962, 45,000 of whom had returned from asylum in the Republic of the Congo (Léopoldville), sporadic fighting was still reported in the northern areas of Angola, and Angolan refugees in large numbers continued to flee to the Congo. By February 2, the Union of Angolan Peoples (UPA), headed by Holden Roberto, had established a rudimentary government near the Congolese border and continued to import foreign weapons and transport them to rebel villages.

Three months later, on April 5, Roberto announced from the Congo the formation of an African government-in-exile for Angola, under his leadership as premier and organized as the result of the fusion of the UPA and its bitter rival, the Angolan Democratic Party, representative of tribal groups in northwest Angola. By May 14 there were 12 Angolan parties in the Congo. Some advocated cooperation with the Portuguese, some recommended passive resistance, and others represented tribal factions. Only two commanded any mass support in Angola and among the refugees in the Congo. One was the UPA led by Roberto; the other was Mario de Andrade's Popular Movement for the Liberation of Angola (MPLA). An-

drade insisted that his party was non-Communist, but many of his followers were being trained in eastern Europe and the USSR. Roberto asserted that the fight for independence should be waged solely with African support. His followers, largely Negroes, were deeply suspicious of the mulatto intellectuals dominating the MPLA. An open feud broke out between the two groups.

New attacks on Portuguese forces by Angolan rebel guerrillas were reported on May 18. Two weeks later (on June 1), 24 young Angolan rebels returned after eight months of guerrilla training by Algerian nationalists in Tunisia. Roberto announced that these rebels would be used to train 200 other Angolans in guerrilla tactics. The first concrete evidence of Congolese support of the Angolan exiles was given on August 20, when Roberto announced that his party, now the National Front for the Liberation of Angola (NFLA), had established a military training base for Angolan rebels in a camp near Thysville "generously donated" by the central government of the Congo.

On August 10, Dr. Agostinho Neto, Angolan nationalist leader long imprisoned in the Cape Verde Islands, appeared in public in Léopoldville following his escape from house arrest in Portugal. Regarded as the dean of nationalist leaders, Neto had been named honorary president of the MPLA while in prison. In an effort to bring an end to the open feud between the MPLA and NFLA, Neto called for the formation of one political body and a single military command representing all factions.

A United Nations subcommittee report, released on November 20, again criticized Portuguese policy in Angola. Portugal sharply attacked the report, accusing the investigating committee of bias, and denouncing several African states for fomenting rebellion in the territory. By mid-December, the Portuguese were reported to have about 44,000 troops in Angola and had undertaken to mop up remaining resistance.

On December 18 the UN General Assembly voted, 57–14, to condemn Portugal's "colonial war" against Angola and to request the Security Council to take appropriate measures, including sanctions, to force Portugal to halt "severe repressive measures" and to grant independence to the Angolan people. The resolution, which also called for an arms embargo, was opposed by Portugal's NATO allies.

The Portuguese also took precautionary measures against trouble in other provinces. In mid-March, four leaders of a Guinean nationalist organization were arrested for possession of arms, nationalist documents, and plastic bombs. The arrests marked rising nationalist feeling in Portuguese Guinea, resulting partially from the independence of neighboring Senegal and French Guinea. A week later, 50 more Guineans were arrested. Portuguese authorities declared, however, that there were no more than 900–2,500 Guinean nationalists, and that the 5,000 Portuguese troops were maintaining firm control.

The repatriation of 4,332 Portuguese from the former Indian enclaves of Goa, Diu, and Damão began on May 5, and by May 22, 2,000 interned Portuguese soldiers and sailors had returned to Lisbon as bitter reminders of India's seizure of the enclaves on Dec. 18–19, 1961. On June 25, Portugal took retaliatory measures against India by cancelling residence permits granted to Indian subjects in Portuguese territories and ordering their assets liquidated.

Fearing that Indonesia might annex Timor, in the Indonesian half of which there was a large military force, Portugal began in August to bolster its garrison in Timor by sending 1,000 troops as "replacements." In Macão the Portuguese were confronted by a flood of refugees from Communist China. In the six months after Sept. 1, 1961, it was estimated that 42,475 immigrants had arrived in Macão, creating a serious burden for the small territory. Six weeks later the number of refugees had increased to 80,000 and was rising at the rate of 300 a day.

Territories in Africa. *Mozambique* (*Portuguese East Africa*).—A territory extending some 1,500 miles along the east coast of Africa. Area, 302,328 sq. mi.; pop., 6,592,994 (1960). Europeans: 65,798 (1955); mixed races, 29,873; Indians, 15,235; *assimilados* (natives granted Portuguese citizenship), 4,554. Lourenço Marques (pop., 1955 est., 105,000) is the capital and chief port.

The governor general (Rear Adm. Manuel María Sarmiento Rodrígues) is assisted by an advisory Government Council and a 24-member Legislative Council. In the 1962 budget, revenue and expenditures were estimated to balance at 3,999.6 million escudos; in 1961 there was a budgetary surplus of 3 million escudos. Public debt in 1960: 1,438.4 million escudos. Number of schools (with enrollments), 1959–60: 3,297 primary (418,519); 8 secondary (2,550); 75 technical (10,400); 6 normal (593).

Trade, 1960 (in million escudos): exports, 2,099.2; imports, 3,646.2. Chief products (with 1960 exports, in tons): sugar (112,249); maize (466,000); cotton (40,753); sisal (25,903); cashew nuts (55,848); gold (9.2 kg. in 1959); beryl (1,414 tons in 1959); bauxite (4,459). Electrical production: 189 million kw.-hr. (1959). Exports in 1959 went principally to Portugal (27.5%), India (17.4%), and Great Britain (12%).

Transportation network (1960): railways, 2,000 miles; roads, 23,459 miles (main roads, 2,548 miles). Motor vehicles (1959): 29,927 passenger cars; 8,707 lorries and buses; 2,581 motor cycles. Telephones: 12,426 (1960); radios, 41,000 (1960).

Angola (*Portuguese West Africa*).—A territory on the west coast of Africa, south of the Republic of the Congo. Area, 481,350 sq. mi.; pop., 4,832,577 (1960). The province includes Cabinda (area, 3,000 sq. mi.; pop., 55,000), an enclave in the Congo separated by the Congo River estuary from Angola proper. Europeans: 109,568 (1955). São Paulo de Luanda (pop., 1955 est., 189,500) is the capital. Other important towns: Lobito (31,630); Nova Lisboa (37,381); and Benguela (15,399).

The governor general (Gen. Venancio Deslandes) is aided by an advisory Government Council and a Legislative Council of 18 elected and 8 appointed members. Revenue (1960): 2,730.8 million escudos; expenditures, 2,633 million escudos. Development expenditure in 1962: 725 million escudos (497 million in 1961). Public debt: 1,174 million escudos at the end of 1959. Number of schools (with enrollments), 1959–60: 1,672 primary (104,027); 37 secondary (6,462); 48 professional (5,382); 2 normal (326); 8 mission (581). An estimated 99% of the indigenous population was illiterate in 1950.

Trade, 1960 (in million escudos): exports, 3,587.4; imports, 3,767.9. Agricultural products (with 1959 exports in metric tons): coffee (88,999); maize (149,184); sugar (29,872); palm oil (8,747); palm kernels (7,823); manioc (35,702); beans (10,806); sisal (54,276); wood (54,580). Mineral production, 1960: diamonds (933,646 carats); iron ore (658,954 metric tons); copper (17,323); manganese (23,340). Fish catch: 267,170 metric tons (1959). Imports: textiles, machinery, coal, and foodstuffs. Manufactures: fish products, cement, and vegetable fibers. Electrical production: 123.1 million kw.-hr. (1959).

Railways: 1,932 miles; roads, 22,059 miles; passenger cars, 29,700 (1960); commercial vehicles, 12,000 (1960); telephones, 7,918 (1960); radios, 44,000 (1959). The province is served by DETA and three other airlines, with the principal airport at Luanda.

Portuguese Guinea.—A territory on the west coast of Africa, bordering on Senegal and Guinea, and including the Bijagós Islands. Area: 13,948 sq. mi.; pop., 570,000 (1960 est.). A large portion of the native population is Muslim. Bissau (1950 pop., 18,309) is the capital and chief port. Revenue (1960): 126.2 million escudos; expenditures, 141 million escudos. Number of schools (with enrollments), 1957–58: 164 primary (11,142); 1 secondary (243); 21 technical (861). Trade (in million escudos): imports, 243.3 (1960 est.); exports, 199.6 (1959 est.). Chief products: rice, palm oil, groundnuts, coconuts, timber, wax, seeds, and hides. Roads: 2,042 miles (1958); radios, 1,400 (1959).

Cape Verde Islands.—The territory consists of 10 principal islands and 5 islets in the Atlantic Ocean about 370 miles west of Dakar. Area, 1,557 sq. mi.; pop., 201,549 (1960). The majority of the population is of mixed European-African descent. Capital: Praia (pop., 9,980). Revenue and expenditures balanced in 1961 at 101.5 million escudos. Public debt: 332 million escudos (1960). Number of schools (with enrollments), 1959–60: 128 primary (8,416); 2 secondary (1,165); 5 technical (351); 1 missionary (33). Trade, 1960 (in million escudos): exports, 306.4; imports, 348.7. Chief products: coffee (1960

exports, 42 metric tons), salt, tuna, bananas, and nuts. Electrical production: 5.3 million kw.-hr. (1959). Roads: 420 miles (1960); radios, 1,600 (1959). The island of São Vicente is a fueling station for ships, and an airport at Ilha do Sal serves transatlantic traffic.

São Tomé and Principé.—Two islands 125 miles off the African coast in the Gulf of Guinea. Area, 372 sq. mi.; pop., 60,159 (1960). Europeans: 1,152 (1950). São Tomé (pop., 7,817) is the capital. Revenue (1960): 94.7 million escudos; expenditures, 86.7 million escudos. Number of schools (with enrollments), 1959–60: 21 primary (2,864); 1 secondary (171); 1 technical (70). Electrical production: 2.3 million kw.-hr. (1959). Trade, 1960 (in million escudos): exports, 211.8; imports, 135.5. Chief exports: copra, coconuts, coffee, cacao, and palm oil. Roads: 172.7 miles (1959); telephones, 399 (1959); radios, 600 (1959); passenger cars, 600 (1959); commercial vehicles, 200 (1959).

Territories in Asia. *Macão.*—The territory (area, 6 sq. mi.; 1960 pop., 169,299) includes the city of Macao, situated on Chungshan Island in the delta of the Canton River, 40 miles west of Hong Kong, and the two adjacent islands of Taipa (area, 2 sq. mi.; pop., 6,148) and Colôane (area, 2 sq. mi.; pop., 2,764). The Chinese majority (98%) has been rapidly increased by refugees from the mainland. Revenue and expenditures balanced in 1960 at 137.8 million escudos. Number of schools (with enrollments), 1959–60: 120 primary (31,925); 30 secondary (5,916); 17 technical (1,393); 1 seminary (69). Macão is an entrepôt for trade with China, a famous resort, and a gambling and smuggling center. Trade, 1960 (in million escudos): exports, 56.3; imports, 158.7. Electrical production: 14.2 million kw.-hr. (1959). Fishing is the chief industry (6,636 metric tons in 1959). Telephones: 2,363 (1960); radios, 5,000 (1959).

Portuguese Timor.—Lying between the Celebes Islands and Australia, the territory (area, 7,383 sq. mi.; 1960 pop., 517,079) consists of the eastern part of the island of Timor; the enclave of Oe-Cusse, or Ambeno (area, 310 sq. mi.; pop., 16,281), in the Indonesian part of Timor; and the islands of Atauro (area, 72 sq. mi.; pop., 4,059) and Jaco (area, 5 sq. mi., uninhabited). Dili (pop., 7,000) is the capital and chief port. Revenues and expenditures balanced in 1960 at 103.5 million escudos. Number of schools (with enrollments), 1958–59: 111 primary (5,893); 3 secondary (290); 1 technical (146). Trade, 1960 (in million escudos): exports, 45.6; imports, 57.3. Chief exports: coffee, sandal root, copra, manioc, maize, rubber, and wax. Roads: 1,251 miles (1959); telephones, 494 (1959); wireless stations, 4.

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POST OFFICE DEPARTMENT

The Post Office Department in 1962 continued to handle record volumes of mail. It instituted new transportation and personnel programs and continued to improve its mail-handling techniques.

Employee's organizations, with full rights of negotiation and contractual agreements (except in matters set by Congress) were chosen in elections on June 15. A merit promotion program providing equal promotional opportunities for all employees, with no restrictions on age, sex, or race, was instituted; the position of senior carrier was created for more than 10,000 mail carriers in urban areas. Transportation of mail by highway from Seattle, Wash., through Canada to Fairbanks, Alaska, was inaugurated in September 1961 and extended to Anchorage, Alaska, in April 1962.

Congress on Oct. 5, 1962, approved new postal rates, which were to become effective on Jan. 7, 1963. Among other changes, first-class and air mail postage was to be increased by 1 cent an ounce and post cards by 1 cent apiece.

Net revenue of the Post Office Department in the 1962 fiscal year was $3,557 million, an increase of 3.9% over the preceding year; appropriation obligations incurred for the year were $4,332 million, an increase of 1.9% over the fiscal year 1961. The postal revenue gap on an obligation basis for the year was $775 million, after a reimbursement of $63 million from the U.S. Treasury for certain public services. The volume of mail processed by the department during the fiscal year 1962 increased (in terms of originating mail) to 66.5 billion pieces, compared with 64.9 billion in the fiscal year 1961.

At the end of the fiscal year 1962, the department had a total of 588,477 employees, including 34,639 postmasters, 123,941 regular city carriers, 31,201 regular rural carriers, 185,068 regular postal clerks and mail handlers, and 153,781 substitute employees. On June 30, 1962, there were 34,797 post offices and 10,156 classified and contract stations and branches, and rural stations.

The Postal Savings System had 1,271,858 depositors at the close of the fiscal year 1962, to whom was credited $583 million on outstanding postal savings certificates, exclusive of accrued interest. Depository locations at the end of the year numbered 5,205.

(See also PHILATELY.)

JAMES F. KELLEHER,
Special Assistant to the Postmaster General.

POTASH. See MINERAL PRODUCTION.
POTATOES. See VEGETABLES.
POULTRY. See Index entry.
POWER, Electric. See ELECTRICAL INDUSTRIES; PUBLIC UTILITIES.

PRESBYTERIAN CHURCHES[1]

The 174th General Assembly of The United Presbyterian Church in the United States of America met at Denver, Colo., on May 17, 1962. The Rev. Marshal L. Scott, dean of the Presbyterian Institute of Industrial Relations, Chicago, Ill., was elected moderator. Ruling Elder Edward C. Logelin was appointed vice moderator.

The special committee authorized in 1961 to invite other communions to join in exploring the establishment of a united catholic, reformed, and evangelical church reported meeting with representatives of the Protestant Episcopal and Methodist churches and the United Church of Christ. This group, now known as the Consultation on Church Union, will continue conferences, inviting other communions to join in exploratory consultations.

An exchange of apologies and forgiveness took place between the United Presbyterian Church and the Cumberland Presbyterian Church over the division that occurred in 1810 and the partially successful reunion in 1907. There were no plans for an immediate reunion.

PRESBYTERIAN CHURCH STATISTICS

Church	Ministers	Churches	Members
Associate Pres. Ch. Synod	5	6	650
Associate Ref. Pres. Ch. Gen. Synod	120	145	26,765
Bible Presbyterian Ch.	164	69	5,956
Cumberland Presbyterian Ch.	748	971	83,642
Cumberland Presbyterian Ch. in the U.S. and Africa	125	121	30,000
Orthodox Presbyterian Ch.	138	92	11,175
Presbyterian Ch. in the U.S.	3,850	3,998	913,582
Reformed Pres. Ch. in North America, Gen. Synod	24	18	2,073
Reformed Pres. Ch. of North America Synod	100	71	6,118
United Presbyterian Ch. in the U.S.A.	12,248	9,222	3,249,007

A slight decrease in total communicant membership for 1961 was due to the release of the Synod of the Punjab in Pakistan, which became an independent synod. Total contributions were

[1] In 1962, distinctively Presbyterian churches in the United States included The United Presbyterian Church in the United States of America; Presbyterian Church in the United States; Reformed Presbyterian Church in North America, General Synod; Reformed Presbyterian Church of North America Synod; Associate Presbyterian Church Synod; Associate Reformed Presbyterian Church General Synod; Cumberland Presbyterian Church; Cumberland Presbyterian Church in the United States and Africa; Orthodox Presbyterian Church; and Bible Presbyterian Church.

$285,380,476, of which $52,496,479 was for benevolences.

The 102nd General Assembly of the Presbyterian Church in the United States was held in Winston-Salem, N.C., May 10–15, 1962. Ruling Elder Edward D. Grant of Baton Rouge, La., former executive secretary of the Board of Christian Education, was elected its moderator. This church serves primarily the southeastern and southwestern areas of the United States. Its total contributions amounted to $96,637,354, of which $22,519,819 was spent for benevolences.

SAMUEL W. SHANE,
Associate Stated Clerk, General Assembly, The United Presbyterian Church in the U.S.A.

PRESS, Freedom of the. See the Index entry, *Freedom of Information, Press, and Speech.*
PRIBILOF ISLANDS. See Index entry.
PRICE SUPPORTS. See Index entry, *Subsidies.*
PRICES. See COST OF LIVING and the Index entry, *Prices.*

PRINCE EDWARD ISLAND

Prince Edward Island, the smallest Canadian province, is situated in the Gulf of St. Lawrence, north of Nova Scotia and New Brunswick. It has an area of 2,184 square miles and a population of 106,000 (June 1, 1962 est.). Principal communities, with their 1961 populations, are: Charlottetown, the capital, 17,956; Summerside, 8,387; Parkdale, 1,735; Souris, 1,479; and Montague, 1,100.

Government.—The crown is represented by a lieutenant-governor (F. Walter Hyndman in 1962), appointed by the government of Canada. An Executive Council of nine members, headed by Premier Walter R. Shaw, is responsible to the Legislative Assembly of 30 members (15 councilors elected by property franchise and 15 assemblymen elected by popular franchise). The judiciary consists of a Supreme Court of four members (Thane A. Campbell, chief justice), and county courts for each of the three counties. The province has four members in the federal House of Commons and four in the Senate.

Education.—School enrollment, 1960–61: elementary, 19,784; high school, 5,229. University enrollment, 1961–62: 683. Total 1961–62 provincial expenditure on education: $2,992,621.

Finance.—The gross funded debt of the province in 1961–62 was $29,960,000, less sinking funds of $4,924,544, leaving a net funded debt of $25,035,457. The net unfunded debt was $8,395,870.

Public Welfare.—For the fiscal year ending March 31, 1962, the federal government paid out $3,205,989 in family allowances on behalf of 39,593 children in 14,099 families, and $5,158,114 in old-age security pensions to 7,562 pensioners. The provincial government, in the year ending March 31, 1962, paid out $500,244 in old-age assistance payments to 897 recipients, $53,886 in pensions to 80 blind persons, and $521,757 in assistance to 780 disabled persons. In the same period, mothers allowances and assistance for 643 children under 18 years of age totaled $131,300.

Transportation and Communications.—As of Nov. 30, 1962, there were 3,211 miles of provincial roads, of which 962 were paved and 1,451 were improved. The Canadian National Railway has 282 miles of track on the island. Two ferry systems connect the province with the mainland. The province has two airports, at Charlottetown and Summerside, and the Maritime Central Airways provides regular passenger and freight service. As of Nov. 30, 1962, there were 20,582 telephones; 21,829 passenger cars, and 7,252 trucks.

Agriculture.—Farm cash income in 1961 was $24,600,000. The principal crops were potatoes, valued at $7,490,000; hay, $6,000,000; oats, $4,250,000; wheat, $127,500; and barley, $36,400. The value of dairy products was $5,043,000.

Fisheries.—Sea products landed in 1961 (with landed value): fish, 36,521,000 pounds ($4,170,872); lobster, 9,500,000 pounds ($3,054,956); Irish moss, 23,593,233 pounds ($313,502). The total market value of all sea products was approximately $7,000,000.

Events, 1962. The most significant event in the island in 1962 was the commencement of construction of the $5,600,000 Fathers of Confederation Memorial Building, which will commemorate the first conference of the Fathers of Confederation in Charlottetown in 1864.

A provincial election on December 10 returned the Progressive Conservative government of Premier W. R. Shaw to its second term of office, with 19 members in the 30-seat legislature. The Liberals won the other 11 seats.

The construction industry was very active, with large rural high schools going up all over the province, several new commercial buildings erected in Charlottetown, and a large new provincial office building begun. A new car ferry, the "Confederation," commenced service from Borden to the mainland.

FRANK MACKINNON,
Principal, Prince of Wales College, Prince Edward Island.

PRINCIPE. See PORTUGUESE TERRITORIES.
PRINTING AND PUBLISHING. See BOOK PUBLISHING AND SALES; MAGAZINES; NEWSPAPERS.

PRISONS

The year 1961 closed with 220,329 prisoners confined in federal and state institutions for adult offenders in the United States. This total represented a 3.4% increase over the 1960 figure of 213,125. The year-end total for state institutions was 196,633, and for federal institutions, 23,696.

The Western states experienced the largest proportionate increase in prisoner population, 7.8%. In the Northeastern states the number of prisoners went up by 3.5%; in the North Central states, 2.3%; and in the Southern states, 2.5%. The number of prisoners per 100,000 of the general civilian population of the nation was 121.7 (119.8 in 1960).

BUREAU OF PRISONS INSTITUTIONS
(Figures as of June 30, 1962)

Type of Institution	Population
Penitentiaries:	
*Alcatraz, California	262
Atlanta, Georgia	2,637
Leavenworth, Kansas	2,576
Lewisburg, Pennsylvania	1,528
McNeil Island, Washington	1,131
Terre Haute, Indiana	1,395
Reformatories:	
Alderson (females), West Virginia	651
Chillicothe, Ohio	1,213
El Reno, Oklahoma	1,048
Lompoc, California	1,151
Petersburg, Virginia	575
Institutions for juvenile and youth offenders:	
Ashland, Kentucky	494
Englewood, Colorado	446
National Training School, Washington, D.C.	357
Natural Bridge Camp, Virginia	72
Youth Camp, Tucson, Arizona	124
Pre-release guidance centers	41
Correctional institutions:	
Danbury, Connecticut	686
La Tuna, Texas	676
Milan, Michigan	629
Sandstone, Minnesota	514
Seagoville, Texas	593
Tallahassee, Florida	767
Terminal Island (males), California	723
Terminal Island (females), California	172
Texarkana, Texas	484
Prison camps:	
Allenwood, Pennsylvania	284
Florence, Arizona	210
Greenville, South Carolina	385
McNeil Island, Washington	272
Montgomery, Alabama	262
Safford, Arizona	239
Detention headquarters:	
New York, New York	47
Medical centers:	
Hospital, Springfield, Mo.	699
Maintenance unit, Springfield, Mo.	251
Prisoners in transit	200

*To be closed by July 1963.

Research.—Greater emphasis was placed on research in the United States correctional field in 1962 than ever before. The most ambitious programs of research were carried out in the California and federal correctional systems. California's programs included two projects financed by the National Institute of Mental Health: a three-year study of parole board practices in setting terms of sentence and parole dates, and a three-year project to determine the effectiveness of group counseling and community living in rehabilitating male adult offenders. Among the manifold research activities of the federal system were studies of the effectiveness of community sponsors for institutionalized juvenile delinquents, and the relationship between the degree of program participation by inmates and their later adjustment in the community, the success of prerelease guidance centers in easing the community adjustments of youths and juveniles released from institutions, and the development of statistical techniques for studying prisoner population characteristics and trends. (See also CRIME.)

The National Council on Crime and Delinquency published a report summarizing 500 research projects, experiments, and program developments in the correctional field. Wisconsin's correctional system also published a report outlining over 30 research projects completed or under way in 1962. Among the significant studies in other state systems was a Texas project in which inmate volunteers were used to determine the effects of blood chemistry on mental illness and abnormal behavior.

Expansion of Facilities.—The success of the preparole "halfway houses" established by U.S. Attorney General Robert F. Kennedy in 1961 led to further development of this program in the federal corrections system and the adoption of the idea in several state systems. California converted a 2,200-inmate naval hospital into a center for the treatment of addicts formerly confined in state prisons. Indiana began building a new youth center. Ohio transferred several hundred prisoners from the overcrowded state reformatory to the newly completed Lebanon correctional institution. Texas broke ground for the construction of a 500-man diagnostic unit for the analytical study of inmates committed from the courts. Wisconsin reorganized and expanded its camp system. In the federal prison system the construction of a new maximum-security institution near Marion, Ill., neared completion; a replacement for the aged National Training School for Boys was being planned; and a new psychiatric hospital for prisoners was under design by architects.

Prison Discipline.—Few disorders occurred in 1962. At St. Vincent de Paul Federal Penitentiary in Montreal, Canada, 1,100 prisoners rioted on June 17 and destroyed most of the old maximum-security prison by fire. The riot had to be quelled by forces of prison guards, provincial police, the Royal Canadian Mounted Police, and army troops. At the District of Columbia's new youth center at Lorton, Va., inmates belonging to the violently antiwhite Black Muslim sect rioted on July 31. In New York, prisoners at the maximum security Sing Sing, Green Haven, Auburn, Clinton, and Attica prisons staged sit-down strikes on March 8–14, protesting the enactment of a stricter parole law. A minor riot broke out at a Kansas prison on August 11. Among other prison events which gained headlines were the escape of 25 inmates from a Georgia state prison branch (April 8), the escape from Alcatraz of three long-term bank robbers who perished in the waters of San Francisco Bay before they could reach the mainland (June 11), and the violent attempt of six murderers to force their way out of San Quentin's death row (July 2).

Commitments and Releases.—In 1961 court commitments numbered 93,590. The total of 80,073 offenders committed to state institutions represented a 6.8% increase over the 74,592 commitments in 1960. For federal institutions there were 13,517 commitments, compared with 13,723 in 1960.

There were 86,205 conditional and unconditional releases from state institutions in 1961, a 4.9% increase. In the federal system there were 14,519 releases, compared with 14,196 in 1960. Among the states, 51,445 (59.7%) of the releases were by parole; in the federal system, 4,380 (30%) were by parole.

UPI

Buildings at the St. Vincent de Paul federal penitentiary in Montreal are burned by inmates during riot on June 17.

Capital Punishment.—Fewer prisoners were executed by civil authorities in the United States in 1961 than in any year since the statistics on executions began in 1930. The 42 executions (as compared with 57 in 1960) involved 18 of the 44 jurisdictions (42 states, the District of Columbia, and the federal government) which still have capital punishment statutes. The executions included 8 in California, 5 each in South Carolina and Mississippi, 4 in Virginia, and 3 each in Georgia and Texas. Convictions for murder accounted for 33 executions, rape for 8, and kidnaping for 1. All 42 were men. On Jan. 1, 1962, 257 prisoners remained under sentence of death, over half of them in the states of California, Florida, Louisiana, Maryland, New York, Alabama, Illinois, and New Jersey. The youngest of those awaiting death was a 16-year-old boy in Georgia.

Legislation to abolish the death penalty received consideration in most of the jurisdictions in which it is still authorized, but little action was taken. The Delaware legislature overrode the governor's veto and reinstated the death penalty, which it had abolished in 1958, for first-degree murder, rape, kidnaping, and treason. The U.S. Congress amended the District of Columbia's statute providing a mandatory death penalty for first-degree murder, thus eliminating the last mandatory death penalty in the nation. The jury may now recommend life imprisonment for a defendant convicted of first-degree murder; if the jury disagrees, the court may choose to sentence the defendant either to death by electrocution or to life imprisonment.

J. V. BENNETT,
Director, Bureau of Prisons.

PRIZES AND AWARDS

Among the principal prizes and awards announced in 1962 are those in the following list, divided by subject. For other awards not listed here, see the Index entry, *Prizes and Awards.*

NOBEL PRIZES

Chemistry.—Drs. Max F. Perutz and John C. Kendrew, Cambridge University.

Literature.—John Steinbeck, American novelist.

Peace.—No award made.

Physics.—Dr. Lev. D. Landau, USSR Academy of Sciences.

Physiology and Medicine.—Prof. James D. Watson, Harvard University, Dr. Maurice H. F. Wilkins, King's College, London, and Dr. Francis H. C. Crick, Cambridge University.

The 1962 awards were equivalent to about $50,000 in each category. (See also NOBEL PRIZES.)

PULITZER PRIZES

Announced by the trustees of Columbia University on May 7, 1962, the Pulitzer Prize awards for 1961 were as follows:

Journalism.—Most distinguished and meritorious public service rendered by a United States newspaper: Panama City (Fla.) *News* and *Herald,* for their exposure of corruption. Distinguished local reporting (under pressure of edition time): Robert D. Mullins of the Salt Lake City *Deseret News,* for his coverage of a murder and kidnaping at Dead Horse Point, Utah. Distinguished local reporting (showing initiative and resourcefulness, not under pressure): George Bliss of the Chicago *Tribune,* for more than

80 articles on scandals in the Metropolitan Sanitary District of Greater Chicago. Distinguished reporting on national affairs: Nathan G. Caldwell and Gene S. Graham of the Nashville *Tennessean,* for six years' reporting on antitrust law violations in the coal industry. Distinguished reporting on international affairs: Walter Lippmann of the New York Herald Tribune Syndicate, for his long service to American journalism, including an interview with Nikita S. Khrushchev. Distinguished editorial writing: Thomas M. Storke of the Santa Barbara *News-Press,* for his exposure of a "campaign of hate and vilification" by the John Birch Society. Distinguished editorial cartoon: Edmund S. Valtman of the Hartford *Times,* for his cartoons during the year, including one of Fidel Castro's efforts to influence Brazilians. Outstanding news photography: Paul Vathis of the Associated Press, for a photograph of John F. Kennedy and Dwight D. Eisenhower.

Letters.—Fiction in book form: Edwin O'Connor, for *The Edge of Sadness.* American play: Frank Loesser and Abe Burrows, for *How to Succeed in Business Without Really Trying.* Book on United States history: Lawrence H. Gipson, for *The Triumphant Empire: Thunder-Clouds Gather in the West.* American biography: no award made. Volume of verse: Alan Dugan, for *Poems.* Nonfiction: Theodore H. White, for *The Making of the President, 1960.*

Music.—Robert Ward, for *The Crucible.*

Art, Music, and Dance

Benjamin Altman prizes ($2,000): Ben Kamihira, for figure painting; Paul Sample, for landscape painting.

American Academy of Arts and Letters Award of Merit (gold medal and $1,000): Charles Sheeler.

American Institute of Architects Gold Medal: The late Eero Saarinen.

American Institute of Graphic Arts Medal: Willem Sandberg.

Art in America Award (medal and $1,000) for 1962: Alfred H. Barr, Jr., and Alexander Calder.

Audubon Artists gold medals of honor: Alfred Blaustein, for graphic arts; Doris Wainwright Kennedy, for water color; Ethel Magafan, for painting; Helen Louise Wilson, for sculpture.

Dance Magazine awards: Melissa Hayden, Anna Sokolow, and Gwen Verdon.

Alice M. Ditson Award ($1,000) for "distinguished service to American music": Guy Fraser Harrison.

Kaufmann International Design Award ($20,000) for 1961: Walter Gropius.

National Institute of Arts and Letters awards: Award for Distinguished Service to the Arts—Paul Mellon; Arnold W. Brunner Memorial Prize ($1,000) in architecture—Ulrich Franzen; Richard and Hinda Rosenthal Award for painting ($2,000)—Robert Andrew Parker; Marjorie Peabody Waite Award ($1,000)—Abraham Walkowitz.

National Sculpture Society awards: Gold Medal—Donald De Lue; Herbert Adams Memorial medals—Paul Fjelde, Pietro Montana, and Wheeler Williams.

New York Music Critics Circle citations for 1961–62: Chamber music—Arthur Berger, for his Quartet; Elliott Carter, for his Double Concerto for Piano, Harpsichord, and Chamber Orchestra; choral work—no citation made; opera—Benjamin Britten, for *The Turn of the Screw;* Robert Ward, for *The Crucible;* orchestra work—no citation made.

Venice Biennale first prizes (2,000,000 lire): Alfred Manessier, for painting; Alberto Giacometti, for sculpture.

Journalism

F. Wayland Ayer Cup for mechanical excellence in journalism: *Christian Science Monitor.*

Heywood Broun Memorial Award ($500) for 1961: Dale Wright and Michael Mok, New York *World-Telegram and Sun.*

Maria Moors Cabot awards for "advancement of international friendship and understanding in the Americas": Raúl Fontaina, general manager, Radio Carve, Montevideo; John R. Herbert, editor, Quincy *Patriot Ledger;* Rodolfo Junco de la Vega, publisher, *El Norte* and *El Sol,* Monterrey; John S. Knight, president, Knight Newspapers, Inc.

Raymond Clapper Memorial Award ($1,000) for 1961: Richard Fryklund, Washington *Star.*

Columbia-Catherwood awards for international journalism: Michel Gordey, *France-Soir,* Paris; Quincy Howe, American Broadcasting Company.

Albert Lasker Medical Journalism awards ($2,500) for 1961: Michael Mok, for articles on mental illness in the New York *World-Telegram and Sun;* Gilbert Cant, for an article on viruses in *Time;* Station WBAL-TV, Baltimore, for a program on mental retardation.

Overseas Press Club awards for 1961: E. W. Fairchild Award—Edwin L. Dale, Jr., New York *Times;* George Polk Memorial Award—Dickey Chapelle, *Reader's Digest;* Ed Stout Award—Juan de Onis, New York *Times;* press reporting from abroad—Robert Considine, Hearst Headline Service; press interpretation of foreign affairs—Phil Newsom, United Press International; radio reporting from abroad—Marvin Kalb, Columbia Broadcasting System; radio interpretation of foreign affairs—Howard K. Smith, American Broadcasting Company; television reporting from abroad—Helen G. Rogers and William Hartigan, American Broadcasting Company; television interpretation of foreign affairs—David Schoenbrun and George Vicas, Columbia Broadcasting System; magazine reporting of foreign affairs—Charles J. V. Murphy, *Fortune;* book on foreign affairs—John Toland, for *But Not in Shame;* still photographic reporting from abroad—Peter Leibing, Associated Press; film reporting from abroad—Leonard Stark and Nobuo Hoshi, National Broadcasting Company.

George Polk Memorial awards for 1961: Foreign reporting—Morris H. Rubin, *Progressive;* national reporting—Gerard Piel, *Scientific American;* local reporting—Laurence Stern, Washington *Post;* radio and television reporting—Robert Young and Charles Dorkins, National Broadcasting Company; news photography—anonymous photographer of a cable car disaster in the French Alps on Aug. 29, 1961; community service—Arnold Brophy and Joseph S. Gelmis, *Newsday;* special award—Jules Feiffer, cartoonist, for his "insights into the frustrations of modern man."

Letters

Academy of American Poets awards: Fellowship Award ($5,000) for distinguished poetic achievement—John Crowe Ransom; Lamont Poetry Selection—Edward Field, for *Stand Up, Friend, with Me.*

American Council of Learned Societies prizes ($10,000): Kenneth E. Boulding, University of Michigan; John K. Fairbank and Harry Levin, Harvard University; Erwin R. Goodenough, Filmer S. C. Northrop, and C. Vann Woodward, Yale University; Robert K. Merton and Marjorie H. Nicolson, Columbia University; Alexander C. Soper, Bryn Mawr College and New York University; Owsel Temkin, Johns Hopkins University.

American Library Association awards: Caldecott Medal—Marcia Brown, for *Once a Mouse;* Clarence Day Award ($1,000)—Lillian H. Smith, Toronto Public Library; Grolier Society Award ($500)—Alice Brooks McGuire, Casis Elementary School, Austin, Texas; Joseph W. Lippincott Award (medal and $1,000)—David H. Clift, American Library Association; John Newbery Medal—Elizabeth George Speare, for *The Bronze Bow.*

Bancroft prizes ($4,000) of Columbia University for distinguished writings in American history, diplomacy, or international relations for 1961: Lawrence A. Cremin, for *The Transformation of the School;* Martin B. Duberman, for *Charles Francis Adams, 1807–1886;* Felix Gilbert, for *To the Farewell Address.*

Bollingen Prize in Poetry ($2,500) for 1961: Richard Eberhart, for the body of his work, and John Hall Wheelock, for *The Gardener and Other Poems.*

Carey-Thomas Award for the best example of creative publishing: Belknap Press of the Harvard University Press, for *The Diary and Autobiography of John Adams.*

Emerson-Thoreau Award (medal and $1,000) of the American Academy of Arts and Sciences: Katherine Anne Porter.

Governor General's awards to Canadians for the best books of 1961: English fiction—the late Malcolm Lowry, for *Hear Us O Lord from Heaven Thy Dwelling Place;* English nonfiction—Thomas A. Goudge, for *The Ascent of Life;* English poetry—Robert Finch, for *Acis in Oxford and Other Poems;* French fiction—Yves Thériault, for *Ashini;* French nonfiction—Jean Le Moyne, for *Convergences;* French poetry—no award made.

Harper Prize Novel ($10,000) for 1963: Richard McKenna, for *The Sand Pebbles.*

MacDowell Colony Medal: Robert Frost.

John P. Marquand First Novel Award ($10,000) of the Book-of-the-Month Club: Joan Williams, for *The Morning and the Evening.*

National Book awards ($1,000): Fiction—Walker Percy, for *The Moviegoer;* nonfiction—Lewis Mumford, for *The City in History;* poetry—Alan Dugan, for *Poems.*

National Institute of Arts and Letters awards: Gold Medal for Fiction—the late William Faulkner (q.v.); Gold Medal for History and Biography—Samuel Eliot Morison; Russell Loines Memorial Award for poetry ($1,000)—I. A. Richards; Richard and Hinda Rosenthal Award for a novel ($2,000)—Paule Marshall, for *Soul Clap Hands and Sing.*

Francis Parkman Prize (medal and $500) of the Society of American Historians: Leon Wolff, for *Little Brown Brother.*

Henry M. Phillips Prize ($2,000) of the American Philosophical Society: The late K. N. Llewellyn, University of Chicago.

Edgar Allan Poe awards of the Mystery Writers of America for 1961: Best mystery novel—J. J. Marric (pseudonym of John Creasey), for *Gideon's Fire;* best first mystery novel—Suzanne Blanc, for *The Green Stone;* best short story—Avram Davidson, for *The Affair at Lahore Cantonment;* best fact crime writing—Barrett Prettyman, for *Death and the Supreme Court;* best juvenile mystery—Edward Fenton, for *The Phantom of Walkaway Hill;* special awards—Erle Stanley Gardner and Thomas M. McDade.

Poetry Society of America awards: Melville Cane Award ($500)—Richard Wilbur, for *Advice to a Prophet and Other Poems;* Robert Frost Poetry Award ($1,000)—William D. Barney; Medal for Distinguished Service—Maurice E. Peloubet; Shelley Memorial Award ($1,250)—Theodore Roethke.

Prix Femina: Yves Berger, for *Le sud.*

Prix Goncourt: Anna Langfus, for *Les bagages de sable.*

Prix Interallié: Henri François Rey, for *Les pianos mécaniques.*

Prix Médicis: Colette Audry, for *Derrière la baignoire.*

Prix Théophraste Renaudot: Simonne Jacquemard, for *Le veilleur de nuit.*

Kenneth Roberts Memorial Award ($5,000): Page Smith, for *John Adams.*

Woodrow Wilson Foundation Award ($1,000) of the American Political Science Association: Robert A. Dahl, for *Who Governs? Democracy and Power in an American City.*

Radio and Television

Academy of Television Arts and Sciences awards for 1961–62: Best program of the year—*Victoria Regina;* best single dramatic performances—Julie Harris, in *Victoria Regina;* Peter Falk, in *The Price of Tomatoes;* best performances in a dramatic series—Shirley Booth, in *Hazel;* E. G. Marshall, in *The Defenders;* best variety performance—Carol Burnett, in *The Garry Moore Show;* best supporting performances—Pamela Brown, in *Victoria Regina;* Don Knotts, in *The Andy Griffith Show;* best children's program—*Young People's Concerts;* best daytime program—*Purex Specials for Women;* best dramatic program—*The Defenders;* best educational and public affairs program—*David Brinkley's Journal;* best humorous program—*The Bob Newhart Show;* best musical program—New York Philharmonic in Japan; best news reporting program—*Huntley-Brinkley Report;* best variety program—*The Garry Moore Show;* best original music—Richard Rodgers, for *Winston Churchill: the Valiant Years;* best comedy writing—Carl Reiner, for *The Dick Van Dyke Show;* best documentary writing—Lou Hazam, for *Vincent Van Gogh: a Self-Portrait;* best dramatic writing—Reginald Rose, for *The Defenders;* best art direction and scenic design—Philip Barber, for *The Twilight Zone;* best comedy direction—Nat Hiken, for *Car 54, Where Are You?;* best dramatic direction—Franklin Schaffner, for *The Defenders;* best cinematography for television—John S. Priestley, for *Naked City;* best editing of a film for television—Aaron Nibley and Hugh Chaloupka, for *Naked City;* best electronic camera work—*The Ernie Kovacs Show;* best engineering or technical achievement—American Broadcasting Company, for a slow-motion video tape process; trustees' special awards—Lt. Col. John H. Glenn, Jr., American Broadcasting Company, Columbia Broadcasting System, and National Broadcasting Company, for the space flight of Feb. 20, 1962; Mrs. John F. Kennedy and the Columbia Broadcasting System, for *A Tour of the White House;* David Sarnoff.

Monte Carlo International Television Festival First Prize: *Pablo Casals' Master Class.*

George Foster Peabody awards for 1961: *Radio.*—Station WRUL, Worldwide Broadcasting, cited for contribution to international understanding (broadcasts of the UN General Assembly); Station WNYC, New York, best educational programs (*The Reader's Almanac* and *Teen Age Book Talk*); Station WFMT, Chicago, best entertainment (*Fine Arts Entertainment*); Capital Cities Broadcasting Corporation, special award, for *Verdict for Tomorrow: the Eichmann Trial on Television. Television.*—Walter Lippmann, cited for contribution to international understanding; *An Age of Kings* and *Vincent Van Gogh: a Self-Portrait,* best educational programs; *The Bob Newhart Show,* best entertainment; *David Brinkley's Journal,* best news program; *Let Freedom Ring,* cited for public service; *Expedition,* best youth and children's program; Newton N. Minow and Fred W. Friendly, special awards.

Science and Technology

American Cancer Society Award: Elmer H. Bobst, Warner-Lambert Pharmaceutical Company.

American Chemical Society awards: Roger Adams Award in Organic Chemistry ($5,000)—Dr. Paul D. Bartlett, Harvard University; ACS Award for Creative Work in Synthetic Organic Chemistry ($1,000)—Dr. Nelson J. Leonard, University of Illinois; ACS Award for Nuclear Applications ($1,000)—Dr. Martin D. Kamen, University of California; ACS Award for Outstanding Work in Inorganic Chemistry ($1,000)—Dr. Daryle H. Busch, Ohio State University; ACS Award in Biological Chemistry ($1,000)—Dr. William P. Jencks, Brandeis University; ACS Award in Chemical Education ($1,000)—Dr. Edward L. Haenisch, Wabash College; ACS Award in Chemical Instrumentation ($1,000)—Dr. Howard V. Malmstadt, University of Illinois; ACS Award in Chromatography and Electrophoresis ($1,000)—Dr. Walter E. Cohn, Oak Ridge National Laboratory; ACS Award in Industrial and Engineering Chemistry ($1,000)—Dr. Manson Benedict, Massachusetts Institute of Technology; ACS Award in Petroleum Chemistry ($1,000)—Dr. John P. McCullough, U.S. Bureau of Mines; ACS Award in Pure Chemistry ($1,000)—Dr. Stuart A. Rice, University of Chicago; ACS Award in the Chemistry of Milk ($1,000)—Dr. Serge N. Timasheff, U.S. Department of Agriculture; Peter Debye Award in Physical Chemistry ($2,000)—Dr. Robert S. Mulliken, University of Chicago; Fisher Award in Analytical Chemistry ($1,000)—Dr. David N. Hume, Massachusetts Institute of Technology; Fritzsche Award ($1,000) for work in essential oils—Dr. Arthur J. Birch, University of Manchester; Garvan Medal—Dr. Mildred Cohn, University of Pennsylvania; Willard Gibbs Medal—Dr. Paul D. Bartlett, Harvard University; Charles Goodyear Medal—Dr. William J. Sparks, Esso Research and Engineering Company; James T. Grady Medal—Lawrence Lessing, *Fortune;* Kendall Company Award in Colloid Chemistry ($1,000)—Dr. William A. Zisman, U.S. Naval Research Laboratory; Frederic Stanley Kipping Award in Organosilicon Chemistry ($1,000)—Dr. Leo H. Sommer, Pennsylvania State University; Paul-Lewis Laboratories Award in Enzyme Chemistry ($1,000)—Dr. Charles Gilvarg, New York University; Priestley Medal—Dr. Peter J. W. Debye, Cornell University.

American Geographical Society awards: Cullum Geographical Medal—Dr. Richard J. Russell, Louisiana State University; Charles P. Daly Medal—O. M. Miller, American Geographical Society.

American Heart Association awards: Gold Heart awards—Dr. Irvine H. Page, Cleveland Clinic Foundation; Sylvester L. Weaver, McCann-Erickson Corporation, International; Dr. Robert W. Wilkins, Boston University; Research Achievement Award ($1,000)—Dr. Maurice B. Visscher, University of Minnesota.

American Institute of Chemists Gold Medal: Dr. W. George Parks, University of Rhode Island.

American Institute of Electrical Engineers awards: Edison Medal—Dr. Alexander C. Monteith, Westinghouse Electric Corporation; Benjamin G. Lamme Gold Medal—Charles Concordia, General Electric Company.

American Medical Association Scientific Achievement Award: Dr. Donald D. Van Slyke, Brookhaven National Laboratory.

American Public Health Association awards: Bronfman prizes ($5,000)—Dr. José Álvarez Amézquita, Mexican secretary of public health and welfare; Prof. Theodore F. Hatch, University of Pittsburgh; Dr. Charles E. Smith, University of California; Sedgwick Memorial Medal—Dr. Ira V. Hiscock, Yale University.

American Society of Mechanical Engineers awards: ASME Medal—Dr. Philip Sporn, American Electric Power

Among winners of Pulitzer Prizes for 1962, announced on May 7, were: ***(left to right)*** **Abe Burrows, coauthor with Frank Loesser of the musical comedy *How to Succeed in Business Without Really Trying*, drama; Edwin O'Connor, for *The Edge of Sadness*, fiction; Theodore H. White, *The Making of the President, 1960*, nonfiction; and Robert Ward, *The Crucible*, music.**

WIDE WORLD

U.P.I.

Dr. Edward Teller (center), a pioneer in thermonuclear research, is presented the Enrico Fermi Award by President Kennedy in Washington, December 3, as Mrs. Teller watches.

Company; Daniel Guggenheim Medal—the late James H. Kindelberger, North American Aviation, Inc.; Hoover Medal—Walker L. Cisler, Detroit Edison Company; George Westinghouse Gold Medal—Edwin H. Krieg, Stone and Webster Engineering Corporation.

Borden Award (gold medal and $1,000) of the Association of American Medical Colleges: Dr. Leon O. Jacobson, University of Chicago.

Oliver E. Buckley Solid-State Physics Prize ($1,000) of the American Physical Society: Dr. Bertram N. Brockhouse, Atomic Energy of Canada, Ltd.

Robert J. Collier Trophy for 1961: Scott Crossfield, North American Aviation, Inc.; Comdr. Forrest Peterson, U.S. Navy; Joseph Walker, National Aeronautics and Space Administration; Maj. Robert M. White, U.S. Air Force.

Albert Einstein Award (gold medal and $5,000) of the Lewis and Rosa Strauss Memorial Fund: Dr. Shields Warren, Harvard Medical School.

Enrico Fermi Award (gold medal and $50,000): Dr. Edward Teller, University of California.

Franklin Medal of the Franklin Institute: Sir Geoffrey I. Taylor, Cambridge University.

Geological Society of America awards: Arthur L. Day Medal—Dr. Hatten S. Yoder, Jr., Geophysical Laboratory, Carnegie Institution of Washington; Penrose Medal—Dr. Alfred S. Romer, Harvard University.

Guggenheim International Astronautics Award ($1,000): Dr. James A. Van Allen, State University of Iowa.

Industrial Research Institute Medal for 1963: Dr. James B. Fisk, Bell Telephone Laboratories.

Institute of Radio Engineers Medal of Honor for 1963: Dr. John H. Hammond, Jr., Hammond Research Corporation; Dr. George C. Southworth, Bell Telephone Laboratories.

Institute of the Aerospace Sciences awards: Octave Chanute Award—Neil A. Armstrong; Lewis H. Hill Space Transportation Award—Robert R. Gilruth, National Aeronautics and Space Administration; John Jeffries Award—Dr. Ashton Graybiel, Naval School of Aviation Medicine; Robert M. Losey Award—Arthur F. Merewether, American Airlines, Inc.; Sylvanus Albert Reed Award—Dr. Alfred J. Eggers, Jr., National Aeronautics and Space Administration; Lawrence B. Sperry Award—Douglas G. Harvey, Martin Marietta Corporation.

Langley Gold Medal of the Smithsonian Institution: Dr. Hugh L. Dryden, National Aeronautics and Space Administration.

Albert Lasker awards in medical research ($10,000): Dr. C. H. Li, University of California; Dr. Joseph E. Smadel, National Institutes of Health.

Ernest O. Lawrence Memorial awards (medal and $5,000): Dr. Andrew A. Benson, University of California, Los Angeles; Dr. Richard P. Feynman, California Institute of Technology; Dr. Herbert Goldstein, Columbia University; Dr. Anthony Turkevich, University of Chicago; Dr. Herbert F. York, University of California, San Diego.

Mathematical Association of America Award for Distinguished Service to Mathematics ($500): Dr. Mina Rees, City University of New York.

National Academy of Sciences awards: Alexander Agassiz Medal—Dr. George E. R. Deacon, British National Institute of Oceanography; Award in Molecular Biology—Dr. Marshall W. Nirenberg, National Institutes of Health; John J. Carty Medal—Dr. Charles H. Townes, Massachusetts Institute of Technology; Daniel Giraud Elliot Medal—Dr. Donald R. Griffin, Harvard University; Kimber Genetics Medal—Dr. Milislav Demerec, Brookhaven National Laboratory; Jessie Stevenson Kovalenko Medal—Dr. George H. Whipple, University of Rochester; Public Welfare Medal—Dr. James A. Shannon, National Institutes of Health; J. Lawrence Smith Medal—Dr. Harold C. Urey, University of California, San Diego; Charles Doolittle Walcott Medal—Dr. Armin A. Opik, Australian Bureau of Mineral Resources.

National Geographic Society awards: Hubbard Medal—Lt. Col. John H. Glenn, Jr., U.S. Marine Corps; Gen. Thomas D. White Space Trophy—Capt. Virgil I. Grissom, U.S. Air Force.

Royal Geographical Society Medal: Capt. Edwin A. McDonald, U.S. Navy.

Royal Medal of the Royal Society: Dr. Subrahmanyan Chandrasekhar, University of Chicago.

Trudeau Medal of the National Tuberculosis Association: Dr. John D. Steele, San Fernando Veterans Administration Hospital.

United Nations awards ($10,000) for cancer research: Dr. W. R. S. Doll, British Medical Research Council; Dr. Ludwik Gross, Bronx Veterans Administration Hospital; Dr. Wilhelm C. Hueper, National Cancer Institute; Dr. Leon M. Shabad, USSR Academy of Medical Sciences; Dr. Antoine Lacassagne, Radium Institute, Paris; the late Dr. George N. Papanicolaou, Papanicolaou Cancer Research Institute, Miami; Dr. Peyton Rous, Rockefeller Institute.

Viking Fund Award (medal and $10,000) of the Wenner-Gren Foundation for Anthropological Research, Inc.: Dr. Edward E. Evans-Pritchard, Oxford University; Dr. Robert von Heine-Geldern, Austrian Academy of Science; Dr. Louis S. B. Leakey, Coryndon Memorial Museum, Nairobi; Dr. Sol Tax, University of Chicago.

William H. Walker Award of the American Institute of Chemical Engineers: Dr. Robert B. Bird, University of Wisconsin.

Wright Brothers Medal of the Society of Automotive Engineers for 1961: C. M. Mears, Hughes Aircraft Company; R. L. Peterson, North American Aviation, Inc.

Theater and Motion Pictures

Academy of Motion Picture Arts and Sciences awards for 1961: Best picture of 1961—*West Side Story;* best film actress—Sophia Loren (q.v.), for her performance in *Two Women;* best film actor—Maximilian Schell (q.v.), for his performance in *Judgment at Nuremberg;* best director—Jerome Robbins and Robert Wise, for *West Side Story;* best supporting actress—Rita Moreno, in *West Side Story;* best supporting actor—George Chakiris, in *West Side Story;* best foreign-language film—*Through a Glass Darkly* (Swedish); best feature documentary film—*The Sky Above and the Mud Below;* best story and screenplay—William Inge, for *Splendor in the Grass;* best screen adaptation—Abby Mann, for *Judgment at Nuremberg;* best original song—*Moon River* (Henry Mancini and Johnny Mercer); best music scoring (drama or comedy)—Henry Mancini, for *Breakfast at Tiffany's;* best music scoring (musical)—Saul Chaplin, Johnny Green, Sid Ramin, and Irwin Kostal, for *West Side Story;* best cinematography (black and white)—Gene Shufton, for *The Hustler;* best cinematography (color)—Daniel L. Fapp, for *West Side Story;* best art direction (black and white)—Harry Horner, for *The Hustler;* set direction by Gene Callahan; best art direction (color)—Boris Leven, for *West Side Story;* set direction by Victor Gangelin; best special effects—Bill Warrington and John Cox, for *The Guns of Navarone;* best costume design (black and white)—Piero Gherardi, for *La dolce vita;* best costume design (color)—Irene Sharaff, for *West Side Story;* best film editing—Thomas Stanford, for *West Side Story;* best sound recording—*West Side Story;* best documentary short subject—*Project Hope;* best live-action short subject—*Seawards the Great Ships;* best cartoon short subject—*Ersatz;* special awards—Bill L. Hendricks, Stanley Kramer (Irving C. Thalberg Award), Fred L. Metzler, Jerome Robbins, and George Seaton (Jean Hersholt Humanitarian Award).

American Academy of Dramatic Arts Award of Merit: Rosalind Russell.

Barter Theater Award: Abe Burrows, for coauthorship and direction of *How to Succeed in Business Without Really Trying.*

British Film Academy awards for 1961: Best film—*The Hustler* and *Ballad of a Soldier;* best British film—*A Taste of Honey;* best British actress—Dora Bryan, for her performance in *A Taste of Honey;* best non-British actress—Sophia Loren (q.v.), for her performance in *Two Women;* best British actor—Peter Finch, for his performance in *No Love for Johnnie;* best non-British actor—Paul Newman, for his performance in *The Hustler;* United Nations Award—*Let My People Go.*

Cannes International Film Festival awards: Golden Palm—*The Given Word* (Brazilian); Second Prize—*Eclipse* (Italian) and *The Trial of Joan of Arc* (French); best acting—Katharine Hepburn, Sir Ralph Richardson, Jason Robards, Jr., and Dean Stockwell, for their performances in *Long Day's Journey into Night* (American); Rita Tushingham and Murray Melvin, for their performances in *A Taste of Honey* (British); best documentary film—*Owl Creek* (French); best film adaptation—*Electra* (Greek); best film comedy—*Divorce—Italian Style* (Italian); Special Jury prizes—*Pan* (Dutch) and *The Wait* (Polish); International Film Critics Award—*The Exterminating Angel* (Mexican); Roman Catholic Film Office Award—*The Trial of Joan of Arc.*

Clarence Derwent awards ($500) for the best non-featured performances in 1961–62: Rebecca Darke, for her performance in *Who'll Save the Plowboy?;* Gene Wilder, for his performance in *The Complaisant Lover.*

Directors Guild of America awards for 1961: Best

motion picture director—Jerome Robbins and Robert Wise, for *West Side Story;* best television director—the late Ernie Kovacs, for *Ernie Kovacs Special;* best critic—John Beaufort, *Christian Science Monitor.*

Robert J. Flaherty Award for creative achievement in documentary films: *The Brigands* (Italian).

Milestone Award of the Screen Producers Guild: Bob Hope, award for 1961; Irving Berlin, award for 1962.

New York Drama Critics Circle awards: *The Night of the Iguana,* best American play of the 1961–62 season; *A Man for All Seasons,* best foreign play; *How to Succeed in Business Without Really Trying,* best musical.

Antoinette Perry awards for 1961–62: *A Man for All Seasons,* play by Robert Bolt; *How to Succeed in Business Without Really Trying,* musical based on a book by Shepherd Mead, with book by Abe Burrows, Jack Weinstock, and Willie Gilbert, and music and lyrics by Frank Loesser; Margaret Leighton (q.v.), for her performance in *The Night of the Iguana;* Paul Scofield (q.v.), for his performance in *A Man for All Seasons;* Anna Maria Alberghetti, for her performance in *Carnival;* Diahann Carroll, for her performance in *No Strings;* Robert Morse and Charles Nelson Reilly, for their performances in *How to Succeed in Business Without Really Trying;* Elizabeth Ashley, for her performance in *Take Her, She's Mine;* Walter Matthau, for his performance in *A Shot in the Dark;* Phyllis Newman, for her performance in *Subways Are for Sleeping;* Noel Willman, for direction, and Michael Burns, for work as stage technician, of *A Man for All Seasons;* Abe Burrows, for direction, and Elliott Lawrence, for musical direction and conducting, of *How to Succeed in Business Without Really Trying;* Richard Rodgers, for musical composition, and Joe Layton, for choreography, of *No Strings;* Will Steven Armstrong, for scenic design of *Carnival;* Lucinda Ballard, for costumes of *The Gay Life;* Agnes de Mille, for choreography of *Kwamina;* Brocks Atkinson, Richard Rodgers, and Franco Zeffirelli, special awards.

Venice International Film Festival awards: Golden Lion of St. Mark—*Childhood of Ivan* (Russian) and *Family Chronicle* (Italian); best actress—Emmanuelle Riva, for her performance in *Thérèse Desqueyroux* (French); best actor—Burt Lancaster, for his performance in *Bird Man of Alcatraz* (American); best first feature film by a new director—*David and Lisa* (American) and *The Flood Victims* (Argentinian); Special Jury Prize—*To Live One's Life* (French); City of Venice Prize and Cineforum Award—*Family Chronicle;* Roman Catholic Film Office Award—*Term of Trial* (British); San Giorgio Prize—*Bird Man of Alcatraz.*

MISCELLANEOUS

American Federation of Labor and Congress of Industrial Organizations Award ($5,000): Luis Muñoz Marín.

America's Democratic Legacy Award of the Anti-Defamation League of B'nai B'rith: Adlai E. Stevenson.

Balzan Prize (1,000,000 Swiss francs) for a "major contribution to peace and humanity": Nobel Foundation.

Erasmus Prize (100,000 guilders) for 1961–62 for outstanding work in the European spirit: Prof. Romano Guardini, University of Munich.

Freedom Award of Freedom House: Jean Monnet.

Harmon International Aviation trophies: Lt. Col. William R. Payne, U.S. Air Force; Jacqueline Cochran; Comdr. Malcolm D. Ross, U.S. Navy; the late Lt. Comdr. Victor E. Prather, U.S. Navy.

Laetare Medal of the University of Notre Dame: Dr. Francis J. Braceland, Yale University.

Florina Lasker Award ($1,000) in social welfare: Mr. and Mrs. Karl de Schweinitz.

Nansen Medal for outstanding services to refugees: Sir Tasman Heyes.

National Brotherhood awards of the National Conference of Christians and Jews: Gen. Lucius D. Clay and President John F. Kennedy.

National Institute of Social Sciences gold medals: Dr. Ralph R. Bunche, Mrs. Mary I. Bunting, Gen. Lucius D. Clay, and Dr. John W. Gardner.

President's Award for Distinguished Federal Civilian Service: J. Stanley Baughman, Robert R. Gilruth, Dr. Donald E. Gregg, Dr. Frances Oldham Kelsey, Waldo K. Lyon, and Llewellyn E. Thompson.

Rockefeller Public Service awards ($5,000) for 1962: J. Stanley Baughman, Reginald G. Conley, Dr. Hugh L. Dryden, Morris H. Hansen, and Llewellyn E. Thompson.

Theodore Roosevelt medals for distinguished service: Arthur H. Dean, Lt. Col. John H. Glenn, Jr., and the late Stanley M. Isaacs.

Walter W. Van Kirk Award for Christian Stewardship of the National Council of Churches: Andrew W. Cordier.

George Washington Award (medal and $5,000) of the Freedoms Foundation: J. Edgar Hoover.

Stephen S. Wise Award of the American Jewish Congress: Robert F. Kennedy.

PRODUCTION, Industrial. See INDUSTRIAL PRODUCTION.
PROFITS, INDUSTRIAL. See BUSINESS DATA, U.S.
PROPAGANDA. See Index entry.
PROPERTY INSURANCE. See INSURANCE.

PROTESTANT EPISCOPAL CHURCH

The most significant event of 1962, if not of the decade, in all Christendom was the convening in October of the Second Vatican Ecumenical Council. There has been a trend in recent years toward opening broader official lines of communications between the Vatican and other Christian sects, as exemplified by the visits to the pope by the archbishop of Canterbury and the American presiding bishop, and the presence of Roman Catholic observers at the Third Assembly of the World Council of Churches meeting in late 1961 in New Delhi, India. This was demonstrated further by the Vatican's invitation to non-Roman churches to send observer-delegates to the council. Of the three Anglicans appointed by the archbishop of Canterbury, one was an American, the Rev. Frederick C. Grant, distinguished Biblical scholar and professor emeritus of Union Theological Seminary, New York, N.Y. The other two Anglicans were the bishop of Ripon, well-known Church of England historian, and the archdeacon of Ceylon. Prior to the opening of the Vatican Council, the presiding bishop, the Rt. Rev. Arthur Lichtenberger, called upon Episcopalians to pray constantly for the council.

The annual meeting of the House of Bishops, which opened on October 27 in Columbia, S.C., welcomed the newly enthroned archbishop of Canterbury, the Most Rev. Arthur Michael Ramsey, visiting the United States for the first time. The bishops set forth, in lieu of a pastoral letter, four separate statements touching on crucial issues in our day: race relations, new movements in the church, Christian unity, and war and peace.

Two new missionary bishops were elected: Eduardo G. Longid, the first Filipino to be ordained by the Episcopal Church, was named the second suffragan bishop of the Philippines, and the Rev. Cedric E. Mills was named first bishop of the Virgin Islands. This recently created jurisdiction was enlarged by the addition of the British Virgin Islands to the Virgin Islands of the United States as a result of the transfer of jurisdiction from the English to the American church.

Among the many notable Episcopal events of 1962 were the following: The first conversations on Christian unity between representatives of the Episcopal, United Presbyterian, and Methodist churches, and the United Church of Christ were held in April in Washington, D.C., and the conferees agreed to continue the conversations and to invite three additional churches to join in future discussions. Episcopalians shared in "Christian Witness in Century 21" at the Seattle World's Fair. The church in the Hawaiian Islands observed the hundredth anniversary of its beginnings. And the concordat between the Episcopal Church and the Philippine Independent Church approved by the 1961 General Convention was formally instituted in May on the occasion of the presiding bishop's visit to Manila.

The president of the National Council of the Episcopal Church is the presiding bishop, the Rt. Rev. Arthur Lichtenberger. The national headquarters, for more than 65 years at Church Missions House, 281 Park Avenue South, New York 10, N.Y. was to move in late February 1963 to a new Episcopal Church Center at 815 Second Avenue, New York 17, N.Y.

WILLIAM E. LEIDT,
Director of Publications, National Council, Protestant Episcopal Church.

PROTESTANTISM. See RELIGION.
PRUNES. See FRUITS.

PSYCHIATRY AND MENTAL HEALTH

The year 1962 saw further development of services and research as in previous years without recording a significant breakthrough or change.

A milestone on the international scene, was the first Pan-African Conference held in Abeokuta, Nigeria, in November 1961. This important congress was attended by leading psychiatrists of the world, who learned about African problems and methods of treatment while stimulating psychiatric education and research throughout the continent, particularly in Nigeria and other independent areas.

Increasing individual travel to and from foreign countries, including eastern Europe, furthered mutual understanding and cross-fertilization of ideas, especially where research was concerned. In both Poland and the Soviet Union in 1962, research of the highest refinement into the nature and character of reflex mechanism continued, and clinicians in those countries were interested in some Western methods of treatment not identified as "Freudian." At the Tri-Annual All Scandinavian Congress for Psychiatry, it became apparent that while academic psychiatry in Scandinavia remained primarily oriented in a biological direction with continuing constructive work in genetics, treatment programs in hospitals and in the community were catching up with the standards set in England and the Netherlands. The First International Congress of Psychosomatic Medicine and Childbirth convened in Paris in July 1962. The majority of contributions from France and the United States were concerned with the emotional aspects of labor and obstetrical management. There were papers from many countries on educational preparation for parturition.

Developments in the United States.—In the United States the number of hospital beds occupied continued to decline, despite increasing admission rates during 1961–62, as had been the case for several years previously. The reasons for the excess of hospital discharges over admissions within a given year remained a matter of controversy, and careful studies of pertinent figures in California showed that the introduction of the tranquilizing agents was not the only factor related to this development, as the trend existed whether or not drugs were employed. Readmission rates also declined, and again many factors were involved, such as better community service in dispensing medication to discharged patients, as well as improvements in other community services.

Action for Mental Health (1961), the final report of the congressional Joint Commission on Mental Illness and Health, also led to controversy in 1962 as national organizations such as the American Public Health Association, the American Medical Association, the American Psychiatric Association, and others discussed the report at annual or special meetings. Although implementation did not necessarily take the course proposed by the commission, the discussions stimulated much work on planned new services and research projects.

Many of these discussions centered on use of manpower and economic sources, on integration of hospital and community services, or on preventive efforts versus treatment and the like. The more fundamental problem of a radical change in psychiatric practice toward treating psychotic instead of neurotic patients was hardly discussed. The American Medical Association, however, which organized a conference on Mental Illness and Health in October 1962, was told authoritatively that psychiatric hospitalization was simply a phase in the course of psychiatric treatment; that psychiatric institutions must end their mental, economic and geographic isolation; and that the job was one for the entire profession. The evidence clearly indicated that psychiatric care in the form of integrated inpatient and outpatient services for psychotics had made more progress under the government-supported systems of medical care in the United Kingdom, the Netherlands, and other countries than in the United States.

Congressional appropriations in 1962 for the National Institute of Mental Health stood at $143,599,000, an increment of $35,000,000 over 1961. Included in the sum was $4,200,000 to be allocated to the states to study and formulate plans for implementation of the commission report.

Research and Training.—Family research and treatment of the family as a unit have so advanced that a new publication called *Family Research* was introduced in 1962. Family treatment, which has some similarities to group therapy, is particularly indicated for the families of hospitalized patients to alleviate their stress and to facilitate the patient's rehabilitation after he leaves the hospital. The importance and effectiveness of such procedures have also been pointed up abroad, especially in psychiatric emergencies.

Physiological and biochemical research in the United States, in Europe, and behind the Iron Curtain continued on a broad front in 1962 without any startling discoveries. Important revisions of concepts of and models for brain organization and function took place constantly. In many laboratories conditioning was again under investigation as a phenomenon in itself, and the conditioning of electrical activity of the brain was accomplished, as was that of several components of cardiac action. Work in biochemical and microbial genetics, going forward at a tremendous pace, was expected to bring forth important findings for clinical psychiatry and the understanding of personality. Among data established were the further identification of the chromosomal abnormalities associated with mongolism and the high incidence of chromosomal aberrations in aborted fetuses. (See also BIOCHEMISTRY; GENETICS.)

Mental subnormality was beginning to receive the attention and resources this important problem deserved. Many states were planning additional facilities for the study and care of such individuals, and the close connection between retardation and unemployability was finally acknowledged by professional persons, as well as by government authorities. The President's Panel on Retardation, active throughout 1962, was directed to submit findings by the end of the year regarding current programs, personnel requirements, research prospects, and private and governmental resources in the fight against mental retardation.

Training in psychiatry and for mental health personnel also received increased attention through 1962. For the education of nonphysician personnel, the publication of the Group for the Advancement of Psychiatry, No. 51, *Toward Therapeutic Care* was a most important up-to-date revision of an earlier publication on nursing. Residency programs for psychiatric specialists were under review by several committess. The Federal Grant Program for training was liberalized in the direction of awarding relatively unrestricted funds to recognized departments and lifet.me appointments to individuals of demonstrated competence in teaching or research and to younger men of exceptional promise.

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(See also PSYCHOLOGY.)

STEPHEN FLECK,
Psychiatrist-in-Chief, Yale Psychiatric Institute.

PSYCHOLOGY

The 17th annual convention of the American Psychological Association (APA) met in St. Louis, Mo., Aug. 30–Sept. 5, 1962. The association, founded in 1892, is the major organization of psychologists in the United States, having a membership of more than 20,000. (See SOCIETIES AND ORGANIZATIONS.)

The convention's complete program, containing abstracts of all contributed papers and titles of formal symposia, may be found in the June 1962 issue of *American Psychologist*. The new president elect is Quinn McNemar of Leland Stanford University, and the current president is Charles E. Osgood of the University of Illinois.

On APA Day (Sunday of the convention week) addresses were presented in the morning by the recipients of the 1961 Distinguished Scientific Contributions Awards. These were James J. Gibson of Cornell University, whose paper was entitled "The Useful Dimension of Sensitivity"; Donald O. Hebb of McGill University, whose paper was called "The Semiautonomous Processes"; and Henry A. Murray of Harvard University, who read a paper on "Studies of Stressful Dyadic Discussions." The annual report of the officers of the APA on budget, council decisions, and changes highlighted advances and growth, as well as problems which confront the organization. The retiring president, Paul E. Meehl of the University of Minnesota presented his presidential address in a paper entitled "Schizotaxia, Schizotypy, Schizophrenia."

Research and Theory.—The 1962 *Annual Review of Psychology* (Vol. 13) covers 17 fields, including developmental psychology, perception, educational psychology, psychotherapy, personality, and learning theory. Among the less familiar topics are ethology, neurophysiology of learning, and consumer analysis.

Ethology, as reviewed by Martin Lindauer, concerns work on the social life, aggregation, and communication within species of animals from insects to vertebrates. Research is pointed out on such matters as conditions under which congregates form among different species, patterns of care for the young, patterns of division of labor, and patterns of interaction among individuals through communicatory devices.

Neurophysiological theories explaining learning phenomena are certainly not new, as may be evidenced by the concept of differential synaptic resistances to neural impulse flow to account for habit formation, a concept that was popular for a long time. However, a review by Garth J. Thomas considers many exciting newer techniques for the experimental manipulation of the brain and observing correlated learning phenomena. These include ablation studies, electrical stimulation, and pharmacological techniques. Among effects being actively studied are interhemispheric transfer of neural mechanisms of learning and its disturbance by sectioning forebrain commissures, the relation of subcortical lesions to conditioning, and interoceptive condition, to name just a few. There is also considerable interest in a search for the neural changes that occur in learning under such concepts as engram and trace.

Consumer analysis refers to the study of consumer buying in relation to saving as affected by happenings in the greater community and as an index of such factors as national optimism-pessimism. In his review of the topic, Lester Guest concerned himself especially with many methodological problems, such as sampling, observer training and observer bias, and instrument construction.

Related to consumer analysis, social psychology, and a number of other fields is the scientific study of mass communication. Here Wilbur Schramm made reference in his review to the wide spread in competence and interest characterizing research in this area during the preceding 10 years; 60 universities and research institutions were represented in the bibliography on which his review was based. Progress has been made in systematizing theory around the process of persuasion and attitude change; much information has been gathered regarding the use of mass media as teaching media; and knowledge is accumulating in regard to entertainment content of the mass media with reference to audience behavior and its effects on children.

ALFRED G. DIETZE,
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Michigan State University.

PUBLIC ASSISTANCE. See CHILDREN AND YOUTH; OLD AGE; SOCIAL WELFARE; and the *Public Assistance* section of articles on the states.

PUBLIC DEBT. See CENSUS DATA, U.S.; TREASURY DEPARTMENT, U.S.

PUBLIC HEALTH

A high level of health continued in the United States in 1962. The country was free of major epidemics. The incidence of paralytic poliomyelitis was the lowest since nationwide statistics on the disease were first gathered in 1912, with only 685 cases reported as of December 15. On the basis of cyclical occurrences of influenza in the past, health authorities anticipated that local outbreaks of Type A_2 (Asian) influenza were likely during the winter of 1962–63, and urged vaccination of those groups in the population which have proved most vulnerable to the disease, including persons with chronic illnesses, pregnant women, and persons over 45 years of age.

Immunology.—In the field of immunology, Types I and II of the oral live-virus poliomyelitis vaccine, developed by Dr. Albert B. Sabin, were licensed in 1961 by the secretary of health, education, and welfare. Type III was licensed in March 1962.

After the licensing of these vaccines, a number of communities organized mass vaccination programs. By mid-September, about 42 million doses of the oral vaccine had been administered. On September 15, however, the surgeon general's special advisory committee on oral poliomyelitis vaccine recommended that Type III vaccine be limited to preschool and school-age children and to adults in high-risk areas, and that mass programs using Types I and II vaccine be continued for all ages. These recommendations followed a review of the evidence of the occurrence of cases of poliomyelitis after the use of oral vaccine.

The killed-virus vaccine developed by Dr. Jonas Salk also continued to be used during the year. Since licensing of this vaccine in April 1955, about 537 million doses have been distributed, and it is estimated that more than 50 million people have received 4 or more doses.

Full-scale field testing of an experimental vaccine for measles continued throughout the year. Early in 1962, the U.S. Public Health Service announced an all-out effort to develop vaccines against upper respiratory infections, popularly grouped under the general term of "common cold"; the first contract under this new vaccine development program was signed on April 29. (See also RESPIRATORY DISEASES.)

Research.—The Public Health Service intensified its research into the relationship of viruses and cancer. Noteworthy progress was made in methods of caring for patients with acute leukemia, including transfusions of pooled platelets from numerous donors to prevent and control hemorrhage, a complication that often takes the lives of acute leukemia patients before drug treatment has had time to take effect. (See also CANCER.)

Among advances in diagnosis of heart attacks was the modification and improvement of precor-

dial scanning as a simple and sensitive technique for detecting left-to-right shunts, one of the most frequent signs of congenital heart disease. (See also HEART DISEASE.)

One of the most significant and dramatic scientific accomplishments of the year—representing a major breakthrough in the chemistry of heredity—was the partial deciphering of the so-called genetic code. This code involves the two heredity chemicals, deoxyribonucleic acid (DNA) and ribonucleic acid (RNA), and provides the means by which living cells store and transmit genetic information. (See also BIOCHEMISTRY; GENETICS.)

Support of research into the causes and prevention of accidents—the fourth leading cause of death in the United States—was increased about 50% over the previous year. A dramatic increase in the installation and use of auto seat belts resulted largely from the cooperative campaign of the Public Health Service, the National Safety Council, and the American Medical Association.

On June 7, 1962, the Public Health Service announced plans to appoint an expert committee to study the impact of smoking on health. The study, which began in the fall of the year, consists of two phases: (1) the nature and magnitude of the health hazard; and (2) recommendations for action.

Radiation Monitoring.—In response to the resumption of nuclear weapons testing in the atmosphere by the USSR in September 1961 and the United States in April 1962, the existing federal-state-local network for monitoring levels of ionizing radiation in milk, water, air, and certain foods was strengthened in 1962. Fallout from these tests resulted in higher levels of radioactivity in many areas than had previously been experienced; in the opinion of most public health authorities, however, the level of radiation exposure of the general population was not high enough to warrant undue public concern. Meanwhile, a greatly accelerated research program is being carried on to determine with greater precision the potentially harmful effects of relatively low levels of exposure to radiation over protracted periods of time. (See also ATOMIC ENERGY.)

Health Legislation.—Several new legislative developments affected the Public Health Service in 1962. Legislation signed on August 14 established two new institutes at the National Institutes of Health: the Institute of Child Health and Human Development, and the Institute of General Medical Science. The latter will support basic studies of biological and related processes. Amendment of the Air Pollution Control Act of 1955 extended for an additional two years technical assistance and research related to air pollution control, including motor vehicle exhaust studies. Public Law 87–692 authorized the Public Health Service to make grants for the establishment and operation of family health service clinics for domestic agricultural migratory workers and their families. The Vaccination Assistance Act of 1962 provides for grants to states and communities to buy vaccine and conduct immunization programs to eradicate polio, diphtheria, whooping cough, and tetanus.

Vital Statistics.—A total of 4,268,326 live births were registered in the United States in 1961, virtually the same as in 1960. Although the total number of births has remained fairly constant in recent years, the crude birth rate—live births per 1,000 people—has declined somewhat. The rate for 1961 was 23.3, as compared with 23.6 in 1960 and 24.5 in 1951. All of these rates, however, are well above those that prevailed between 1920 and 1945.

The average length of life for the entire population was 70.2 years in 1961, an all-time high and substantially above the life expectancy of 68.4 years in 1951.

The infant death rate dropped from 28.4 per 1,000 live births in 1951 to 25.3 per 1,000 in 1961. The maternal mortality rate has declined by more than 50% in the same period, from 7.5 per 10,000 to 3.2 per 10,000.

The principal communicable diseases of childhood—scarlet fever, diphtheria, whooping cough, and measles—accounted collectively for 243 deaths per 100,000 children aged 15 and under in 1900. By 1950 this rate had declined to 5 per 100,000, and in 1961 to 1 death per 100,000. Death rates in the total population for tuberculosis and syphilis declined from 20.1 per 100,000 to 5.7, and from 4.1 to 1.8, respectively, in the 1951–61 period.

The chronic diseases which characterize the latter part of life remain by far the leading causes of death, and their death rates have tended to rise slightly in the past decade. The death rate for the major cardiovascular-renal diseases was 513 per 100,000 in 1951, and 514 in 1961. For cancer the corresponding rates were 140.5 and 147.5. (See also DEATH, CAUSES OF.)

LUTHER L. TERRY,
Surgeon General, U.S. Public Health Service.

PUBLIC OPINION SURVEYS

In their coverage of 1962 election campaigns in the United States, the major published polls continued their trend toward more detailed analyses of voting intentions and away from flat predictions of the outcome. The last of seven Gallup Poll reports of national congressional preferences showed a Democratic majority of 55.5%. The poll thus foreshadowed the strong Democratic showing in elections to the House of Representatives, but took care to warn that "national percentages for the two parties cannot be translated directly into seats." The last of six California poll reports on the state gubernatorial election gave Gov. Pat Brown a 53-to-47 edge over Richard Nixon, a lead which the poll termed "significant, but not decisive." Throughout the campaign, the polls reported fully on such matters as probable turnout, shifts in voting intention among population subgroups, and things liked or disliked about the two parties or candidates. (See also ELECTIONS, U.S.)

Private surveys were increasingly relied upon by the candidates themselves. In New York the nomination of Robert M. Morgenthau, Jr., as Democratic gubernatorial candidate was widely attributed to a private survey which reportedly found him to be the party's strongest candidate. It has been suggested that the use of surveys for political purposes has coincided with the deterioration of party machines, and that the polls now provide the same sort of information formerly obtained by precinct workers. They are only incidentally relied upon to forecast election outcomes, but more often to assess the strengths and weaknesses of the candidates and to guide the allocation of campaign resources.

Other Trends.—As in past years, there was a continued expansion of the use of public opinion surveys and a gradual improvement in techniques. The design, execution, and analysis of surveys have become ever more complex and sophisticated. In 1962 few surveys were content with asking for simple preferences and reasons therefor. Routinely, questions were asked concerning the issue's importance to the individual, his past behavior, his expectations for the future, and the amount of his information. There was an observable trend toward "contextual analysis," in which opinions are studied in the context of the individual's environment. Availability of high-speed electronic computers facilitated many types of analysis which were formerly impossible.

The Gallup Poll remained the only regularly published source of national survey data. Among its findings during the year were continued support for the United Nations (78% thought it was doing a good or fair job) and a decline in approval of "the way Kennedy is handling his job as president" (from 79% in March to 73% after the steel crisis in April, 71% after the stock market slump in May, and 62% after the Mississippi riots in October). In a survey conducted the evening of October 22, Gallup reported that 84% of those who heard or watched the president's speech approved of his decision to act in the Cuban crisis, even though one in five feared it would mean all-out war.

Activities Abroad.—Survey research corporations and institutes continued to proliferate abroad. A Coordination Center for Southeast Asian Studies was established in Bangkok to serve as clearing house for market and opinion research in Burma, Cambodia, the Philippines, Thailand, Vietnam, Singapore, Malaya, and Indonesia. A Russian statistical journal reported on three polls conducted by an "institute of public opinion" established by *Komsomolskaya Pravda,* the newspaper for young Communists. A thousand men and women were polled "at ten points located on the Thirtieth Meridian" on the issue: "Will mankind succeed in averting war?"; questionnaires concerning economic conditions and living standards were distributed in "65 trains leaving Moscow in various directions"; and 20,000 mail questionnaires were received from youthful readers on the attitudes and goals of their generation. The Gallup Poll's West German affiliate reported a continued decline in the proportion of West Germans who would vote today for "a man like Hitler." Formerly between 12% and 15%, the figure began to drop in 1958, and in 1962 was only 3%.

Events.—The Roper Public Opinion Research Center, established in 1957 as a repository for survey data the world over, dedicated its new building in Williamstown, Mass., in September. The Center had in its files nearly 2,000 surveys from 29 countries. The 17th annual conference of the American Association for Public Opinion Research (AAPOR), held at Lake George, N.Y., in May, was dedicated to the memory of Samuel A. Stouffer (d. 1961). The AAPOR Award for distinguished achievement in public opinion research was received by Angus Campbell, director of the Survey Research Center, University of Michigan, and coauthor of *The American Voter* (1960).

PAUL B. SHEATSLEY,
Eastern Representative, National Opinion Research Center, University of Chicago.

PUBLIC ROADS, Bureau of. See HIGHWAYS.

PUBLIC UTILITIES

Sales of electric energy to ultimate consumers in the United States (excluding Alaska and Hawaii) for the 12 months ending June 30, 1962, reached 749.2 billion kw.-hr., an increase of 7.5% over the preceding 12-month period, according to Federal Power Commission figures. Electric utility generating plants in the United States increased their installed generating capacity over the same period from 174.4 million kw. to 186.0 million kw. Of the latter amount, 146.3 million kw., or 78.7%, was steam produced; 36.7 million kw., or 19.7%, was hydro; and 3.0 million kw., or 1.6%, was internal combustion. Of the same total, 75.7%, or 140.8 million kw., was investor-owned, and 45.2 million kw., or 24.3%, was owned publicly or by cooperatives. Average annual residential consumption of electricity in 1961 rose from 3,854 kw.-hr. to 4,019 kw.-hr., while the average cost per kw.-hr. dropped from 2.47 cents to 2.45 cents (revised figures).

As of October 1962, electric utilities were participating in the operation of seven nuclear power plants with a combined capability of approximately 668,500 kw. Included in this total was the Indian Point plant of the Consolidated Edison Company of New York, with a capacity of 275,000 kw. The plant went critical Aug. 2, 1962. Electricity from atomic energy was produced in Canada for the first time on June 4, 1962, at the Rolphton, Ontario, plant.

The utility industry continued the development of high-voltage transmission systems. A 345,000-volt transmission line supplying Niagara Falls power to New York City was completed on June 15, 1962. A 460,000-volt line is now in operation in western Pennsylvania, and a 500,000-volt line is planned to connect a mine-mouth plant to electric load centers in Virginia. Attention is being given to direct-current transmission systems which may offer substantial economies at high voltages and under certain special conditions. In an increasing number of instances, power-pooling agreements have come to include interlocking construction programs in which each utility adds capacity in turn and sells excess power to pool members. There have been continuing proposals of government-owned, power-grid systems. The Federal Power Commission is giving concentrated study to the economics of power transmission and the location of generating facilities.

The Priest River hydro plant on the Columbia River was dedicated on June 2, 1962. It was built by a Public Utility District and has a capacity of 788,400 kw. The Consolidation Coal Company and the Texas Eastern Transmission Company have announced plans for a $100 million, 350-mile coal-slurry pipeline from West Virginia to utility plants in eastern Pennsylvania, New York, and New Jersey. To meet the competitive threats, several railroads are planning integrated trains of permanently coupled cars to shuttle back and forth between mines and plants. The Babcock & Wilcox Company demonstrated the instantaneous burning of a solution of coal and water to produce electricity commercially. There has been a revival of interest in pumped-storage hydro plants, due in part to improvements in the reversible turbine. (See also ATOMIC ENERGY; ELECTRICAL INDUSTRIES.)

Natural Gas.—Public utility sales of natural gas increased to 93.6 billion therms in 1961, an increase of 3.4% over 1960. Marketed production of wet natural gas accounted for 33.2% of all energy production in the United States in 1961, a slight increase. Proved recoverable reserves increased to 267.7 trillion cubic feet at the end of 1961, an increase of 1.5%. The largest additions were again in Louisiana. Twelve new underground storage pools were added during the year, bringing the total number up to 229 with a capacity of 3,121 billion cubic feet. The industry increased its network of mains by 4.4% to 659,000 miles. Gas utility and pipeline construction expenditures for new facilities amounted to $1,662 million.

The Federal Power Commission made substantial headway in reducing the huge backlog of natural gas pipeline cases before it. In the twelve months ending June 30, 1962, annual amounts under suspension were reduced by nearly $100 million to $277 million, and refunds of $153 million were made to ratepayers. The area-wide pricing system for independent producers was sustained by the U.S. Court of Appeals in November 1961. The U.S. Supreme Court held on April 30, 1962, that the Federal Power Commission had no right to approve the merger of the Pacific Northwest Pipeline Corporation into the El Paso Natural Gas Company while an antitrust suit challenging the merger was pending before a federal court. The industry gave increasing attention to the use of the gas turbine as a localized source of energy for the generation of electric power. Several gas utilities made test installations. (See also FEDERAL POWER COMMISSION; GAS; PETROLEUM.)

Telephone and Telegraph.—Telephones in service in the United States and Puerto Rico increased by 4.2% to 77,575,100 at the end of 1961. Of these, the 23 Bell Telephone operating companies accounted for 65,508,000, and 3,035 independent companies accounted for 12,067,100. The number of these independent companies has been steadily declining in recent years because of mergers and consolidations. As a result of changes in the accounting for intrastate and interstate expenses, Bell companies made reductions of approximately $39 million a year in intrastate rates.

Telstar, the American Telephone and Telegraph Company's experimental satellite, was launched on July 10, and on the same day it transmitted signals from the United States to Europe. A communications satellite bill was signed by the president on August 31. The bill provides for the creation of a private corporation in which half of the stock will be owned by private investors and half by communications companies.

The Federal Communications Commission in May ordered an investigation of the domestic telegraph industry to

determine what steps should be taken to assure future service. Since 1945 the volume of annual messages has declined from 245 million to 131 million, although other services have been expanded. (See also FEDERAL COMMUNICATIONS COMMISSION; SPACE FLIGHT; TELEPHONE.)

Finance.—The utility industries offered a total of $4,418 million of securities to the investing public in 1961, compared with $3,691 million the year before. Offerings of the electric utility industry declined slightly; those of the gas and telephone industries increased.

(See also LAW; RAILROADS; URBAN TRANSIT.)

E. W. CLEMENS,
Professor of Economics and Business Administration, University of Maryland.

PUBLISHING. See BOOK PUBLISHING AND SALES; MAGAZINES; NEWSPAPERS.

PUERTO RICO

Situated in the Caribbean Sea about 1,000 miles southeast of Florida, the Commonwealth of Puerto Rico is the easternmost island of the Greater Antilles. It has a total area of 3,435 square miles, including the islands of Vieques (51 sq. mi.), Mona (19 sq. mi.), and Culebra (11.8 sq. mi.). Self-governing in domestic affairs, Puerto Rico has a voluntary association with the United States, which is responsible for its defense and foreign affairs. Puerto Ricans are also citizens of the United States. Spanish is the official language.

Population.—According to the 1960 census, Puerto Rico's population is 2,349,544, a decennial increase of 6.3%, despite the net emigration in 1950–59 of 430,522 persons, almost entirely to the United States mainland. The 1961–62 net emigration was 11,363, compared with 13,800 in 1960–61. The principal cities (with 1960 census populations) are San Juan, the capital, 432,377; Ponce, 114,286; Mayagüez, 50,147; and Caguas, 32,015. The ethnic composition of the population (1950 census) is 79.7% white and 20% Negro.

Government.—Ceded to the United States by Spain by the Treaty of Paris (Dec. 10, 1898), Puerto Rico became a free commonwealth by act of the U.S. Congress on July 25, 1952. Executive power is vested in a governor (Luis Muñoz Marín, elected Nov. 6, 1960 for a 4-year term), assisted by an appointed Council of Secretaries (Roberto Sánchez Vilella, secretary of state). The bicameral legislature, elected by universal suffrage for a 4-year term, consists of a 32-member Senate and a 64-member House of Representatives. Puerto Rico is represented in the U.S. House of Representatives by a resident commissioner (Antonio Fernós-Isern), who may take part in debate but may not vote. The Supreme Court is the highest judicial body, headed by Luis Negrón Fernández. Puerto Ricans do not vote in United States presidential elections, do not pay United States income tax, but are subject to military conscription. Principal political parties (with number of votes received in the 1960 elections): Popular Democratic Party, 457,887; Republican Statehood Party, 252,462; Christian Action Party, 51,292; and Independence Party, 24,122. (See also below *Events, 1962.*)

Finance.—Total revenue, 1961: $263 million; expenditure: $318 million. Chief items of expenditure: education, $98 million; health and public welfare, $72 million; and industrial, agricultural, and commercial development, $34 million. United States grants and payments in Puerto Rico in 1960–61 totaled $192.2 million. Total assets of the Puerto Rico Government Development Bank were $118.3 million at the end of 1961. Property valuation was $1,900 million in 1961–62.

Puerto Rico's Gov. Luis Muñoz Marín, shown with his wife, in 1962 advocated a plebiscite to let Puerto Rico decide its future political status in relation to the United States.

WIDE WORLD

Education and Religion.—Well over one third of the island's population is receiving some kind of formal education. (In the United States the figure is less than one fourth.) A special drive has increased adult literacy to 89% in 1962, as against 75% in 1950. The commonwealth spends nearly one third of its budget on education, but there is still a shortage of teachers and accommodations. In 1961–62 there were 589,458 pupils in the public day schools and 56,634 in accredited private schools, as compared with 408,128 and 22,595, respectively, in 1950. The University of Puerto Rico in Río Piedras has increased its attendance from 5,000 in 1940 to 21,262 in 1962. The Catholic University in Ponce and the Inter-American University in San Germán are other institutions of higher learning. Roman Catholicism is the predominant religion.

Transportation and Communications.—In 1962 Puerto Rico had 3,014 miles of paved roads, 44 standard broadcasting stations, 9 television stations, 1,410,000 radios, and 180,000 television sets. Motor vehicles registered in 1961 totaled 202,803; telephones totaled 89,892. San Juan International Airport is served by six airlines.

Economic Indicators.—Puerto Rico's gross national product rose to $1,985 million in 1961–62, an increase of 10.6% over 1960–61. Total net income rose from $614 million in 1950 to $1,650 million in 1961–62; per capita income reached $700 for the first time. The consumer price index (1957–59 = 100) reached 109.1 in April 1962 (107.7 in April 1961). In 1961–62 about 84,000 workers (13% of the labor force) were unemployed, compared with 75,000 persons (12%) the previous year. The average hourly wage was $1.063 in July 1962 (up four fifths of 1 cent from July 1961).

Manufactures and Minerals.—Mechanization of agriculture, manufacturing, and shipping has caused an increase in technological unemployment, but this has been offset by expansions in manufacturing and other industries. The net income from manufacturing was $381 million in 1961–62, compared with $333 million in 1960–61. In 1960, 71,728 persons were engaged in nondurable goods manufacture and 22,380 in the manufacture of durable goods. The principal industries are food processing; apparel and textiles; metal products; stone, clay, and glass products; and tobacco manufactures. The number of factories established with government aid (Operation Bootstrap) totaled 863 in 1961–62, an increase of 105 over the preceeding year. The trend of the commonwealth's promotion efforts has been increasingly toward the building of factories to process agricultural products and toward the development of interlocking industries in which the byproducts of one become the raw materials of another. Mineral production, consisting primarily of cement and stone, was valued at $33.8 million in 1961.

Agriculture.—Problems created by old patterns of land tenure and outmoded methods of farming, together with the urgent need to improve grading, packaging, and distribution techniques, have retarded the rate of development in agriculture. Sugar remains the island's principal crop; dairy farming comes next. Total agricultural production in 1961–62 reached $261 million. In 1960, 136,096 persons were engaged in agriculture. The 1961 sugarcane crop was estimated at 10,754,000 tons (9,997,000 in 1960), from which 1,110,000 tons of sugar and 63 million gallons of blackstrap molasses were produced. Other important crops include oranges, mangoes, coconuts, bananas, grapefruit, tobacco, and coffee.

Foreign Trade.—Exports in 1961 totaled $711.1 million ($604.3 million in 1960); imports totaled $1,018 million ($923.7 million in 1960). Trade is almost entirely with the United States mainland (84% of the imports and 98% of the exports in 1961–62). The 1961–62 tourist season broke all records, with over 394,000 visitors spending an estimated $66 million.

Events, 1962.—On July 25, Governor Muñoz Marín made public an exchange of letters between President Kennedy and himself on the desirability of a plebiscite through which the Puerto Rican people would express their wishes on one of three different permanent forms of political status: (1) continued commonwealth status, strengthened and altered somewhat; (2) statehood in the United States; and (3) independence. Both leaders expressed the opinion that the association of the United States and Puerto Rico needed perfecting, and that the people of Puerto Rico should be afforded complete freedom of choice. The Independence Party (no longer an established political party since gaining only 3% of the vote in the 1960 election) and the Republican Statehood Party threatened to boycott the plebiscite, which will probably be held in mid-1963.

Following the visit to Puerto Rico in August of Msgr. Emanuelle Clarizio, apostolic delegate to Puerto Rico and papal nuncio to the Dominican Republic, the long-standing rift between the Roman Catholic Church and Governor Muñoz Marín was healed. The Christian Action Party, established with the aid of Bishop James McManus of Ponce and Archbishop James Davis of San Juan, announced that it would participate in the forthcoming plebiscite.

Two camps for the physical training of U.S. Peace Corps volunteers were established in Puerto Rico in 1962. Area studies and other training programs for Peace Corps volunteers were inaugurated in collaboration with the University of Puerto Rico, the Catholic University, and the Inter-American University. Nearly 500 delegates from 43 countries attended the Peace Corps-sponsored International Conference on Middle Level Manpower on October 10–12. The conference resulted in wide acceptance of the Peace Corps idea, with eight countries declaring their readiness to establish such programs of their own.

EARL PARKER HANSON,
Geographer; Consultant to the Department of State, Commonwealth of Puerto Rico.

PULITZER PRIZES. See PRIZES AND AWARDS.
PYRITE. See MINERAL PRODUCTION.

QATAR. See ARABIA.
QUAKERS. See FRIENDS, RELIGIOUS SOCIETY OF.
QUARTZ. See ABRASIVES.

QUEBEC

Canada's largest province, Quebec has an area of 594,860 square miles (15.5% of the total area of Canada), consisting of 523,860 square miles of land area and 71,000 square miles of water. The population, according to the 1961 census, is 5,259,211 (est. June 1, 1962, 5,366,000). The overwhelming majority of the population is of French origin (80%) and Roman Catholic (88%). In 1961, 3,906,404 persons lived in urban localities and 1,352,807 in rural areas. Principal cities, with their 1961 population, are: Montreal, 1,191,062 (metropolitan area, 2,109,509); Quebec, the capital, 171,979 (metropolitan area, 357,568); Verdun, 78,317; Sherbrooke, 66,554; Trois-Rivières, 53,477; and Hull, 56,929. Montreal (q.v.) is the chief metropolis of Canada and the second-largest French-speaking city in the world, ranking next to Paris.

Government.—Quebec's government comprises a lieutenant-governor named by the government of Canada; an Executive Council of 16 members, one of whom has no portfolio; a Legislative Council of 24 members appointed for life by the lieutenant-governor in council; and a Legislative Assembly of 95 members elected for five years. The lieutenant-governor in 1962 was Paul Comtois; Jean Lesage, leader of the Liberal Party, was premier. Membership in the Legislative Assembly in 1962 was as follows: Liberal, 53; Union Nationale, 41; and Independent, 1. The people of the province are represented in the Canadian Parliament by 24 members in the Senate and 75 in the House of Commons.

Finance.—For the 1961–62 fiscal year the total revenue of the province was $754,114,485; the ordinary expenditure, $713,587,762; and net capital expenditure, $103,294,698. The net funded debt was $496,565,794.

Education.—The schools governed by the Education Act are either Catholic or Protestant, and French and English are taught in both types. In 1961 the entire school system included 9,259 schools, 67,151 teachers, and 1,445,751 pupils. Teacher training is provided in 115 normal schools. Secondary education is provided by public schools and 104 *collèges classiques*, three of which have modernized their curricula. Higher education is provided by six universities.

Purchasing Power.—The purchasing power of Quebec's population was estimated at $7,004 million in 1961; salaries and wages totaling $4,986 million made up the greater part of the amount. Retail trade in 1961 amounted to $4,109 million.

UPI

Premier Jean Lesage of Quebec campaigns in preparation for the November 14 provincial election, in which his Liberal Party won a 31-seat majority in the Legislative Assembly.

Hydroelectric Energy.—The actual capacity of turbines installed in the province represents 47% of the total Canadian installation and about one third of the resources recorded at the present time. Hydroelectric turbines installed during 1961 represented an increase of 136,700 horsepower and brought the total turbine installation in Quebec to 12,576,845 hp., or 9,315,000 kilowatts, with active construction under way for other large-scale projects expected to add 240,000 hp. of new hydroelectric capacity in 1962. Subsequent to 1962, planning or preliminary construction work already in hand will make available more than 5.9 million hp. of new hydroelectric capacity.

Transportation and Communications.—In 1961 Quebec had 34,178 miles of improved roads, out of a total road mileage of 44,734, and 1,267,602 registered motor cars. There were 5,087 miles of railways and 1,520,622 telephones.

Agriculture.—Agricultural land covers an area of 66,615 square miles, or about 12% of the total area of the province. In 1961, 7,239,000 acres were under cultivation (including pastures); the aggregate value of agricultural production was estimated at $674,400,000. The three leading crops are hay and clover, oats, and potatoes. Cash income from the sale of farm products was valued at $444,992,000 and was derived from the sale of dairy products ($179,541,000); livestock ($134,666,000); poultry and eggs ($56,783,000); field crops ($9,557,000); fruits and vegetables ($24,393,000); forest products, maple products, tobacco, honey, and miscellaneous commodities, ($40,052,000).

Forestry.—Quebec's commercial forests cover an area of 264,160 square miles. The wood cut during 1961 was valued at $281,568,000 and included pulpwood valued at $181,656,000; lumber, $76,020,000; veneer, excelsior, matches, and similar products, $7,900,000; and charcoal and firewood, $10,556,000. In 1961 the pulp and paper industry provided employment to 26,253 persons and had a payroll of $137,932,000 and a gross production value of $597 million. Newsprint production was estimated at 3,136,000 tons ($359,680,000).

Mines and Quarries.—The value of mineral production in 1961 was estimated at $447,437,000, subdivided as follows: metals, $212,169,000; industrial minerals, $148,258,000; and building materials, $87,017,000. The Quebec Cartier Mining Company is developing the so-called Quebec Labrador Trough, which extends from Lac Jeannine to the far northern tip of the Ungava Peninsula. The company shipped its first iron ore concentrates from its mill at Gagnon via Port Cartier on the north shore of the St. Lawrence River in July 1962. It was expected that the full production peak of some 8 million tons of concentrates a year would be reached in 1963.

Manufactures.—Manufacturing establishments during 1961 paid $1.6 billion in salaries and wages to 434,000 workers. The gross value of factory

shipments was estimated at $7,206,096,000. Chief industries include pulp and paper production, nonferrous smelting and refining, slaughtering and meat packing, and the manufacture of petroleum products, cotton yarns and cloth, factory clothing, railway rolling stock, electrical appliances, and synthetic textiles.

Events, 1962.—Since July 6, 1962, the Province of Quebec has had its own General Investment Corporation, the duties of which will be to promote the creation and development of industrial and commercial undertakings, so as to insure the economic growth of Quebec and contribute to full employment.

The main political event of the year was the general election on November 14, two years prior to expiration of the Legislative Assembly's mandate. The Liberal Party, in power since June 22, 1960, had aimed at a *politique de grandeur* in the fields of education and social assistance, and Premier Lesage wanted popular approval of its project to nationalize all private companies producing and distributing electricity in the Province of Quebec—a project estimated to bring about capital expenditures of some $600 million. The opposition had promised a referendum on the nationalization of electricity. At the polls, the Liberal Party gained favor, taking 63 of the 95 seats in the Legislative Assembly. The Union Nationale was represented by 31 members, and one independent candidate won the remaining seat. (See also CANADA.)

The Royal Commission of Inquiry on Education held several public hearings in 1962 and studied a few hundred briefs. The parent commission's report will serve as a basis for a complete reorganization of education in Quebec.

LIONEL LA BERGE,
Director, "Quebec Year Book."

QUEMOY. See Index entry.

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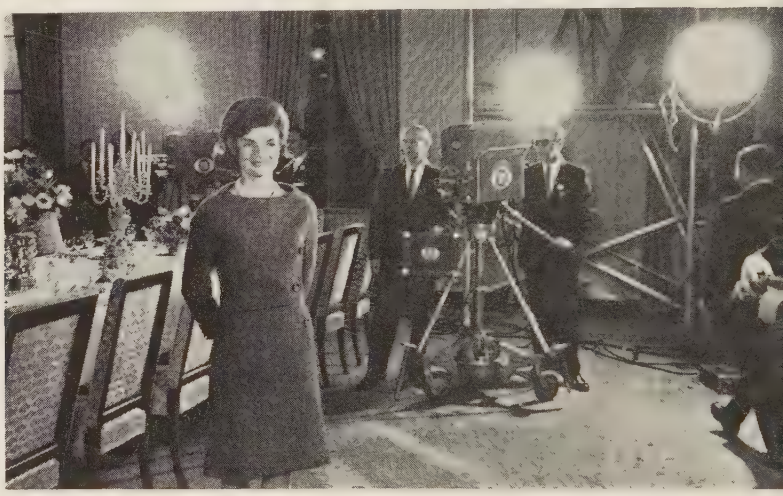

RADIO AND TELEVISION—Tour of White House with Jacqueline Kennedy is filmed for television, January 15.

UPI

RACE RELATIONS. See CIVIL LIBERTIES and the Index entry, *Race Relations.*
RACING. See SPORTS, GAMES, AND SHOWS.
RADAR. See Index entry.
RADIATION. See the Index entries, *Radiation, Radioactivity,* and *Van Allen Layers.*

RADIO AND TELEVISION

Highlights of the year 1962 in radio and television are reviewed in this article in three sections: (1) The Radio-TV-Electronics Industry; (2) Radio and Television Engineering; and (3) Radio and Television Programs. For additional information, see the Index entries *Radio* and *Television.*

THE RADIO-TV-ELECTRONICS INDUSTRY

The radio-TV-electronics industry in the United States added another $1 billion in sales in 1962 to reach a new peak of $13 billion. Government procurement accounted for about 60% of this total, but gains in industrial electronics and home entertainment products were also impressive. Congress, for the first time, took actions designed to expand television broadcasting, both commercial and educational, while FM radio was revitalized through the adoption of stereophonic broadcasting.

Expansion of TV Expected.—The Federal Communications Commission (FCC) sponsored legislation requiring manufacturers to cease producing very-high-frequency (VHF)-only receivers and to manufacture sets receiving both VHF and ultra-high-frequency (UHF) channels. After the law was enacted, the FCC late in 1962 issued regulations requiring complete conversion to all-channel receiver manufacturing by April 30, 1964. A broad expansion of television broadcasting was expected. Although the 12 VHF channels have not been adequate to provide satisfactory TV service for all areas of the nation, the available UHF frequencies had been in little demand.

Congress also passed legislation under which the government will match, up to $1 million in each state and $32 million in total, costs of constructing educational TV broadcasting stations. (See also EDUCATION.)

Space Exploration.—Expanding activities of the United States government in space exploration began to have an impact on electronics production in 1962. More than 60% of all equipment used in space probes is electronic. The total budget of the National Aeronautics and Space Administration, in its race to beat the Soviet Union to the moon, was increased from $950 million in the fiscal year 1961 to $3.8 billion in 1963, and anticipated expenditures between 1962 and 1972 are estimated at between $50 and $60 billion.

Military purchases of electronic parts and equipment reached $7.6 billion in 1962—an increase of 12% over 1961. The emphasis was on research and development, rather than on production of hardware. (See also SPACE FLIGHT.)

Industrial Market.—The industrial market for electronics has grown fourfold during the past decade. In 1962 it represented 20% of total industry sales and paralleled consumer goods (radio-TV-phonographs), which before 1950 represented the lion's share of the business. The greatest gains have been in computing and data-processing equipment and industrial controls. Other industrial products include electronic testing and measuring devices, communication and navigational equipment, and nuclear, medical, and meteorological apparatus.

Consumer Goods.—TV-set sales increased in 1962 by more than 200,000 over 1961, to a total of 6.4 million. The long-delayed interest in color television, an increase in all-channel receivers, and a trend toward larger screens stimulated the market. Despite severe foreign competition in transistor portables, radio-set sales gained more than a million units in 1962 to a total of 11.8 million receivers, exclusive of 7.3 million automobile sets. Phonographs made a 25% gain to reach 5.0 million instruments, chiefly stereo. FM stereo, standardized by the FCC in 1961, unquestionably boosted the demand for radios. The FCC estimated that 250 FM stations—about one quarter of the total—had converted to stereo broadcasting by the end of 1962.

International Trade.—Both exports and imports of electronic equipment and components increased in 1962, and the enactment of the Trade Expansion Act in September was expected to have far-reaching effects on the industry. Exports rose 20% over 1961 to a total of $730 million, while imports increased from $179 million in 1961 to $240 million in 1962. Japan remained the most serious foreign contender for the American consumer dollar as increasing shipments of Japanese TV sets approached those of transistor radios.

Electronics Industry.—The fifth largest manufacturing industry in the United States, the electronics industry comprises more than 5,000 plants and more than 2,000 product categories. The heaviest concentrations of plants are in the Atlantic seaboard, the Chicago-Midwest, and the west coast (chiefly California) areas. Of the more than 850,000 employees, more than 130,000 are engineers or scientists. (See also ELECTRONICS.)

JAMES D. SECREST,
Executive Vice President,
Electronic Industries Association.

RADIO AND TELEVISION ENGINEERING

A new era in television began in 1962 with live television transmissions between the United States and Europe. The first transmissions took place on July 10, relayed by means of the American Telephone and Telegraph Company's experimental Telstar satellite, between Andover, Me., and stations in England and France.

The Telstar transmissions cannot be picked up directly by the general public. Plans are under study, however, for direct broadcasting to the home from earth satellites in synchronous equatorial orbits some 22,000 miles above the earth's surface, in which the satellites remain fixed with respect to the earth. Although such broadcasting stations may someday prove to be feasible, it is not expected that the problems of rocket launching, guidance, and high-capacity electric power supplies for such satellites will be solved for several years. In the meantime, transmissions via satellite will be confined to point-to-point relay. (See also SPACE FLIGHT.)

Television Stations.—The construction of new television stations throughout the world continued during 1962. The accompanying table lists the countries reported to have regular television serv-

SUMMARY OF WORLD TELEVISION, 1962

Country	Transmitting stations	Receiving sets
Albania[1]	1	...[2]
Algeria	6	67,500
Argentina	9	850,000
Australia	27	1,337,655
Austria	27[3]	350,000
Belgium	12	950,000
Bermuda	1	9,400
Brazil	37	1,430,000
Bulgaria	2	17,367
Canada	154	4,375,000
Chile	3	3,000
China (Communist)	26	100,000
Colombia	14	200,000
Costa Rica	4[4]	15,000
Cuba	27[5]	400,000
Cyprus	1	4,500
Czechoslovakia	100[6]	1,300,000
Denmark	11	795,000
Dominican Republic	4	18,000
Ecuador	2	5,000
El Salvador	3	30,000
Finland	19	315,000
France	152[7]	3,059,574
Germany, East	117[8]	1,500,000
Germany, West	419[9]	7,000,000
Gibraltar[1]	1	...[2]
Guatemala	3	40,000
Haiti	1	2,500
Honduras	2	4,500
Hong Kong[10]	1	16,000
Hungary	8	250,000
India	1	750
Iran	2	50,000
Iraq	1	35,000
Ireland	5	120,000
Italy	586[11]	3,255,611
Japan	207[12]	11,222,802
Kenya[1]	1	3,500
Korea	1	40,000
Kuwait	1	8,000
Lebanon	4	80,000
Luxembourg	1	10,500
Malta	1	21,000
Mexico	24	1,000,000
Monaco	1	12,000
Morocco	4	5,000
Netherlands	7	1,168,995
Netherlands Antilles	1	10,000
New Zealand	4	52,000
Nicaragua	2	10,000
Nigeria	6	10,000
Norway	20[13]	155,000
Okinawa	2	47,000
Panama	3	30,000[14]
Peru	7	88,000
Philippines	11	60,000
Poland	17	1,000,000
Portugal	8	90,000
Rhodesia	3	35,000
Rumania	9	68,000
Saudi Arabia	1	14,000
Spain	36[15]	400,000
Sweden	63	1,550,000
Switzerland	27	250,000
Syrian Arab Republic	3	42,000
Taiwan	2	5,000
Thailand	2	100,000
Trinidad	1	5,000
Turkey	1	500
United Arab Republic	13[16]	200,000
United Kingdom	50	12,500,000
United States	644	60,000,000
Uruguay	3	70,000
USSR	173[17]	6,500,000
Venezuela	14	263,000
Yugoslavia	39[18]	100,000

[1] Inaugurated regular television service in 1962. [2] Sets-in-use estimate unavailable. [3] Includes 15 low-power satellite transmitters. [4] Includes 2 low-power satellite transmitters. [5] Recent information not available. [6] Includes 89 low-power satellite transmitters. [7] Includes 115 low-power satellite transmitters. [8] Includes 107 low-power satellite transmitters. [9] Includes 334 low-power satellite transmitters. [10] Closed-circuit cable system. [11] Includes 543 low-power satellite transmitters. [12] Includes 82 low-power satellite transmitters. [13] Includes 15 low-power satellite transmitters. [14] Does not include sets in Canal Zone. [15] Includes 28 low-power satellite transmitters. [16] Includes 6 relay units. [17] USSR claims 231 stations, but provides no data to substantiate claim. [18] Includes 32 low-power satellite transmitters. (Source: *Television Factbook.*)

ice during 1962, and gives the latest available statistics on the number of transmitters and home receivers in regular use. In the United States, the number of stations on the air increased from 620 at the end of 1961 to 644 at the end of 1962.

Ultra-High-Frequency (UHF) Stations.—The relatively small increase in the number of television stations in the United States reflects a continued slackening in the pace of new station construction. One of the reasons for this has been the approaching saturation of the 12 very-high-frequency (VHF) channels. These have been in great demand, while large numbers of channel assignments on the 70 ultra-high-frequency (UHF) channels have gone unused. This lack of interest in UHF television broadcasting has stemmed from many causes, especially the fact that less than 10 per cent of the receivers in use today are capable of receiving UHF transmissions. Few commercial UHF stations (84 as of June 30, 1962) are on the air, providing little inducement for the purchase of all-channel receivers; at the same time, the available number of UHF receivers has been too small to stimulate new UHF station construction.

This vicious circle was finally broken by an act of Congress in 1962, empowering the Federal Communications Commission (FCC) to require that all receivers shipped in interstate commerce be capable of receiving all television channels. Following conferences with the manufacturing industry, a date of April 30, 1964, was established after which only all-channel receivers may be distributed within the United States.

The FCC completed extensive engineering tests of UHF in New York City in 1962. A special transmitter and antenna were installed on top of the Empire State Building, and programs were broadcast simultaneously over the UHF station (Channel 31) and the regular commercial VHF stations in the city. Extensive tests and observations were made at thousands of homes in the New York City area for the purpose of evaluating the quality of UHF pictures. These tests showed the UHF to be capable of rendering a fully acceptable service within the New York metropolitan area, although somewhat inferior to the service provided by the VHF stations. At the completion of tests on Oct. 31, 1962, the City of New York took over the technical facilities installed by the FCC and continued the operation as the country's first municipal television broadcast system.

FM and AM Stations.—In radio broadcasting, an increasing number of frequency modulation (FM) stations began regular transmissions in stereophonic sound, employing a system standardized for the purpose in 1961. The number of commercial FM stations in operation during 1962 increased from 961 to 1,078, representing an all-time high in the number of FM stations in regular operation.

The expansion of standard (AM) broadcast stations was curtailed sharply in mid-1962 by an FCC order imposing a freeze on the authorization of new AM broadcast stations, in order to evaluate both technical and economic factors involved in the increasing growth of AM stations, which have increased almost fourfold since the end of World War II. Stations authorized prior to the freeze began operation, however, and the total number of stations on the air increased from 3,684 to 3,803 during the year.

(See also ELECTRONICS; FEDERAL COMMUNICATIONS COMMISSION.)

HOWARD T. HEAD,
Consulting Radio Engineer.

RADIO AND TELEVISION PROGRAMS

One of the most controversial television events of 1962 was a two-minute segment of a half-hour commentary program with a relatively low rating. The incident was the inclusion of an interview with Alger Hiss in an American Broadcasting Company program entitled *The Political Obituary of Richard M. Nixon,* conducted by Howard K. Smith on November 11. It was presented five days after former Vice President Nixon had lost his race for the California governorship.

Rarely has TV touched off such controversy as it did in putting on a man who was convicted for perjury after denying he had been a participant in a Communist spy ring. Hiss was investigated by the House Committee on Un-American Activities in 1948, when Nixon was a member of the committee. Many viewers denounced the network, Smith, and James C. Hagerty, vice president of news for ABC. But others, asserting that freedom of the press must be upheld, said the network had every right to use Hiss on the program. Two stations had refused to use the program, and two ABC advertisers who sponsored programs other than the one on which Hiss appeared requested (unsuccessfully) to cancel contracts totaling $1,500,000. A week after the Hiss incident, Hagerty appeared at the beginning of Smith's program, defending the network's decision to broadcast the program.

A notable event of the 1962 season was *A Tour of the White House* with Mrs. John F. Kennedy on February 14. She explained the changes and

(*Left*) Judy Garland and her guests Dean Martin (left) and Frank Sinatra. (*Center*) Richard Tucker (left), Eileen Farrell, and Leonard Bernstein at the opening night of Lincoln Center. (*Right*) Lucille Ball is guest star on Bop Hope's show.

CBS, CBS, NBC

NBC; CBS; CBS; NBC

(*Left*) Miyoshi Umeki, David Wayne (center), and John Forsythe in *Teahouse of the August Moon;* (*top*) Pulitzer Prize winners Mark Van Doren (left) and Archibald MacLeish conduct an informal conversation; (*bottom*) comediennes Julie Andrews (left) and Carol Burnett at Carnegie Hall; (*right*) Hope Lange and Christopher Plummer in *Cyrano de Bergerac.*

restorations she had made in the White House interior. Accompanied on the tour by Charles Collingwood of CBS, Mrs. Kennedy filled a role amounting to that of a historian savoring the small facts and human stories in the evolution of the White House decor. The American Research Bureau estimated that 46,500,000 persons had watched the first telecast of the program, which was presented simultaneously by CBS and NBC. It was later televised by ABC and repeated by CBS.

Other Programming.—The most emotionally gripping news event on television and radio was on Feb. 20, 1962—the space flight of Lt. Col. John H. Glenn, the first United States astronaut to orbit the earth. Television coverage of the three-orbit flight lasted for nearly 12 hours. Television and radio also covered the orbital flights of Comdr. M. Scott Carpenter (May 24) and Walter Schirra (October 3)—the latter competing for viewers' attention with the final game of the National League pennant playoff.

On election night (November 6) the networks proved they had made great strides toward perfecting high-speed methods for gathering and reporting election results. With electronic computers that projected returns from carefully selected key areas, the networks accurately predicted winners in some areas only a short time after the polls had closed.

The first exchange of live television programs between the United States and Europe occurred on July 10 by means of Telstar, the communications satellite. Because of the brief periods when Telstar came into line of sight over the Atlantic, no regular program schedule could be established. Relay, a second communications satellite, was launched and used experimentally by television for transatlantic programs. (See also SPACE FLIGHT and the foregoing section, *Radio and Television Engineering.*)

The new television season in the fall of 1962 brought in 32 new network shows in prime evening time and saw the return of 66 programs. By category, comedy was the most heavily represented. Among the comedy stars who came back after an absence of one or more seasons were Lucille Ball, Jackie Gleason, and Sid Caesar. Steve Allen also returned in a 90-minute program syndicated to stations five nights a week.

The returning comedy star who scored the biggest hit was Lucille Ball. On *The Lucy Show* she portrayed a widow with children, but it was basically the same character she had created in *I Love Lucy,* on which she had starred for years with Desi Arnaz. Vivian Vance, who had been featured on *I Love Lucy,* played a divorcee on *The Lucy Show.*

The Lucy Show began the season as first in ratings compiled by the A. C. Nielsen Company. But in a later survey, first place was taken over by *The Beverly Hillbillies,* an unlikely situation comedy about an Ozark family that struck oil and went to live in Beverly Hills, Calif.

In addition to the returning *Ben Casey* and *Dr. Kildare,* the new television season had two new medical shows—*The Nurses* and *The Eleventh Hour.* There also were dramas about World War II, such as *Combat* and *The Gallant Men.* Military uniforms and atmosphere provided the background for such comedy shows as *McHale's Navy, McKeever and the Colonel,* and *Don't Call Me Charlie!*

Bob Newhart's weekly comedy program, his first series, was not renewed for 1962–63. Shortly before the sponsor decided not to renew the program, Newhart received a George Foster Peabody Award as the outstanding TV comedian of the year.

Among the outstanding special one-hour shows were *The Danny Kaye Show; The Judy Garland Show,* which was repeated; an original drama by Tad Mosel entitled *That's Where the Town's Going;* and *Julie and Carol at Carnegie Hall,* starring Julie Andrews and Carol Burnett. Poetry is not a television staple, but *Americans: A Portrait in Verses* got special attention by CBS viewers. The one-hour program presented excerpts from the works of 23 poets, read by 16 performers. More than 35,000 persons wrote for bibliographies.

Controversy was stirred by an episode of the CBS drama *The Defenders,* entitled "The Benefactor," which advocated the legalizing of abortion under certain circumstances. The network screened it in advance for its affiliates, and 25 stations declined to carry it. The drama also was rejected by the Canadian Broadcasting Corporation.

Three television children's programs, the type of show long advocated by Newton N. Minow, chairman of the Federal Communications Commission, made their debut in 1962—*Discovery '62*

(ABC), *Reading Room* (CBS), and *Exploring* (NBC).

Jack Paar left as host of NBC's *Tonight* show (also called the *Jack Paar Show*) on May 29 after almost five years. His final appearance combined tributes to the star with comedy, controversy, sentiment, and music. In the fall, Paar initiated a one-hour weekly program on NBC, which in format was not greatly unlike the *Tonight* show. He was succeeded on *Tonight* by Johnny Carson.

A New York television station (WCBS-TV) turned over 2½ hours of prime evening time for a complete performance of *The Merchant of Venice*. The show was taped in the New York Shakespeare Festival's amphitheater in Central Park.

Other Developments.—In 1962, New York received its first educational television station, WNDT, and what was reported to be the first municipally owned TV station, WNYC-TV. The latter station, operating on ultra-high-frequency (UHF) channel 31, was given to the City of New York by the FCC, which had built it to conduct a UHF experiment for a year.

A Senate subcommittee investigating juvenile delinquency charged that TV networks violated their own code of moral practice by increasing emphasis on crime, violence, and sex in their programs. The networks denied the charge. One program under strong attack by the subcommittee was ABC's *Bus Stop*, which had presented a drama about adultery, murder, and suicide involving a teen-age psychopathic killer.

Newton Minow of the FCC, who a year earlier had called TV a "vast wasteland," turned to radio when he addressed the National Association of Broadcasters a second time. He said that some of radio was "astonishingly good," but that too much was "incredibly bad." In too many communities, he declared, radio had too many commercials. But he credited both television and radio with improvements.

Minow received a Peabody Award for his efforts "to rescue the (television) wasteland from the cowboys and private eyes." He was the first government official to be cited by the Peabody committee, whose 13-man board includes critics, educators, and lawyers.

(See also FEDERAL COMMUNICATIONS COMMISSION; PRIZES AND AWARDS.)

OUTSTANDING TV PROGRAMS IN 1962

Americans: Portrait in Verses—Character studies by American poets; read by Alexander Scourby, Peggy Wood, Kim Hunter, and others. Narrator: James Whitmore; producer: Richard Siemanowski. CBS, August 16.

Arms and the State (*NBC White Paper*)—Documentary study of the impact of the defense effort on American life. Narrated by Chet Huntley. NBC, March 25.

Arsenic and Old Lace—Robert Hartung's adaptation of Joseph Kesselring's comedy; with Dorothy Stickney, Mildred Natwick, Tony Randall, Boris Karloff, and Tom Bosley. NBC, February 5.

Birth Control and the Law (*C.B.S. Reports*)—Documentary and discussion of moral and legal aspects of birth control; narrated by Eric Sevareid; produced by Stephen Fleischman. CBS, May 10.

Broadway of Lerner and Loewe, The—A tribute to the composing team with excerpts from their musicals performed by Julie Andrews, Richard Burton, Maurice Chevalier, Robert Goulet, and Stanley Holloway. NBC, February 11.

Cancer Virus (*Breakthrough*)—Documentary survey of the search for the cause of cancer. Narrated by John Chancellor. NBC, June 8.

Chosen Child, The—Documentary study of child adoption; written by the program's producer, Robert Northshield, and director, Frank De Felitta. Narrated by John Chancellor. NBC, November 25.

Cyrano de Bergerac (*Hallmark Hall of Fame*)—Edmond Rostand's classic drama; with Christopher Plummer, Hope Lange, Donald Harron, and George Rose. NBC, December 6.

Danny Kaye Show, The—Comedy and music starring Danny Kaye, with Lucille Ball; directed by Greg Garrison. NBC, November 11.

Dialogues of Archibald MacLeish and Mark Van Doren, The—Informal conversation on a variety of subjects, filmed at MacLeish's farm in Conway, Mass. CBS, August 2.

Fat American, The (*C.B.S. Reports*)—Documentary study of the food industry and the problem of overweight. Narrated by Harry Reasoner. CBS, January 18.

Germany: Fathers and Sons—Documentary study of the "barrier of silence" separating the Germans who lived under Hitler from younger Germans searching for a tradition. Narrated by John Rich. NBC, June 15.

He Is Risen (*Project 20*)—Depiction of Christ's last days on earth, the Crucifixion, and the Resurrection, through art masterpieces; narration by Alexander Scourby; musical score by Robert Russell Bennett; produced by Donald B. Hyatt. NBC, April 15.

Heart and Artery Surgery (*Breakthrough*)—Four heart and artery operations, showing recent medical advances; narrated by John Chancellor and Dr. Henry Swan. NBC, April 23.

Inferno, The (*NBC White Paper*)—Documentary study of life in a slum in Palermo, Sicily. Written, directed, and filmed by Robert Young and Michael Roemer; narrated by Chet Huntley. NBC, May 18.

John Brown's Body—Stephen Vincent Benet's classic poem about the Civil War; with Douglas Campbell, Nancy Wickwire, and Lester Rawlins; narrated by Richard Boone; produced by Richard Siemanowski; directed by Joseph Chomyn; score by George Kleinsinger. CBS, January 14.

Julie and Carol at Carnegie Hall—Musical variety program featuring Julie Andrews and Carol Burnett; script by Mike Nichols and Ken Welch; choreography by Ernest Flatt; produced and directed by Joe Hamilton. CBS, June 11.

Laudes Evangelii—Miracle play with dance and music, depicting the life of Christ; choreography by Leonide Massine; music by Valentino Bucchi; libretto by Giorgio Signorini; originally shown in Great Britain in 1961. CBS, April 8.

Love of Three Kings, The—Montemezzi's opera performed by the NBC Opera Company; Alfred Wallenstein, conductor; Kirk Browning, director; with Giorgio Tozzi, Richard Torigi, Phyllis Curtin, Frank Poretta, and Nicholas di Virgilio. NBC, February 25.

Mental Illness (*Breakthrough*)—Documentary survey of the study and treatment of mental illness; narrated by John Chancellor and Dr. John Romano. NBC, June 22.

Merchant of Venice, The—Taped presentation of the Shakespeare play, produced by the New York Shakespeare Festival in Central Park; with George C. Scott, Nan Martin; staged by Joseph Papp. CBS, June 21.

Noah and the Flood—Dance allegory woven around a new musical score by Igor Stravinsky; choreography by George Balanchine; book by Robert Craft. CBS, June 14.

Opening Night at Lincoln Center—Live broadcast of the opening of Philharmonic Hall in New York City's Lincoln Center for the Performing Arts; narrated by Alistair Cooke; concert by the New York Philharmonic Orchestra, directed by Leonard Bernstein; Eileen Farrell, Jennie Tourel, George London, Richard Tucker, and others, soloists. CBS, September 23.

Other Face of Dixie, The (*C.B.S. Reports*)—Documentary study of school integration progress in four Southern cities; narrated by Harry Reasoner. CBS, October 24.

Picasso: An American Tribute—Study of Picasso's life and works; narrated by Brian O'Doherty. NBC, April 23.

Polaris Submarine: Journal of an Undersea Voyage—Special program filmed aboard the U.S.S. *George Washington* during a mission that included the launching of its missiles into the Atlantic missile range. NBC, December 19.

Red China (*NBC White Paper*)—Films and interviews with travelers in Red China, obtained from various sources, including Swiss film maker Fernand Gigon. NBC, February 25.

River Nile, The—Travelogue covering the waterway from its source to the Mediterranean; narrated by James Mason; produced by Lou Hazam. NBC, October 28.

Shakespeare: Soul of an Age—Excerpts from Shakespeare's plays, filmed in Great Britain and France; with Michael Redgrave and narrator Ralph Richardson. NBC, November 30.

Teahouse of the August Moon (*Hallmark Hall of Fame*)—Comedy by John Patrick; with John Forsythe, David Wayne, Miyoshi Umeki, Paul Ford; produced and directed by George Schaefer. NBC, October 26.

Thunder on the Right (*C.B.S. Reports*)—Documentary study of conservative thought in the United States; various right-wing speakers; narrated by Eric Sevareid. CBS, February 22.

Tour of the White House, A—Study of the history, furnishings, and works of art of the White House; narrated by Mrs. John F. Kennedy, accompanied by Charles Collingwood. CBS and NBC, February 14 (later shown on ABC and repeated by CBS).

Tunnel, The—Documentary about a group of West Berlin students who dug a 450-foot tunnel into East Berlin to rescue 59 compatriots. NBC, December 10.

U.S. 1: American Profile—Documentary study of U.S. Highway No. 1, extending from Fort Kent, Me., to Key West, Fla.; narrated by Van Heflin. NBC, March 29.

Walking Hard—Documentary study of juvenile delinquency in New York City and suburbs; produced by Larry Johnson, directed by Allen Robertson; narrated by Eli Wallach. ABC, June 26.

World of Jacqueline Kennedy, The—A Special Arts Program portrait of the First Lady; narrated by Alexander Scourby, and with filmed comments by Pierre Salinger, Oleg Cassini, Margaret Mead, and the late Eleanor Roosevelt. NBC, November 30.

VAL ADAMS,
Radio and Television Writer,
"The New York Times."

RADIOACTIVITY. See Index entry.
RADIOLOGY. See X-RAY.

RAILROADS

Class I railroads of the United States in 1962 ended a two-year decline in freight traffic and operating revenues and a six-year decline in net income.[1] However, the margin of recovery was slight, and a large segment of the industry, particularly in the East, remained dangerously near insolvency. Principally, the year was notable for developments which promised greater railroad recovery in the future.

The existence of costly and outmoded work rules for railroad operating employees was in 1962 confirmed by a Presidential Railroad Commission after a 13-month study. The commission's report, issued on February 28, called for the gradual elimination of firemen on diesel freight and yard locomotives, and made other recommendations to correct deficiencies and to protect the employees affected by the changes. The recommendations were accepted by the railroads, but were rejected by the unions. Court action brought by the unions to enjoin the railroads from effecting them unilaterally was unsuccessful.

A five-year dispute between the Chicago and North Western Railway and the Order of Railway Telegraphers was resolved through binding arbitration after a telegraphers' strike halted the road's operations from August 30 to September 28. The dispute, over the railroad's right to close or consolidate small stations without union consent, was resolved in favor of the railroad. The decision was expected to set the pattern for settlement of similar disputes. (See also LABOR.)

Legislation.—In a historic transportation message to Congress on April 5, 1962, President Kennedy called for a reversal of the long-term trend toward tighter government regulation of transportation, saying: ". . . less federal regulation and subsidization is in the long run a prime requisite of a healthy intercity transportation network." The president recommended giving railroads the right to reduce their rates, without interference by the Interstate Commerce Commission (ICC), on commodities which the Interstate Commerce Act exempted from regulation when being moved by motor carrier or barge. This proposal, the heart of the president's recommendations, was the subject of hearings before the commerce committees of both houses of Congress, and a decision in 1963 was anticipated.

An industry goal long sought as a means of promoting railroad modernization was realized in midyear with the Treasury Department's announcement of shorter depreciable lives for railroad plant and equipment. Additional investment stimulus was provided by congressional enactment of measures to permit a 7% annual tax credit for capital expenditures and to increase from five years to seven years the period in which common carriers may carry forward their operating losses as tax deductions.

Railroad passenger traffic, generally in decline since World War II, was helped by repeal of the 10% federal tax on passenger fares, effective Nov. 16, 1962. However, President Kennedy's proposal for $500 million in federal aid to urban regions "for the revitalization and needed expansion of public mass transportation" failed of enactment.

Mergers.—As a determined effort by railroad unions to have Congress declare a moratorium on railroad mergers failed, Congress was seen to be encouraging the ICC to act on the merger proposals before it. Awaiting ICC decision were four major proposed mergers: (1) the Pennsylvania and the New York Central; (2) the Seaboard Air Line and the Atlantic Coast Line; (3) the Great Northern, the Northern Pacific, and the Chicago, Burlington and Quincy (also involved was the proposed purchase of the Pacific Coast Railroad and lease of the Spokane, Portland, and Seattle); and (4) the Norfolk and Western and the New York, Chicago and St. Louis. The Norfolk and Western Railway also proposed to lease the Pittsburgh and West Virginia Railway.

The Chesapeake and Ohio Railway received ICC approval to acquire control of the Baltimore and Ohio as the first step in a proposed merger of the two roads. The Southern Railway and the Detroit, Toledo, and Ironton Railway were authorized to acquire, respectively, control of the Central of Georgia and Ann Arbor railways. Railroads involved in merger, lease, or control proposals represented 60% of total miles of railroad operated, and 67% of railroad revenue.

Financial Results.—In 1962, railroads in the United States had total operating revenues of $9.44 billion, 2.8% higher than in 1961. Operating expenses were $7.42 billion, 2% higher than in 1961. Net railway operating income, before deduction of interest and other fixed charges, was $726 million, compared with $538 million in 1961; this increase included new tax depreciation rates and investment credits. Earnings were equal to a return of 2.67%.

Freight Traffic.—Railroad freight carloadings and ton-miles (one ton carried one mile) increased in 1962 for the first time since 1959. (See Table 1.) Loadings in the last half trailed the 1961 period, but the loss was not enough to offset first half gains. As a result, total carloadings of 29 million were up about 1% over 1961 and total ton-miles of 570 billion were up nearly 2%.

Table 1—FREIGHT TRAFFIC

Year	Tons originated (millions)	Ton-miles (millions)	Ton-miles (% increase over 1939)
1939	901.7	333,438	...
1944 (peak war year)	1,491.5	737,246	121.1
1947 (peak postwar year)	1,537.5	654,728	96.4
1961	1,225.0	563,304	68.9
1962 (estimated)	1,230.0	580,000	74.1

Trailer-on-flat-car loadings increased for the ninth consecutive year. Volume totaled 705,000 cars, or 19% over 1961.

Passenger Traffic.—Revenue passenger miles declined in 1962 for the 12th consecutive year. Total volume of 19.5 billion passenger miles was 4% below 1961 and the smallest since the depression year of 1935. (See Table 2.) However, through the discontinuance of additional money-losing trains and by other economies the passenger deficit was reduced to below $400 million, a 16-year low.

[1] Figures and statements herein refer to Class I railroads only. These railroads account for about 95% of all railroad performance. All figures for 1962 are partly estimated.

Table 2—PASSENGER TRAFFIC

Year	Passenger-miles (millions)	Per cent increase over 1933
1933 (record low)	16,341	...
1935	18,476	13.1
1944 (peak war year)	95,549	484.7
1961	20,287	24.1
1962 (estimated)	19,500	19.3

Facilities.—Railroads spent more on new plant and equipment than in 1961, but expenditures fell below the annual postwar average of $1,022 million for the fifth consecutive year. Total expenditures of $800 million included $540 million for new equipment and $260 million for improvements to fixed plant. Railroad plant and equipment consisted of 207,000 miles of road (338,000 miles of tracks), 28,500 locomotives (mostly diesel-electric), 1,575,000 freight cars, and 22,500 passenger-train cars.

Employment.—Railroad employment declined in 1962 for the 12th consecutive year, the average for 1962 being 700,000, a new low for the 20th century. Nonoperating employees received wage increases totaling 10.28 cents an hour (4 cents effective February 1 and 6.28 cents effective May 1), which added $102 million a year to railroad operating costs. Unions of operating employees also demanded higher wages and benefits, and negotiations were continuing at the end of 1962.

Rates and Fares.—There were no general freight rate increases in 1962. Instead, most railroads continued to make competitive rate adjustments in an effort to increase net income by increasing traffic volume. Eastern railroads, which suffered the heaviest deficits, received ICC authority to raise passenger fares by 10%, coincident with repeal of the 10% federal tax effective November 16.

Research.—After years of intensive research, the perennial and costly railroad problem of overheated car journals (hotboxes) was rapidly being overcome. Despite constantly heavier loads hauled at faster sustained speeds, car journals were steadily setting new records of trouble-free performance. In June 1962 the average number of miles operated for each car set out between division terminals, due to overheated journals, totaled 938,576, or more than three times the average of June 1961.

In large part, this impressive gain resulted from the almost complete transition from the traditional method of journal lubrication by means of oil-soaked waste packing to the use of new types of lubricating pads. An estimated 95% of all solid-bearing freight cars were equipped with such pads in 1962; and after May 1, freight cars not so equipped were not acceptable for operation in interchange service.

Foreign Railroads.—Statistics on railway traffic in major countries are provided in Table 3.

Table 3—RAILWAY TRAFFIC, BY MAJOR COUNTRIES

(In millions of passenger-kilometers and freight net ton-kilometers; one kilometer equals 0.62137 mile)

Country	Passenger-km. 1959	Passenger-km. 1960 (prelim.)	Ton-km. 1959	Ton-km. 1960 (prelim.)
Argentina	16,585	13,421	16,340	15,134
Australia[1, 2]	...	...	11,926	13,020
Austria[3]	6,309	6,614	6,643	7,879
Belgium[4]	8,519	8,577	6,119	6,359
Brazil	14,639	...	12,689[5, 6]	...
Canada	3,936	3,643	99,215	95,548
China (mainland)[7]	45,670	...	265,260	...
Czechoslovakia	18,574	19,335	44,101[8]	47,407[8]
France[9]	31,970	32,040	53,370	56,886
Germany, East	21,388	21,288	31,648[5, 11]	32,860[5, 11]
Germany, West[3]	38,452[10]	38,583[10, 12]	51,871	56,437[12]
Saar	826	...	960	...
India[13]	74,519	...	69,120	...
Italy[14]	25,687	27,429	14,328[15]	15,765[15]
Japan[13]	149,826	159,620	48,426	53,859
Mexico	3,725	4,148	12,231[5, 16]	13,931[5, 16]
Netherlands	7,416	7,670	3,210[17]	3,410[17]
Pakistan[18]	11,526	11,035	7,360[5]	8,215[5]
Poland	34,894	30,942	61,666[5]	66,547[5]
South Africa[13, 18]	...	...	28,400	30,864
Spain[19]	8,488[20]	7,341[20]	7,470[21]	6,059[21]
Sweden	5,052	5,187	9,705	10,930
Switzerland	7,955	7,843	3,798[5, 22]	4,346[5, 22]
United Kingdom[23]	35,840	34,677	28,960[5]	30,496[5]
United States[24]	35,525	34,216	844,796	835,421
USSR[7]	164,400	170,800	1,429,500	1,504,400
Yugoslavia	9,250[25]	10,448[25]	12,749	13,895

Note—The figures relate to the domestic and international traffic on all railway lines within each country shown except railways entirely within an urban unit and plantation, industrial, mining, funicular, and cable railways. The figures relating to passenger-kilometers include all passengers except military, government, and railway personnel when carried without revenue; those relating to ton-kilometers are freight net ton-kilometers and include both fast and ordinary goods services but exclude service traffic, mail, baggage, and nonrevenue governmental stores.

[1] Twelve months ending June 30. [2] Government railways only. [3] Federal railways only. [4] Société Nationale des Chemins de fer belges only. [5] Includes service traffic. [6] Excludes small parcels. [7] May include service traffic. [8] Includes nonrevenue traffic. [9] Société Nationale des Chemins de fer français only. [10] Excludes occupation traffic. [11] Excludes light railways. [12] Beginning 1960, includes the Saar. [13] Twelve months beginning April 1. [14] State railways. [15] Excludes livestock. [16] Includes government traffic. [17] Full carloads only. [18] Beginning December 1959, includes Bechuanaland-Mahalapye line; prior to this period, includes Vryburg-Bulawayo line of Rhodesia Railways. [19] Spanish National Railways (RENFE) only. [20] Excludes suburban railways. [21] Includes mail and weight of mail cars. [22] Includes mail and passengers' baggage. [23] British Railways only. [24] Excludes Alaska and Hawaii. [25] Prior to 1953 excludes passengers arriving from other countries or in transit (0.6% of the total in 1953). (Source: *Statistical Yearbook, 1961*, Statistical Office of the United Nations.)

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RAINFALL. See METEOROLOGY AND CLIMATOLOGY.
RANGER SPACECRAFT. See SPACE FLIGHT.
RAPID TRANSIT. See URBAN TRANSIT.
RAYON. See TEXTILE INDUSTRY.

REAPPORTIONMENT AND REDISTRICTING

In the courts, the legislatures, and the polling booths, Americans did more about legislative apportionment in 1962 than at any other time in the history of the United States.

Action began on March 26, 1962, when the U.S. Supreme Court handed down (6–2) its long-awaited decision in the case of *Baker* v. *Carr*. This suit, filed on behalf of several residents of urban areas of Tennessee, sought to force reapportionment of the legislature in accordance with the state constitution. No apportionment had been effected in Tennessee since 1901, and the growth of urban areas had created great inequality in the population of legislative districts. The court held that the manner in which seats in a state legislature are distributed was subject to scrutiny by the courts and returned the case to the federal district court in Tennessee for trial on its merits. (See also LAW.)

Prior to this opinion a long series of rulings had left the impression that the judiciary viewed apportionment as a political issue not subject to court review. Malapportionment had become chronic in many Southern states as a result of the legislatures' refusal to reapportion themselves, and individual citizens had been powerless to force action. In Northern and Western states legislatures had generally reapportioned themselves on a regular basis, but the formulas used had discriminated against urban areas. Now what had been an ignored or hopeless problem became the most important issue concerning the fundamental structure of American state government.

The public and legal reaction to the Supreme

Court's ruling in *Baker* v. *Carr* was immediate. Within hours after the opinion had been announced, suits were instituted in states in all sections of the country. Before the end of the year, more than 50 cases had been filed in 35 states. Special legislative sessions were called in 10 states, and in 2 of them, Florida and Mississippi, more than one such session was necessary because the voters rejected the reapportionment formula that the first special session had produced. Georgia legislators had to meet twice on the issue, as first the county unit system (somewhat similar to the national Electoral College) was declared invalid (April 28), and then the state's apportionment was overruled (May 25).

New apportionment formulas were instituted in Alabama, Georgia, Maryland, and Tennessee in time for their application in the November elections. At that time the electorate of 12 states voted on either an initiative or a referendum measure that was a direct result of the new interest in apportionment created by the Supreme Court's action. (In addition, Hawaii and New York had routine measures on the ballot that dealt with the subject but did not affect the apportionment formulas.) Colorado was the only state to adopt an entirely new plan, but Nebraska, North Carolina, Oklahoma, and Tennessee approved modifications of the present system. New plans were defeated in California, Florida, Mississippi, Oregon, and Washington. Three of these plans would have thwarted urban demands for greater representation, while two of them—in California and Washington—would have benefited urban residents. Georgians approved part of a new plan, while in West Virginia a modification of the present law was turned down.

It is impossible to state that any specific rules for what constitutes a just apportionment have been established either by the courts or by a vote of the people. One criterion, however, has achieved semiofficial status—that is, that at least one house of a legislature must be based on equal representation according to population. This has been the ruling of the overwhelming majority of the courts, and the various formulas adopted by the voters in November also contained this feature. Nevertheless, the population criterion has often been modified or ignored for the second house of a legislature. In Nebraska, the only state with a unicameral legislature, the electorate approved a mixed formula that gave major weight to population representation and partial consideration to land area.

Meanwhile, five apportionment cases, all decided by lower courts between April and September, were appealed to the Supreme Court. One case, dealing with the Georgia unit system, was unique but possibly had relevance for the inhabitants of all states; the others—from Alabama, Maryland, Michigan, and New York—introduced almost every major issue involved in the apportionment controversy.

In Alabama a United States district court ruled on April 14 that both houses of the state legislature had to be reapportioned on the basis of population as required by the Alabama Constitution. When the legislature failed to adopt corrective measures that met the court's criteria, the court itself laid down a new plan on July 21. This was the first time that a federal court had redistricted a state. It was necessary, the court said, to "release the stranglehold" and make it possible for the next legislature to create a permanent and equitable apportionment.

The highest courts of Maryland and Michigan took opposite stands on the issue of whether both houses of a legislature must be based on population. On July 23, Maryland's Court of Appeals ruled that if the lower house were based primarily on population, the Senate could be constituted on some other basis. The court also approved the legislature's plan for the House, which placed considerable emphasis on population but still left the urban areas underrepresented. Both actions were being challenged. The Michigan State Supreme Court ruled on July 18 that both houses must adequately reflect actual population distribution. By invalidating the present apportionment of the Michigan Senate, the court ruled that a measure adopted by a vote of the people of the state was in conflict with the 14th Amendment of the federal Constitution.

New York's complex formula for apportioning Assembly and Senate seats was upheld on August 17 by a federal district court. A complaint had been made that the formula was discriminatory, since the more heavily populated counties were assigned legislative seats in a less advantageous manner than small counties.

Not only states but also local units of government were involved. In Ohio a state court ordered the City of Cleveland to redraw its ward boundaries to bring them into relation with population, and in New York, Suffolk County was sued to reapportion its Board of Supervisors.

(See also articles on the various states.)

William J. D. Boyd,
Senior Associate, National Municipal League.

RECLAMATION. See Index entry.

RECORDINGS

Highlights of the year 1962 in recordings are reviewed in this article in three sections: (1) Popular Records; (2) Classical Records; and (3) Jazz Records. For additional information, see the Index entries *Talking Books* and *Tape Recording.*

Popular Records

It was "exit laughing" for the record industry as 1962 drew to a close. The glee was caused by a banner sales year which promised to push the industry's volume to a new, all-time high of around $560 million, and particularly by two comedy albums that swept the nation like wildfire. *The First Family* (Cadence) with Vaughn Meader doing a hilarious takeoff of the president, and *My Son, the Folk Singer* (Warner Bros.) in which Allan Sherman provided brilliant parodies on the Belafonte school of folk singing, became the fastest selling records in the history of the industry. The former also promised to become the all-time best seller.

It was, in general, a good year for the industry in terms of volume sales. Particularly gratifying was the strong upsurge staged by the popular singles record, the irreplaceable medium for the record manufacturer in providing continuous exposure to established artists and in showcasing new talent. Indicative of the upsurge in volume were the certifications for Gold Record Awards conducted by the Record Industry Association of America. In 1961, 15 long-playing albums and 2 singles records qualified for the award; in 1962, 38 long-playing albums and 4 singles records were certified. (To qualify for an RIAA certification, a single must have sold a minimum of 1 million units; a long-playing album, a minimum of $1 million in factory billing.)

While the twist was the most popular fad as the year began, it was the bossa nova—a wedding of jazz and Brazilian samba beat—that captured the public's interest as the year came to a close. In between came such dance fads as the mashed potato, the Watusi, and locomotion.

The year also saw Congress acknowledge the seriousness of the counterfeit record racket (which was robbing the industry of an estimated $20 million annually) by passing a law making counterfeiting punishable by up to a year in jail and/or a fine of up to $1,000.

Down Beat, a jazz magazine circulated among the public, and *Billboard Music Week,* a trade newspaper, conducted polls of favorite performers in 1962. (The former polled its own readers; the latter, the nation's disk jockeys). The results were:

Down Beat

Male vocalist—Frank Sinatra (Capitol, Reprise)
Female vocalist—Ella Fitzgerald (Verve)
Vocal group—Lambert-Hendricks-Bavan (Columbia)
Big jazz band—Duke Ellington (Columbia, United Artists)
Big dance band—Count Basie (Roulette)
Jazz combo—Dave Brubeck (Columbia)
Hall of Fame—Miles Davis (Columbia)

Billboard

Male vocalist—Frank Sinatra (Capitol, Reprise)
Female vocalist—Connie Francis (M-G-M)
Vocal group—The Four Freshmen (Capitol)
Instrumentalist—Acker Bilk (Atlantic)
Instrumental group—Dave Brubeck (Columbia)
Orchestra—Si Zentner (Liberty)

The top ten monaural long-playing albums which dominated the sales charts during 1962 (although not necessarily in order of total unit sales) were: *West Side Story,* sound track (Columbia); *Breakfast at Tiffany's,* Henry Mancini (RCA Victor); *Blue Hawaii,* Elvis Presley (RCA Victor); *West Side Story,* original cast (Columbia); *The Sound of Music,* original cast (Columbia); *Time Out,* Dave Brubeck (Columbia); *Camelot,* original cast (Columbia); *Your Twist Party,* Chubby Checker (Parkway); *Knockers Up,* Rusty Warren (Jubilee); and *Judy at Carnegie Hall,* Judy Garland (Capitol).

Stereo albums that remained longest on the popularity charts during the year were: *West Side Story,* sound track (Columbia); *Breakfast at Tiffany's,* Henry Mancini (RCA Victor); *Stereo 35 mm,* Enoch Light and his Orchestra (Command); *Camelot,* original cast (Columbia); *The Sound of Music,* original cast (Columbia); *Blue Hawaii,* Elvis Presley (RCA Victor); *Judy at Carnegie Hall,* Judy Garland (Capitol); *West Side Story,* original cast (Columbia); *Time Out,* Dave Brubeck (Columbia); and *Moon River,* Lawrence Welk (Dot).

Best-selling popular single records included: *Stranger on the Shore,* Acker Bilk (Atco); *I Can't Stop Loving You,* Ray Charles (ABC-Paramount); *Mashed Potato Time,* Dee Dee Sharp (Cameo); *Roses Are Red,* Bobby Vinton (Epic); *The Stripper,* David Rose (M-G-M); *Johnny Angel,* Shelley Fabares (Colpix); *Ramblin' Rose,* Nat King Cole (Capitol); *Loco-motion,* Little Eva (Dimension); *Let Me In,* Sensations (Argo); and *Alley Cat,* Bent Fabric (Atco).

HENRY BRIEF,
Executive Secretary, Record Industry Association of America, Inc.

CLASSICAL RECORDS

The year 1962 marked the fifth anniversary of the birth of stereo, and it was clear that ways and means of utilizing the techniques were by no means exhausted. The most outstanding and controversial record of the year, in this respect, was the London recording of Richard Strauss' *Salome,* in which no pains were spared to bring the orchestral detail into clear focus without overwhelming the voices, and to create dramatic effects of staging. A few critics protested the emphasis given to sheer sonics, but the great majority found this release to be a powerful re-creation of Strauss' work. All agreed on the excellence of the performance itself.

Technological advances did not preclude recordings in which the sound was necessarily of secondary importance: the release of three sets of "live" performances argued the desirability of capturing concerts of historical significance in the making. Columbia released three volumes of Sviatoslav Richter's Carnegie Hall recitals; RCA Victor issued a "highlights" disc drawn from Artur Rubinstein's series of ten recitals at Carnegie Hall the preceding winter; and the opening concert in New York's Philharmonic Hall at Lincoln Center was documented in a two-disc set by Columbia Records.

It was coincidental that while the opening of Philharmonic Hall provided a new location for recording in the United States, another setting was afforded by the completion of RCA Victor's large new recording plant in Rome. Studio A, one of four studios in the building, was said to be the largest in the world, capable of accommodating as many as 250 musicians. The acoustical design of the room was intended to approximate that of a moderately "live" opera house, and RCA voiced the hope that other companies would lease the studio for opera recordings. RCA's own first venture in the new setting was a recording of *Madama Butterfly* starring Leontyne Price; it was made in July and scheduled for release early in 1963.

Another newsworthy undertaking on foreign soil was made by Mercury, the first American record company to take its own equipment and personnel to the Soviet Union. The initial release in the Russian series was a taping of piano con-

Fastest-selling album of all time, *The First Family,* features Vaughn Meader (*right*) mimicking President Kennedy.

CADENCE RECORDS

certos—the Prokofiev Third and the Rachmaninoff First—by Byron Janis with the Moscow Philharmonic under Kyril Kondrashin.

The death within the year of two great musicians, Bruno Walter and Fritz Kreisler, created a new demand for recordings made by them. Columbia issued as a Walter memorial a Mahler Ninth Symphony under the late conductor's direction, accompanied by a record of rehearsal excerpts and an interview of some years before; Angel also made available on the Great Recordings of the Century series Walter's Act I of *Die Walküre* with Lotte Lehmann and Lauritz Melchior, recorded in 1936. RCA Victory saluted Kreisler with a two-disc album of performances in which the violinist is heard with such notable colleagues as Rachmaninoff, Zimbalist, McCormack, and Geraldine Farrar.

Among the notable events of 1962 was the return of Vladimir Horowitz to the recording studio after an absence of some years. His recital disc for Columbia stirred enthusiasm from all quarters. Another famous artist heard on records after a long absence was Joseph Szigeti, whose performance of the Bach Sonatas and Partitas for Solo Violin was released by Vanguard.

Two small new record companies attracted attention by issuing a few 12-inch records to be played at 45 rpm. rather than at the standard 33⅓. One of these discs in particular (works for flute ensembles by Joseph Bodin de Boismortier and Michel Corrette, on Connoisseur Society) made a convincing case for the clarity and distinct separation obtainable at the faster speed, with no loss of actual playing time.

Following is a sampling of notable recordings which appeared in 1962, other than those mentioned above. Except where otherwise indicated, all are available in both stereo and monaural form.

Bach, Mass in B minor: Saramae Endich, Adele Addison, Florence Kopleff, Mallory Walter, Ara Berberian; Robert Shaw Chorale and Orchestra, Robert Shaw, conductor (RCA Victor; 3 discs).

Bach, *St. Matthew Passion:* Elisabeth Schwarzkopf, Christa Ludwig, Peter Pears, Nicolai Gedda, Dietrich Fischer-Dieskau, Walter Berry; Philharmonic Choir and Orchestra, Otto Klemperer, conductor (Angel; 5 discs).

Beethoven, Symphony No. 4 in B flat, Op. 60; *Leonore Overture* No. 3, Op. 72a: Pittsburgh Symphony Orchestra, William Steinberg, conductor (Command).

Beethoven, Variations for Piano: Alfred Brendel, piano (Vox; 3 discs, mono only).

Britten, *Noye's Fludde:* Sheila Rex, Owen Brannigan, and other soloists; Children's Chorus and An East Suffolk Children's Orchestra, Norman del Mar, conductor (London).

Bruch, *Scottish Fantasia,* Op. 46/Vieuxtemps, Concerto for Violin and Orchestra, No. 5, in A minor, Op. 37: Jascha Heifetz, violin; New Symphony Orchestra of London, Sir Malcolm Sargent, conductor (RCA Victor).

Cilèa, *Adriana Lecouvreur:* Renata Tebaldi, Giulietta Simionato, Mario del Monaco, and other soloists; Chorus and Orchestra of Accademia de Santa Cecilia (Rome), Franco Capuana, conductor (London; 3 discs).

Foss, *Studies in Improvisation:* Lukas Foss, piano; Improvisation Chamber Ensemble (RCA Victor).

Handel, *Alcina:* Joan Sutherland, Graziella Sciutti, Teresa Berganza, Ezio Flagello, and other soloists; London Symphony Chorus and Orchestra, Richard Bonynge (London: 2 discs).

Handel, *Messiah:* Joan Sutherland, Grace Bumbry, Kenneth McKellar, David Ward; London Symphony Orchestra, Sir Adrian Boult, conductor (London; 3 discs).

Hindemith, *Mathis der Maler* (excerpts): Pilar Lorengar, Donald Grobe, Dietrich Fischer-Dieskau; Radio Symphony Orchestra (Berlin), Leopold Ludwig, conductor (Deutsche Grammophon).

Holst, *The Planets,* Op. 32: Women of the Vienna State Opera Chorus; Vienna Philharmonic Orchestra, Herbert von Karajan, conductor (London).

Ives, Sonata for Piano, No. 2 ("Concord"): George Pappastavrou, piano; Bonnie Lichter, flute (Composers Recordings, Inc.).

Martin, *Le vin herbé:* Basia Rechitzka, Hélène Morath, Oleg de Nyaznkowskyj, and other soloists; Frank Martin, piano; members of the Winterthur Symphony Orchestra, Victor Desarzens, conductor (Westminster; 2 discs).

Schubert, *Die schöne Müllerin,* Op. 25: Dietrich Fischer-Dieskau, baritone; Gerald Moore, piano (Angel; 2 discs).

Stravinsky, *The Flood;* Mass: Laurence Harvey, Elsa Lanchester, and other speakers; Richard Robinson, Robert Oliver, John Reardon, soloists; Columbia Chorus and Columbia Symphony Orchestra, Robert Craft and Igor Stravinsky, conductors (Columbia).

Stravinsky, *Petrouchka:* Columbia Symphony Orchestra, Igor Stravinsky, conductor (Columbia).

Tchaikovsky, Concerto for Piano and Orchestra, No. 1, in B flat minor, Op. 23: Sviatoslav Richter, piano; Vienna Symphony, Herbert von Karajan, conductor (Deutsche Grammophon).

Varèse, *Arcana; Déserts; Offrandes;* Dona Precht, soprano; Columbia Symphony Orchestra, Robert Craft, conductor (Columbia).

Verdi, *Aida:* Leontyne Price, Rita Gorr, Jon Vickers, Giorgio Tozzi, and other soloists; Chorus and Orchestra of the Rome Opera House, Georg Solti, conductor (RCA Victor; 3 discs).

Wagner, *Die Walküre:* Birgit Nilsson, Jon Vickers, George London, and other soloists; London Symphony Orchestra, Erich Leinsdorf, conductor (RCA Victor; 5 discs).

French Opera Arias: Maria Callas, soprano; Orchestre National de la Radiodiffusion Française, Georges Prêtre, conductor (Angel).

The Heifetz-Piatigorsky Concerts, with Primrose, Pennario, and Guests (RCA Victor; 3 discs).

Spanish Song of the Renaissance: Victoria de los Angeles, soprano; Ars Musicae Orchestra, José M. Lamana, conductor (Angel).

ROLAND GELATT,
Editor, "High Fidelity" Magazine.

JAZZ RECORDS

Jazz recordings released in 1962 reflected the growing worldwide basis that jazz has acquired since World War II. This was most noticeable in the wave of popularity of the bossa nova—a light, airy, jazz-oriented variation of the samba—which was developed by a clique of young Brazilian musicians.

A few American musicians had recorded an occasional bossa nova, but it was not until the release in the spring of 1962 of *Jazz Samba* (Verve 8432; stereo 6–8432), on which the trio of guitarist Charlie Byrd was joined by tenor saxophonist Stan Getz, that the bossa nova became the cynosure of jazz circles. Among the recorded performances of real merit were, in addition to *Jazz Samba,* another Charlie Byrd disc, *Latin Impressions* (Riverside 427; stereo 9427), Herbie Mann's *Right Now* (Atlantic 1384; stereo S-1384), Lalo Schifrin's *Bossa Nova* (Audio Fidelity 1981; stereo 5981), and Paul Winter's *Jazz Meets Bossa Nova* (Columbia CL-1925; stereo CS-8725).

Richard Strauss' *Salome,* starring Birgit Nilsson and conducted by Georg Solti (*inset*), was a prize-winning 1962 disc.

The major triumph of jazz on the international scene in 1962 was a six-week tour of the Soviet Union by Benny Goodman and his orchestra, the first time that a jazz group had been officially invited to perform in the USSR. Selections recorded by the band in Moscow make up *Benny Goodman in Moscow* (RCA Victor LOC-6008; stereo LSO-6008; two discs); members of the band, without Goodman, recorded *Jazz Mission to Moscow* (Colpix 433; stereo S-433) after their return to the United States.

The impact of jazz on other countries was the subject of a musical show written by pianist Dave Brubeck and his wife, in which a leading character is patterned on Louis Armstrong. This was one of the first attempts to write an entire musical in jazz terms. Although the musical has not yet been produced, a portion of the score was recorded in 1962, with Armstrong singing and playing the role designed for him (*The Real Ambassadors,* Columbia OL-5850; stereo OS-2250).

The first real fruits of an ambitious five-year program of jazz reissues by Columbia Records arrived in 1962, starting with a four-disc survey of the work of Fletcher Henderson's orchestra, generally considered to have been the first big jazz band (*The Fletcher Henderson Story,* Columbia C4L-19). This was followed by three-disc collections of the early recordings of Billie Holiday (*The Golden Years,* Columbia C3L-21) and of a 20-year span of Mildred Bailey's career (*Her Greatest Performances,* Columbia C3L-22), along with an entertaining four-disc miscellany of the groups and individuals who made 52d Street in New York the heart of the jazz world in the 1930's and 1940's (*Swing Street,* Epic 6042).

RCA Victor contributed an exceptional two-disc reissue covering some of Duke Ellington's most fruitful years (*The Indispensable Duke Ellington,* RCA Victor LPM-6009) and revitalized a lagging jazz program with a group of releases that included new recordings by Sonny Rollins (*The Bridge,* RCA Victor LPM-2527; stereo LSP 2527) and a disc recorded by Charlie Mingus in 1957 but never released previously (*Tijuana Moods,* RCA Victor LPM 2533; stereo LSP 2533).

Other jazz releases of special interest in 1962 were:

Count Basie and the Kansas City Seven (Impulse 11; stereo S-11).
Art Blakey's Jazz Messengers, *Three Blind Mice* (United Artists 14002; stereo 15002).
Benny Carter and his orchestra, *Further Definitions* (Impulse 12; stereo S-12).
Kenny Clarke–Francy Boland & Co., *The Golden Eight* (Blue Note 4092).
Miles Davis, *At Carnegie Hall* (Columbia CL-1812; stereo CS-8612).
Bill Evans–Jim Hall, *Undercurrent* (United Artists 14003; stereo 15003).
Stan Getz, *Focus* (Verve 8412; stereo 6–8412).
Dizzy Gillespie, *An Electrifying Evening* (Verve 8401; stereo 6–8401).
Barry Harris, *Listen to Barry Harris* (Riverside 392; stereo 9392).
Quincy Jones and his orchestra, *The Quintessence* (Impulse 11; stereo S-11).
Roland Kirk, *We Free Kings* (Mercury 20679; stereo 60679).
Tommy Ladnier, *Blues and Stomps* (Riverside 154).
Donald Lambert, *Giant Stride* (Solo Art 18001).
Charlie Mingus, *Chazz!* (Fantasy 6002).
Fats Navarro, *Classics of Modern Jazz,* vol. 1, (Jazzland 50).
Anita O'Day, *All the Sad Young Men* (Verve 8442; stereo 6–8442).
Original Dixieland Jazz Band, *Their Historic Recordings in England* (Riverside 156/157).
Charlie Parker, *Bird Symbols* (Charlie Parker 407).
Lester Young and the Kansas City Five (Commodore 30,-014).
Jazz at Massey Hall (Fantasy 6003).

JOHN S. WILSON,
Reviewer of Jazz Records, "The New York Times" and "High Fidelity" Magazine.

RED CROSS. See SOCIETIES AND ORGANIZATIONS.

REFORESTATION. See CONSERVATION OF NATURAL RESOURCES; FORESTRY.

REFUGEES AND DISPLACED PERSONS

Political-economic problems continued during 1962 to produce new refugees or displaced peoples throughout the world, while many earlier refugee problems remained unsolved. The Office of the United Nations High Commissioner for Refugees (UNHCR) actively cooperated with some 50 countries where refugees are in residence. United Nations funds are limited, but by April 1, 1962, 31 governmental contributions (paid, pledged, or promised) amounted to $4,098,805. Of this amount, $2,685,000 was allocated for the regular UNHCR program, and $1,413,000 for Algerian refugees and assistance to new groups of refugees.

The Nansen Medal, awarded by the UNHCR for distinguished service in the refugee field, was presented for 1962 to Sir Tasman Heyes, formerly secretary of Australia's Department of Immigration.

In the United States, legislative approval was given for financial support of UNHCR and the Intergovernmental Committee for European Migration. Under the Migration and Refugee Assistance Act, signed by President Kennedy on June 28, 1962, the United States has agreed to admit refugees within UNHCR's mandate, without regard to immigration quotas but only up to 20 per cent of the number admitted by the rest of the free world. (See also IMMIGRATION AND NATURALIZATION; SOCIAL SECURITY.)

Palestinian Refugees.—A total of 1,174,760 Arab refugees from Palestine were registered by the United Nations Relief and Works Agency for Palestine Refugees (UNRWA) as of June 30, 1962. More than half of these refugees (639,145) were located in Jordan, and the remainder in Gaza (268,614), Lebanon (144,774), and Syria (122,-227). For the large numbers of children and youth among them, the UNHCR has emphasized education and training in various skills, with which some governments are helping. (See also CHILDREN AND YOUTH.) In August, the United States Agency for International Development announced a $16 million Food-for-Peace Program for the Arab refugees, to be administered by UNRWA.

European Refugees.—UNHCR's program for the clearance of camps in Europe was continued. At the beginning of 1962, there were 8,551 refugees in 131 camps in Europe. Fifty-five per cent of these refugees (4,743) were in Germany's 38 camps, 2,284 in the 90 camps in Austria, 213 in Greece's two camps, and 1,311 in the one camp in Italy. This compares favorably with the Jan. 1, 1961, totals of 15,200 refugees in 212 camps. It was hoped that resettlement or repatriation of the persons in these camps might be completed in Greece, Italy, and Austria by the end of 1962, and in Germany by the end of 1963.

Since the sealing off of East Berlin from West Berlin by the Communist wall on Aug. 13, 1961, an estimated 13,000 East Germans have escaped to establish new lives for themselves in West Berlin and West Germany, while others have been killed by the East German police in the attempt.

African Refugees.—Balubas and refugees of other tribal origins fled from their communes in the Elisabethville area during the Katanga crisis in the Republic of the Congo, and sought and were given protection by the United Nations Organization in the Congo at a camp near Elisabethville. By Aug. 1, 1962, 71,266 of the refugees had been repatriated by plane, train, and truck to the tribes from which

they came, and the camp was transferred to the Elisabethville authorities.

The reintegration of the more than 250,000 Algerian refugees repatriated from Tunisia and Morocco went forward with the assistance of the UNHCR, voluntary agencies, and the League of Red Cross Societies. In addition, the French government reported in June, 1962, that 183,000 refugees from Algeria, mainly European women, children, and elderly persons, had left their homes in Algiers to return to France and that about 11,000 others were waiting to do so.

In other parts of Africa, the UNHCR dealt with new refugee situations. These included 150,000 refugees from Angola in the Congo (Léopoldville) and 6,000 from Angola in Togo; and approximately 144,000 refugees from Rwanda in Tanganyika (9,000), Uganda (35,000), Burundi (40,000), and the Kivu area of the Congo (60,000). In all these African areas, the League of Red Cross Societies worked jointly with the UNHCR in providing material aid and services.

Hong Kong.—One of the great tragedies of history has been the effort of the Chinese to leave Communist China for the British crown colony of Hong Kong. Often this exodus is blocked by the military, since only 50 emigrants daily may enter Hong Kong by entry permits. In May 1962, 45,000 Chinese seeking refuge in Hong Kong were forcibly returned to China, while 15,000 managed to remain in Hong Kong. At least 65,000 refugees are estimated to have entered Hong Kong in 1962. There were also about 80,000 Communist Chinese refugees in the Portuguese territory of Macão in mid-1962.

Cuban Refugees.—From January 1961 to Sept. 19, 1962, 147,000 Cubans had registered at the reception center in Miami, Fla., and of that number 42,000 had been resettled in other United States cities. Many of these newcomers are skilled workers or professional people who find useful employment. All registered Cuban refugees can receive federal assistance through the U.S. Department of Health, Education, and Welfare. The sponsors of the various groups assisting Cubans on their arrival in the United States are the National Catholic Welfare Conference, the Hebrew Immigrant Aid Society, the Church World Service (Protestant), and the International Rescue Committee.

(For further references, see the Index entry, *Refugees and Displaced Persons.*)

FRED K. HOEHLER,
Consultant on Public Administration; Former Director of Division on Displaced Persons, UNRRA.

REHABILITATION, Vocational. See the Index entry, *Vocational Guidance.*

RELIEF, Public. See SOCIAL WELFARE.

RELIGION

Major developments among the world's principal religions in 1962 are reviewed in this article under the following headings: (1) Introduction: A General Survey; (2) Protestantism; (3) Catholicism; (4) Oriental Religions, Islam, and Eastern Orthodoxy; and (5) Judaism. The largest individual bodies in the United States and Canada are treated separately under their own headings, and membership figures are tabulated in the article CHURCH MEMBERSHIP, U.S.

INTRODUCTION: A GENERAL SURVEY

Changing patterns of knowledge, and of political and social structures, were reflected in the world's religious bodies in 1962.

In Pakistan there was continued debate over changes in the marriage laws, designed to relate traditional Koranic teaching to the new role of women in democratic industrial society. In February, millions of devotees of South Asian religions which incorporate astrological beliefs in popular expressions of faith made elaborate preparations for world catastrophe at the time of conjunction of five planets; the absence of disaster subsequently was religiously interpreted.

In Japan the "Soka Gakkai," a vigorous social-religious Buddhist party, greatly increased its power in the Parliament. In October, 50 Japanese Buddhist priests visited the United States to observe the 70th anniversary of the introduction of

UPI

This family is among the refugees returning to Algeria in May at a rate of about 1,500 a day, after the cease-fire.

Buddhism to the country, and to dedicate a new Buddhist temple in New York City. Buddhism was established, and then disestablished, as the state religion of Burma. In Ceylon, Buddhist groups exercised increased influence in national affairs.

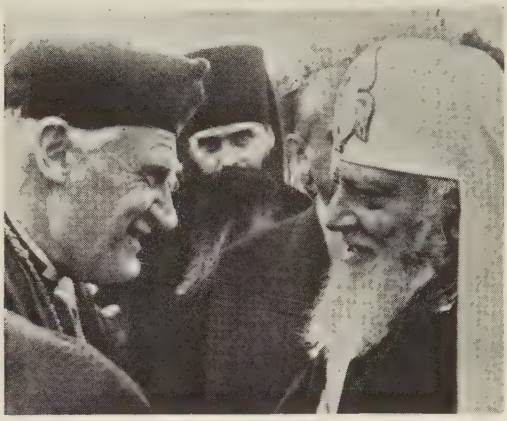
Attention was focused on the tragedy of Jews in the Hitler era by the trial and execution (on May 31, 1962) in Israel of Adolf Eichmann, leading figure in the Nazi persecutions. Vice Chancellor Ludwig Erhard of West Germany attended the dedication of a new synagogue in Worms, replacing the medieval structure gutted by the Nazis in 1938; but the Jewish population of West Germany was 30,000, as contrasted with 760,000 Jews in Germany before the Nazi era.

In June, members of the Secretariat of the World Council of Churches toured Russia, and five additional Russian churches announced interest in joining the council. In July and August, a representative group of Protestant churchmen from the United States met with a similar group from the Russian Orthodox Church in Moscow to exchange views and to explore plans for the exchange of theological students. At the same time the Soviet Communist Party called for an intensification of the state's antireligious programs.

Polls revealed that church attendance and the rate of growth of religious bodies in the United

Deplaning at Homestead AFB in Florida on December 24 are the first prisoners to be ransomed of those who were taken in the unsuccessful Cuban invasion attempt in April 1961.

WIDE WORLD



WIDE WORLD

The archbishop of Canterbury (left), visiting the Soviet Union, is greeted by Alexei, patriarch of Moscow, July 30.

States declined slightly during the year. Widespread debate followed the decision of the U.S. Supreme Court in July that the recommendation by the New York State Board of Regents that a prayer composed by the Board be recited daily in the New York public schools was unconstitutional. Some churchmen and statesmen denounced the decision as marking another stage in the secularization of the country; others hailed it as providing new guarantees of freedom of religion. Implications of the decision remained to be worked out. (See also EDUCATION; LAW.)

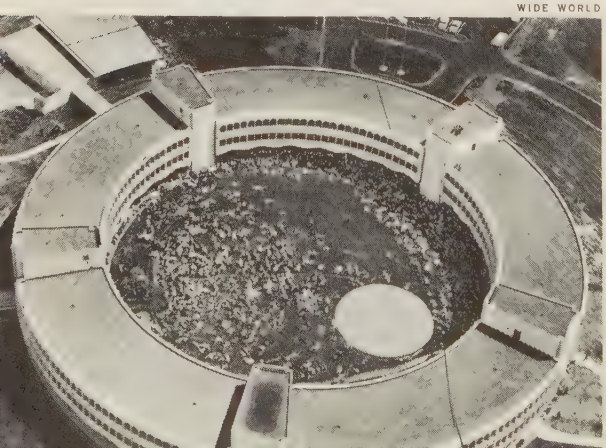
There were new steps toward the unity of American Protestant bodies. In April, representatives of the United Church of Christ, the United Presbyterian Church in the U.S.A., the Protestant Episcopal Church, and the Methodist Church met in Washington, D.C., to continue discussion of the possibilities of a merger of these bodies. In June, the American Evangelical, Augustana Evangelical, and United Lutheran Churches and the Suomi Synod merged to form the sixth largest Protestant group in the United States, with a membership of 3 million.

During the year, Pope John XXIII was visited by the archbishop of Canterbury, the moderator of the Church of Scotland, the presiding bishop of the Protestant Episcopal Church, and other leaders of non-Roman Catholic communions. In October, Ecumenical Council Vatican II (the 21st Ecumenical Council, and the second ever to be held at the Vatican) convened in Rome. Some 2,800 "fathers of the church" were in attendance, along with 28 official "observers" from non-Roman Catholic churches, including the Russian Orthodox Church. Pope John made new appeals for the revitalization of the church, for greater understanding and unity among Christian groups, and for action on the part of the world's statesmen to preserve peace and extend justice. The council elected members of 10 commissions to study and make pronouncements in major areas of ecclesiology and theology.

JAMES ALFRED MARTIN, JR.,
Danforth Professor of Religion in Higher Education, Union Theological Seminary.

New circular headquarters building of the American Baptist Convention, at Valley Forge, Pa., is dedicated on May 26.

WIDE WORLD



PROTESTANTISM

The three most noteworthy phases in Protestant growth in 1962 were the continued ecumenical growth, the advance in fraternal relations with Roman Catholicism, and the rapid expansion in Latin America.

On June 28, the Augustana Lutheran Church, Suomi Synod, United Lutheran Church, and American Evangelical Lutheran Church merged to form The Lutheran Church in America, with a total membership of 3.2 million. (See also LUTHERAN CHURCHES.) At its 55th annual convention the Church of Christ (Disciples) in the Philippines voted to merge with the United Church of Christ in the Philippines. In the United States, Methodist, United Church of Christ, United Presbyterian, and Episcopal leaders met in April to consider Dr. Eugene Blake's 1960 proposal for a "united Church, truly Catholic, truly Reformed, and truly Evangelical." An ardent supporter of such a move was Episcopal Bishop James A. Pike.

The voice of the 1961 World Council of Churches (WCC) Assembly at New Delhi, India, continued to reverberate throughout Protestantism. At their annual meetings in Paris in August 1962, the WCC Central and Executive committees addressed themselves to several basic problems: the need for clearer definition of Christian unity; the three-way struggle between confessional, ecumenical, and national churches; the relation between ecumenicity as a movement and as a set of institutions; and the problems of growth as Soviet churches join the WCC.

The U.S. National Council of Churches sponsored a number of study groups to advance the ecumenical cause at the local level. Iowa State University's School of Religion sponsored an American tour for 11 Japanese religious leaders to study religion in American life. John Weller resigned his pastorate at Purley in Surrey to devote the next five years to help the cause of unity in Great Britain. An open letter to the archbishop of Canterbury from 32 Church of England theologians, pleading for more interchurch communion, resulted in a poll of the clergy in which 43% were for and 48% against the suggested modification.

Fraternal feeling between Protestants and Roman Catholics in the United States increased in 1962. An "ecumenical dialogue" at St. James Church in Upper Montclair, N.J., was attended by 300 Protestant and Roman Catholic laymen and clergy. Protestant, Roman Catholic, and Eastern Orthodox clergy joined in retreat and dialogue at the Glenmont Jesuit House near Albany, N.Y. Episcopal Bishop Angus Dun and Roman Catholic Father Gustave Weigel participated in a symposium on the ecumenical movement at Grace Episcopal Church, Silver Springs, Md. At Alexandria, Va., a number of Protestant and Roman Catholic clergy participated in "The Octave of Prayer for Christian Unity." Protestant Professor Joseph Sit-

tler of the University of Chicago spoke on the WCC to a Roman Catholic audience at Loyola University in Chicago. Father Weigel spoke to 250 Lutheran clergy at the annual convocation at Lutheran Theological Seminary, Mount Airy, Pa. Dr. Archibald C. Craig, moderator of the Church of Scotland, visited Pope John XXIII at the Vatican. And for the first time in 400 years a cardinal from Rome (Cardinal Bea of the Vatican Unity Commission) entered Lambeth Palace, as guest of the archbishop of Canterbury. Protestant and Roman Catholic theologians collaborated in producing a special edition of the Gospel of St. Luke, published by Unité Chretienne, Lyons, France. The Second Ecumenical Vatican Council, which began October 11, was not a "reunion council," as some Protestants had hoped, but the WCC gratefully accepted the Vatican's invitation to send delegates to the council as observers.

In Latin America, where the indigenous population has doubled in 30 years, the Protestant population doubled in only 10 years, bringing the total to 8,470,000. In Mexico, Protestant membership has grown from 265,000 in 1949 to 1,065,161 in 1961.

Feb. 19, 1962, marked the 150th anniversary of the beginning of American foreign missions, when Adoniram Judson embarked at Salem, Mass., for Calcutta, India. The year also marked the 300th anniversary of the Book of Common Prayer, and the Anglican Church was again astir over the archbishop of Canterbury's proposal to revise the prayer book and make other reforms.

The U.S. Supreme Court ruling that the New York State Board of Regents' prayer, devised for public school use, is unconstitutional provoked many negative initial reactions. A wave of second thought, however, both Roman Catholic and Protestant, reflected a common belief that prayer-writing is not the business of the government. (See also EDUCATION.)

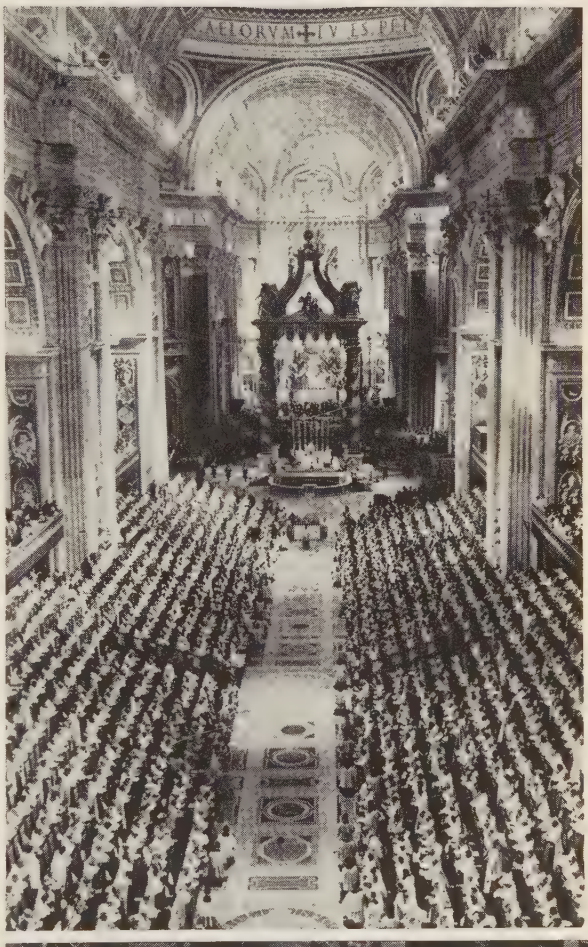
A $175,000 building at the Century 21 Exposition—Seattle World's Fair—was erected and operated by 21 denominations and 15 agencies. In April, at the University of Chicago and Princeton Theological Seminary, Karl Barth, the world-famous Swiss theologian, stressed the need for America to develop a theology which relates to its own experience.

RALPH G. WILBURN,
Dean and Professor of Historical Theology, The College of the Bible, Lexington, Ky.

CATHOLICISM

The Second Vatican Ecumenical Council opened amid liturgical splendor in St. Peter's Basilica in Rome on Oct. 11, 1962. A gathering of 2,800 cardinals, archbishops, bishops, and heads of major men's religious orders assembled under the presidency of Pope John XXIII, who told visitors that the idea of the council had come to him, "like a heavenly inspiration" during a conversation with the late papal secretary of state, Domenico Cardinal Tardini.

Speaking in Rome on April 26, Augustin Cardinal Bea, head of the Vatican's Secretariat for the Union of Christians, had said of the forthcoming council: "[It] aims at preparing—even though only on a long-term basis—the union of all the baptized, of all Christians. . . . All those



Three views of the first session of the Ecumenical Council, held at the Vatican, October 11 to December 8. (*Top*) Bishops from all parts of the world walk in procession at St. Peter's Square; (*center*) nearly 3,000 church leaders in Rome for the council attend opening ceremonies at St. Peter's Basilica; (*bottom*) Pope John XXIII, seated on the papal throne in St. Peter's, receives the cardinals.

PARIS MATCH; UPI; PARIS MATCH

LONDON DAILY EXPRESS

A state funeral is held for Archbishop Theoklitos, primate of the national church of Greece, who died on January 8.

who have been baptized and in good faith accept and live the faith in which they were born and brought up . . . are on the path of salvation by virtue of this fundamental belonging to the Church of Christ."

The Roman Catholic Church in the United States was represented at the Ecumenical Council by 224 prelates, one of whom, Bishop Joseph A. Burke of Buffalo, N.Y., died shortly after his arrival in Rome. Present as observers at all council proceedings and—like the official delegates—sworn to secrecy were 34 representatives of various Protestant bodies and two representatives of the Russian Orthodox Church. The Union of Greek Orthodox Churches, headed by Archbishop Athenagoras of Constantinople, announced shortly before the opening of the council that it would not be able to attend. Under the guidance of 160 commission leaders elected by the council and 81 more appointed by the pope, the council began the systematic discussion of each of the ten schemata or discussion agenda, prepared in advance by a preliminary commission of theological experts. The first topic to be taken up was that of the church's liturgy and sacramental administration, a matter of widespread popular interest and diversity of views.

Immediately after convening, the council issued a "message to humanity," greeting "all men as brothers, irrespective of the race or nation to which they belong," and stating as the council's major concern "those who suffer hunger, misery, and ignorance."

On October 27, representatives of the churches caring for the 10 million Catholics in Africa decided to establish in Rome a special secretariat of the Pan-African Episcopacy. Africa's Negro cardinals and 60 archbishops and bishops would thereby seek unification of church administration, up to now divided among four Roman administrative units. The universality of the church had already been stressed by the canonization on May 6 of a Dominican lay brother, Blessed Martin de Porres, of Lima, Peru (d. 1639), the son of a Spanish grandee and a Peruvian mother of mixed Indian and Negro origin.

Pope John on November 13 decreed the first change in the canon of the Mass since the early 7th century. Effective December 8, the name of St. Joseph, spouse of the Virgin Mary, was inserted into one of the nine prayers of the canon, immediately following that of Mary. The canon, the most sacred part of the Mass, includes the consecration of the bread and wine, and communion.

The annual assembly of the Catholic hierarchy of the United States, held in Washington, D.C., each November, was exchanged in 1962 for a meeting of the American delegates to the council in Rome. The Ecumenical Council closed its first session on December 8; the second session was to begin Sept. 8, 1963, and there were plans for a third session to be held later.

The canonization of three saints was proclaimed by Pope John on December 9: Pierre Julien Eymard, French founder of the Congregation of the Blessed Sacrament; Angelo Maria Pucci, Tuscan founder of the Catholic Action movement; and Francesco Maria da Campo-Rosso, Capuchin monk who asked God to take his life and save the city of Genoa from a cholera epidemic in 1868.

The Laetare Medal, bestowed annually by the University of Notre Dame, was awarded in 1962 to Dr. Francis J. Braceland, a physician, former president of the American Psychiatric Association and chief psychiatrist of the Institute for Living in Hartford, Conn.

The annual James J. Hoey Award, given annually by the Catholic Interracial Council of New York for distinguished service by a white and a Negro Catholic in the cause of interracial justice, was given on October 28 to Benjamin Muse of Virginia and Dr. Eugene T. Reed of Amityville, N.Y.

(See also ROMAN CATHOLIC CHURCH.)

JOHN LAFARGE, S.J.,
Associate Editor, "America."

ORIENTAL RELIGIONS, ISLAM, AND EASTERN ORTHODOXY

The enormous problems of changeover from colonial status to complete independence and eventual self-sufficiency have so engrossed the new nations in Asia and Africa that the religions within their borders have generally been drawn into the national effort. Departure of foreign personnel has had multiple effects in itself. Reports from Netherlands New Guinea after withdrawal of the colonial administration indicated a marked breakdown of state machinery and a reversion by primitives of the interior to tribal warfare, headhunting, and traditional forms of magic and religion. In places in eastern Africa with Muslim majorities, not only have Christian missionaries and institutions come under increasing restrictions, but primitive tribes have reverted to beliefs and practices prevalent before the coming of white settlers.

Hinduism.—Prime Minister Nehru of India, having mollified the Sikhs with conciliatory measures and thus ended the 1961 hunger strikes for outright home rule, encountered increasing difficulties with Muslims in 1962. In Bengal, tension led to rioting and several deaths. Pakistani claims to Kashmir, based on the numerical superiority of Muslims to Hindus, continued to exacerbate relations between India and Pakistan. Nehru rejected the proffered good offices of the president of the United States in seeking settlement of a border dispute, on the grounds that the United Nations has accepted India's claim and the only dispute arises from Pakistan's unlawful occupation of Kashmir territory. In June the UN Security Council debated a resolution calling for a plebiscite in the disputed territory to determine who should have sovereignty over it, but this resolution was vetoed by the Soviet Union.

Agitation by conservative organizations to have Hinduism declared the state religion of India has continued but with no marked success.

Buddhism.—In Burma, early in March 1962, the Army, by a bloodless coup led by Gen. Ne Win, took over the government. Ostensibly the seizure of power was motivated by fear that the northern hill tribes would gain the autonomy they were seeking and thus divide the country politi-

cally as well as religiously. Since the Karens particularly were predominantly Christian and other hill tribes remained animists, the Buddhist monks joined left-wing organizations and labor unions in backing Ne Win. But shortly after the coup Ne Win suspended the constitution, ended official observance of the Buddhist sabbath, and abolished the decree making Buddhism the religion of the state.

The dispute which arose between Thailand and Cambodia as a result of the 1954 Thai occupation of the ancient temple of Preah Vihear was finally resolved when the International Court of Justice in June 1962 ruled that the temple was on Cambodian territory. Thailand acceded after a show of dissatisfaction.

Early in the year a statement of the Panchen Lama was made public declaring that Tibet was Chinese territory and that the crushing of "counter-revolutionary rebellion supported by imperialism and foreign reactionaries" was an internal affair in which the United Nations and other international organizations had no right to interfere. "The imperialist forces have been driven out," he declared; "feudal serfdom has been smashed, and one million serfs . . . for the first time . . . are enjoying the fruits of their labors as well as full democratic rights, including the right of freedom of religious belief." In addition to this expression of submission to the Peking line, the Panchen Lama denounced India for giving asylum to the Dalai Lama. It was announced in February that the Potala at Lhasa, which had been damaged by Chinese shelling during the 1959 Tibetan revolt, had been restored after extensive repairs, including the rebinding of 1,000 volumes of scriptures and the retouching of murals.

In April 1962, married and celibate monks in South Korea united in a Buddhist Reconstruction Emergency Congress, thus ending an 8-year feud.

Islam.—In certain areas of the Muslim world, economic stringencies have caused leaders to hold that the month-long observance of the fast of Ramadan is contrary to the public interest. Premier Bourguiba of Tunisia in 1962 lent his support to this view.

When President Nasser of the United Arab Republic declared early in March that Islam was incompatible with communism but not with socialism, King Saud of Saudi Arabia countered publicly that it was incompatible with both. Tension between the countries led to Saudi Arabia's rejection of the Egyptian pilgrims' annual offering of a holy carpet for the Mecca shrine.

Nearly 200 Muslim leaders from 40 countries met in Baghdad, Iraq, in May for the 5th session of the World Muslim Congress. The congress was addressed by the patriarch of the Orthodox Priests of Palestine, who appealed for the preservation of Christian holy places.

Eastern Orthodoxy.—Metropolitan Chrysostomos was elected primate of the Greek Orthodox churches after sharp opposition to Archbishop Iakovos' earlier election had caused the latter's abdication.

Patriarch Athenagoras declared in July at Istanbul, Turkey, that a common front among Protestant, Orthodox, and Roman Catholic churches should be created; he held that dogmatic unity between Orthodox and other Christian churches is a long-term prospect.

Delegates of the Orthodox churches have attended the sessions of the Ecumenical Council in Rome (beginning Oct. 11, 1962) as observers.

JOHN B. NOSS,
Emeritus Professor of Philosophy, Franklin and Marshall College.

JUDAISM

The Jewish population of the world was estimated at almost 13 million at the end of 1962—6,475,000 (50%) in North, Central, and South America; 3,907,000 (30%) in Europe; some 2,161,000 (17%) in Asia; 318,750 (2.5%) in Africa; and 70,000 (0.5%) in Australasia. Approximately 5.5 million resided in the United States, over 40% of whom were in New York City and its suburbs. Other large centers of Jewish population were: the Soviet Union, 2,385,000; Israel, 2,035,000; France, 500,000; Great Britain, 450,000; Argentina, 450,000; Canada, 250,000; Rumania, 180,000; and Morocco, 130,000. Except for Israel, Canada, the USSR, and Morocco, these figures are based on unofficial estimates.

Jews emigrated in large numbers from North Africa, chiefly from Algeria after the French-Algerian cease-fire agreement in March. The immigration to France—about 100,000 Jews—gave that country the fourth largest Jewish community and the largest in western Europe.

In the United States the Jewish community provided funds and services through a whole complex of national and local agencies. The United Jewish Appeal (UJA) and the American Joint Distribution Committee were the principal agencies aiding Jews in Israel and other countries.[1]

The major synagogue bodies in the United States were the Union of Orthodox Jewish Congregations, the United Synagogue (Conservative), and the Union of American Hebrew Congregations (Reform). Approximately 1.5 million Jews were affiliated with the larger Orthodox congregations, according to estimates by Orthodox rabbis; an estimated 800,000 were in 627 Reform congregations, and roughly 900,000 were in 713 Conservative congregations. While the rest of the Jewish population (over 2 million) was not included in these figures, many were members of small Orthodox synagogues.

According to a 1962 survey, 589,000 American children were enrolled in all types of Jewish schools. There were 297,400 (or 50.5%) in one-day-a-week schools, 241,200 (or 41%) in schools meeting two or more afternoons a week, and 50,000 (or 8.5%) in full-time day schools. In the 11 years 1952–62, Jewish school enrollment grew by 253,000, or over 57%.

Concern was expressed by Zionist and other Jewish pro-Israel organizations, as well as by members of Congress, with the position of the United States in the United Nations on questions affecting Israel. One source of concern was the United States vote against a draft resolution calling on Middle East governments to undertake direct negotiations on the Arab-Israel disputes. Another was the United States vote censuring Israel for its March 16 attack on a fortified Syrian port on the eastern shore of the Sea of Galilee. American government officials denied any change

[1] The major coordinating agencies furnishing national services were: the National Jewish Welfare Board (service to Jewish Community Centers and Jewish military personnel); the American Association for Jewish Education (service to local bureaus of Jewish Education); the Synagogue Council of America (representative body of synagogue and rabbinical organizations); the National Community Relations Advisory Council (service to local as well as national community relations groups); and the Council of Jewish Federations and Welfare Funds (coordinating local Jewish federations). Among the major membership agencies offering specialized programs in the Jewish community were: the American Jewish Committee (intergroup and community relations); B'nai B'rith (largest Jewish fraternal order); the B'nai B'rith Anti-Defamation League (intergroup and community relations); Hadassah (women's Zionist organization); the National Council of Jewish Women (membership and civic activity); and the National Jewish Hospital and City of Hope (health).

in the friendly American policy toward Israel.

American Jewish agencies, supported by newspaper editorials and by resolutions adopted by the legislatures of seven states, continued to oppose America's compliance with the discrimination practiced by Arab Middle East countries against American citizens who are Jewish. In July a Senate-House conference committee incorporated an anti-bias amendment into the final version of the Foreign Aid and Related Agencies Appropriations Act, 1963.

Efforts to clarify and strengthen cultural and religious relationships between American Jews and Israel included: the American Jewish Committee's opening in February of an office in Israel, which will publish a magazine (*Ammot*) in Hebrew; a 3-day American-Israeli Dialogue in Jerusalem in June, conducted by the American Jewish Congress; and the student and teacher exchange program of the American Zionist Council. The Reform and Conservative synagogue bodies established religious institutions in Israel, where only Orthodox Judaism is officially recognized.

American Jewish agencies continued to protest Soviet anti-Semitism. In a strongly worded cable in December to Soviet Premier Nikita Khrushchev, the American Jewish Committee and 46 Protestant, Catholic, and Jewish clergymen and educators urged that he abolish all discrimination.

Almost all Jewish groups supported the U.S. Supreme Court decision in June declaring unconstitutional the New York State Board of Regents prayer. (See also CIVIL LIBERTIES; EDUCATION; LAW.) Considerable controversy arose over an editorial in *America* (a Jesuit weekly magazine), September 1, which criticized Jewish agencies for their opposition to the school prayer and warned of a rise in anti-Semitism if they persisted in supporting such court action. On September 8, *America* carried a reply from the American Jewish Committee denying that anti-Semitism was being aroused by the action of Jews, and maintaining that every group in America had the right to press its viewpoint through the impartial judicial process.

MORRIS FINE,
Editor, "American Jewish Year Book."

REPRESENTATIVES, House of. For list of members, see UNITED STATES CONGRESS; and for legislation, see the Index entry, *Congress, U.S.*

REPUBLICAN PARTY

Elections in 1962 gave to Republicans new governorships in three of the large industrial states: Pennsylvania, Michigan, and Ohio. The party gained two seats in the national House of Representatives but lost four in the Senate. The new 88th Congress, after the elections, remained Democratic in the House by 258–176, with one vacancy (compared with 261–174, with two vacancies, at the end of the 87th Congress[1]) and in the Senate by 68–32 (compared with 64–36). The Republicans gained an additional Senate seat, however, as a result of the appointment of Republican Edwin L. Mechem to fill the vacancy created by the death on November 18 of Sen. Dennis Chavez (D, N.Mex.). The alignment in the new Senate thus became 67 Democrats and 33 Republicans. The Republicans won 15 governorships, for a total of 17 (a net gain of one).

Republican leaders had hoped to make larger gains, especially in the House and in the governorships, in an election year midway between presidential campaigns, a time when the party in power has often suffered setbacks. Reapportionment and redistricting after the 1960 census cost House seats in some Republican strongholds. The Cuban crisis was counted by many Republican leaders as a development which brought about Democratic votes in support of the president. Local issues and personalities were important factors in many races.

Reelection of Nelson A. Rockefeller as governor of New York by a margin of 518,218 votes placed him in the front rank of prospective candidates for the Republican presidential nomination in 1964. Rockefeller did better in New York City than he had in his 1958 race for the governorship, reducing the 1958 Democratic margin by over 100,000 votes, although his own statewide victory was gained by 55,000 fewer votes than in 1958. The election also added to possible presidential lists the names of two other Republican gubernatorial victors: William W. Scranton of Pennsylvania and George W. Romney of Michigan. Richard M. Nixon, the presidential nominee in 1960, was virtually eliminated from the 1964 race by his defeat for the governorship of California by more than 300,000 votes.

Republican organization in many key states and metropolitan areas was tightened and made more effective. In states outside the South, Republican candidates for senatorships and governorships received more than half the votes cast. In the South, seven incumbent Republicans in Congress were reelected and the party gained four additional seats from North Carolina, Florida, Tennessee, and Texas. In Oklahoma, Henry Bellmon became the first elected Republican governor in the history of the state.

A Declaration of Republican Principle and Policy was issued on June 7, 1962, with the approval of the Senate and House Republican conferences, after preparation by a joint committee headed by Representative Melvin R. Laird of Wisconsin. It offered five principles as basic party beliefs: individual liberty, limited government, diffusion of power, government with a heart, and government with a head. On domestic issues it recommended a "thorough overhaul of the tax system" to encourage production, jobs, savings, and investments; a balanced budget, reduction of federal debt, and a stable dollar; a government both "probusiness and prolabor"; shifts in agricultural resources "encouraged by a massive voluntary long-term land retirement system, increased emphasis on new uses for farm products, and improved marketing and distribution practices"; a civil rights program based on the 1960 party plat-

Former President Dwight Eisenhower, followed by New York Governor Nelson Rockefeller, gets an ovation at a Republican fund-raising dinner at Syracuse, N.Y., October 29.

[1] The House was then temporarily increased by two seats for Alaska and Hawaii until those states could be included in the new apportionment.

form; "effective tax relief for medical and hospital insurance"; "selective federal assistance to education" without federal control; and tax relief for persons financing education for themselves or others.

On international issues, the declaration proposed efforts "to reorganize and revitalize the United Nations" by changing voting in the General Assembly to a population basis; trade policies to keep American products competitive; aid to underdeveloped nations without sacrifice of "the trust of old friends in Europe"; recasting foreign aid policies to serve "the cause of freedom, without waste and within the sensible limits of careful priorities"; "superior military force so long as the Communist drive for world conquest continues"; and disarmament only with inspection.

(See also ELECTIONS, U.S.; UNITED STATES.)

FRANKLIN L. BURDETTE,
Professor and Director, Bureau of Governmental Research, University of Maryland.

RESERVE FORCES, Military. See Index entry.
RESINS. See Index entry.

RESPIRATORY DISEASES

While great progress has been made on the etiology of acute respiratory infections, this group of illnesses continues to be the most disabling and costly to mankind in all age groups and countries. Respiratory infections are responsible for over 50% of all acute human illnesses suffered annually in the United States. Recent household data compiled by the U.S. National Health Survey show a rate of 1.25 respiratory illnesses per person per year for the United States population as a whole. More intensive surveys in family, student, child, and industrial groups indicate an annual rate of from 4 to 6 respiratory illnesses per individual, or approximately a billion cases annually among the population of the United States. Recent reports reveal that this high prevalence of acute respiratory disease is worldwide.

Over 90% of all acute respiratory infections are of viral origin. Over 100 different viral agents have now been isolated and identified with respiratory tract illness of varying degrees of severity. These fall into several different immunologically distinct groups, and the spectrum of respiratory illnesses each group produces is gradually being clarified.

Influenza.—The epidemic influenza A_2 (Asian) virus has produced only minor sporadic outbreaks since the January epidemic of 1960. Essentially no influenza A_2 infections were recognized during the 1961–62 season, although numerous sporadic outbreaks of influenza B virus occurred throughout the United States. Because influenza A_2 virus infections have been infrequent or absent in the United States population since 1960, an epidemic outbreak is predicted by health authorities, to occur sometime during the fall and winter of 1962–63. Influenza and its accompanying complications, such as pneumonia, rank it among the first 10 causes of death in this country. Vaccination of all age groups was urged for protection against this devastating illness.

Four strains of parainfluenza viruses, which share properties with the epidemic influenza virus, have been recognized as causing frequent respiratory illnesses in childhood. They have been shown to be important causes of primary and repeated attacks of croup, pharyngitis, bronchitis, and pneumonia, with some cases terminating fatally. These agents also may produce mild upper respiratory illnesses in adults.

Respiratory Syncytial Infections.—The respiratory syncytial virus (RS), originally isolated from a chimpanzee with a cold, also has been identified by several groups of investigators as being a major cause of respiratory tract illness in infants and children. Five syndromes are recognized: pharyngitis, bronchitis, bronchiolitis, bronchopneumonia, and (rarely) croup. The majority of primary infections involve the lungs and are of major severity with some terminating fatally. Respiratory syncytial infections in older age groups of children, which usually represent reinfection, tend to be milder and in some cases without symptoms.

Rhinoviruses.—Several groups of investigators in the United States and England during the past two years have isolated by methods of tissue culture many strains of virus from the nasal secretions of young adults from military and civilian groups, with symptoms of the common cold. These represent a heterogeneous group of agents which are clinically significant as the cause of upper respiratory infections in adults. The great majority of these new virus agents (over 30 or more types), however, appear immunologically distinct from those mentioned above and are generally grouped under the name of rhinoviruses.

Adenoviruses.—Since the adenovirus group of agents was recognized in 1953 as an important cause of acute respiratory disease in the military recruit, at least 44 serotypes have been recognized, 28 from humans and 16 from animals. Types 3, 4, 7, 14, and 21 have been shown to produce epidemic respiratory tract illnesses. Types 4 and 7 continue to be the major cause (30 to 50%) of acute respiratory disease, including pneumonia, in military populations. In civilian adult groups the incidence of adenovirus infections is estimated to be only 1 to 3%. However, infections with adenoviruses occur early in life and by age 5 the majority of children have been infected with several types (1, 2, 3, 5, etc.). Adenovirus infections in infants and children are mild and ill-defined, as they are in the civilian adult population. Adenovirus vaccine containing types 3, 4, and 7 has been shown to be highly effective in preventing infections, including pneumonia due to these types, in military recruits.

Pneumonia.—A most significant advance during the past year in the etiology of acute respiratory disease has been the identification and isolation of the agent causing primary atypical pneumonia. This form of pneumonia, recognized as a clinical entity for 25 years, was thought by Monroe D. Eaton and others to be due to a virus. Recently Eaton's agent causing primary atypical pneumonia in man has been shown to be a pleuropneumonia-like organism (PPLO), and not a virus. Serological studies have revealed that Eaton's PPLO agent is responsible for approximately 10% of pneumonias in pediatric patients, 25% in college population groups, and from 25 to 52% in military recruits. Although no vaccine is as yet available, fortunately Eaton's agent pneumonia responds favorably to treatment with tetracycline therapy.

(See also MEDICINE; PUBLIC HEALTH.)

CLAYTON G. LOOSLI,
Dean, School of Medicine, University of Southern California.

RETAIL STORE SALES

Consumer purchases at retail stores in the United States totaled $115 billion in the first half of 1962, a 5% gain over the 1961 average half-year volume. Sales established successive new highs in the first two quarters of 1962, after seasonal adjustment, and midsummer buying indi-

cated a continuation of the record levels. Prices at retail stores rose fractionally above 1961, a rate of gain that has prevailed since 1958.

Per capita retail spending in the first half of 1962 was $620. Consumers spent 60% of their income after taxes at about 2 million retail outlets. (See also COST OF LIVING.)

About one fourth of retail purchases, with a dollar value of $27.4 billion, were made at chain stores with 11 or more outlets. Chain stores sold significant proportions of general merchandise (65%), groceries (45%), apparel (25%), and drug outlets (20%).

SALES OF RETAIL STORES
(In millions of dollars)

	Year 1961	First half (seasonally adjusted) 1961	1962
All retail stores	218,811	107,701	115,195
Durable goods stores[1]	67,296	32,750	36,607
Nondurable goods stores[1]	151,515	74,951	78,588
Durable goods stores:			
Automotive group	36,906	17,826	20,868
Furniture and appliance group	10,382	5,057	5,277
Lumber, building, hardware group	10,951	5,433	5,637
Nondurable goods stores:			
Apparel group	13,730	6,750	7,089
Drug and proprietary stores	7,739	3,778	4,010
Eating and drinking places	16,403	8,166	8,576
Food group	55,421	27,550	28,406
Gasoline service stations	17,971	8,883	9,267
General merchandise group	24,907	12,055	13,248

[1] Includes estimates for other retail stores not shown separately. (Source: U.S. Department of Commerce, Bureau of the Census and Office of Business Economics.)

In the 1950's sales rose about 60% in a 10-year period. If price influences are removed, the rise equaled about 40%. The annual rate of gain in the early 1960's has been considerably smaller. Retail store sales declined 4% from the midquarter of 1960 to the winter of 1961. Five quarters of increase from the spring of 1961 to mid-1962 added 8% to sales volume.

The sharpest gain in sales from 1961 to the first half of 1962 was recorded by automotive stores—13%. General merchandise store sales rose 6% in this period, while sales of other types of retail store rose less than 5%.

On June 30, 1962, accounts-receivable balances owed to retail stores by customers totaled $13 billion, a rise of $1.3 billion in a year. Charge-account credit outstanding equaled $7 billion; installment accounts, $6 billion. Retailers' inventories were valued at $27 billion, after seasonal adjustment. The stock-sales ratio fell in 1961 and 1962, and was 1.4 in mid-1962. Durable goods inventories were $11.5 billion; nondurable goods inventories were $15.5 billion; and their respective ratios to sales were 0.9 and 1.2.

(See also BUSINESS DATA, U.S.; CENSUS DATA, U.S.)

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RÉUNION

One of the Mascarene Islands in the Indian Ocean about 420 miles east of Madagascar, Réunion is an overseas department of France. It has an area of 970 square miles, and a population of 346,000 (est. 1961), mainly French Creoles of European-Asian-African descent. Saint Denis (pop. est., 50,000) is the capital and chief city. Réunion is administered by a French-appointed prefect (Jean Perreau-Pradier), who is assisted by a 36-member General Council elected by universal suffrage. French is the official language.

The economy of the country is based on sugar production. Chief crops (metric tons exported, 1961): sugar, 197,727; geranium and ilang-ilang oils, 2,355; vetiver oil, 32; rum, 156; and vanilla, 42. Total exports, 1961: 18,132 million French francs; imports, 28,509 million. Trade is primarily with France. Réunion has a 79-mile coastal railroad and 1,240 miles of roads (455 bituminized). Gillot airfield is served by several foreign airlines.

On Feb. 28, 1962, the island was struck by a severe hurricane which killed 27 persons and injured several hundred.

REVENUE. See Index entry, *Internal Revenue.*

RHODE ISLAND

A New England state of the United States, Rhode Island ranks last among the states in area (land, 1,058 square miles; inland water, 156) and 39th in population (865,000 on July 1, 1962, an 0.7% increase from the 1960 census figure of 859,488). Towns and cities with populations above 15,000 in 1960:

Central Falls	19,858	N. Kingstown town	18,977
Coventry town	15,432	N. Providence town	18,220
Cranston	66,766	Pawtucket	81,001
Cumberland town	18,792	Providence (*capital*)	207,498
E. Providence	41,955	Warwick	68,504
Johnston town	17,160	W. Warwick town	21,414
Newport	47,049	Woonsocket	47,080

Government.—Chief executive and judicial officers in 1962 included John A. Notte, Jr. (Democrat), governor, serving a two-year term; Edward P. Gallogly, lieutenant governor; August P. LaFrance, secretary of state; Raymond H. Hawksley, treasurer; Charles W. Hill, controller; J. Joseph Nugent, attorney general; Michael F. Walsh, commissioner of education; and Francis B. Condon, chief justice of the 5-member Supreme Court.

The Rhode Island General Assembly, which convenes annually, comprised 28 Democrats and 16 Republicans in the Senate in 1962 and 76 Democrats and 22 Republicans (with 2 vacancies) in the House of Representatives.

Legislation, 1962.—In the shortest regular session since 1939, the Rhode Island General Assembly completed its work in a 37-hour ordeal ending at 2:30 A.M. on April 15. Partisan struggle and efforts to serve local interests prevented effective action on some major matters. Among these were fair housing, creation of a consumer council, increase of public control over Blue Cross and Physicians Service, and reapportionment of seats in the House of Representatives.

Legislation adopted included an extensive revision of the motor vehicle code which repealed the limited license law enacted in 1961; abolition of the Milk Control Board and adoption of a milk sanitation code; mandatory installation of seat belts in all new cars beginning with the 1964 models; and increase of the minimum wage to $1.25 per hour.

Pay increases for general officers and judges raised the governor's salary from $15,000 to $25,000 and the salaries of Supreme Court justices from $17,000 to $20,000 (plus $1,000 additional for the chief justice). Other general officers received $5,000–$7,000 increases. Tax relief of over $168,000 was granted to the United Transit Company of Providence in an effort to keep the bus system in operation. The administration's entire fiscal program, including $101,000,000 in general appropriations and no new or increased taxes, was also passed. Five bond issues providing for construction of educational and welfare institutions were referred to the voters. The proposals, totaling $31 million, were approved in November.

A special session of the Assembly was convened in the summer to deal with reapportionment (see below, *Events, 1962*).

Finance.—In the 1962 fiscal year, revenue of $117,065,072 included $92,063,274 from state taxes and $16,106,054 in federal funds. Chief tax yields were the 3% general sales tax ($26,682,357) and taxes on corporate incomes ($8,400,293) and motor fuels ($17,874,867). Spending of $116,363,465 included $30,550,914 for education, $44,704,901 for health, welfare, and safety, and $9,290,601 for highways.

Education.—In the fall of 1962, public elementary schools staffed by 2,949 teachers enrolled 81,612 pupils; secondary schools with 2,830 teachers enrolled 60,940; and (fall of 1961) parochial schools with 1,434 teachers enrolled 48,613. College enrollment (fall of 1961) totaled 19,842 in 12 institutions, including 2 junior colleges and 10 senior colleges and universities.

Estimated public school spending in the 1961–62 school year totaled $62,272,000, including current ex-

penditures of $56,072,000 ($450 per pupil) and $6 million in capital outlays. Revenue of $62,272,000 was drawn chiefly from state funds ($15,702,000) and local districts ($44,270,000). Teachers' salaries averaged $5,800 (high school, $5,900; elementary, $5,715). Actual spending for higher education (1961 fiscal year) amounted to $11,041,000.

Public Assistance.—In the 1962 fiscal year, public assistance payments to a monthly average of 35,735 persons totaled $20,865,880. This amount included $9,258,578 for dependent children and $6,246,178 for the aged.

Transportation and Communications.—With 31 miles of highway construction and reconstruction completed during 1961, *highways and roads* on Jan. 1, 1962, totaled 4,393 miles (3,471 surfaced). These served 367,527 *motor vehicles* (as registered on Dec. 31, 1961), including 308,052 automobiles. Operating in the state were (1962) 4 *railroads* (using 183 lines miles of track); (1961) 6 regularly scheduled *airlines;* and 9 commercial and municipal *airports.*

Communications media included (1961) 14 AM and 6 FM *radio stations;* 2 VHF *television stations;* 7 daily *newspapers* (circulation, 299,236); and (Jan. 1, 1962) 98,400 business and 267,600 residential *telephones.*

Labor Force.—The state's labor force on Aug. 15, 1962, included 1,620 agricultural workers. Nonagricultural employment stood at 295,500, compared with 293,200 for the previous August 15. Of nonfarm employees, 40% were in manufacturing, 17.9% in trade, and 14.3% in service industries. Unemployment on Aug. 15, 1962, numbered 24,600, compared with 28,300 for the previous August 15.

Manufacturing.—Manufacturing engaged 118,686 workers in 1961, including 93,362 in production, and provided a payroll of $517,147,000. Adjusted value added by manufacture totaled $959,210,000.

LEADING RHODE ISLAND MANUFACTURES, 1961

Industry group	Total employees	Total payroll	Adjusted value added by mfr.[1]
		(in thousands)	
Textile mill products	25,774	$100,967	$188,970
Rubber and plastics products	8,600	41,422	100,958
Nonelectrical machinery	9,231	50,573	84,861
Primary metals	9,054	46,634	76,566
Jewelry and silverware	8,785	34,092	68,056
Costume jewelry and notions	10,400	37,638	60,727
Fabricated metals	7,568	32,442	55,582
Food and kindred products	6,504	29,328	54,670
Electrical machinery	6,379	25,691	51,365

[1] For definition, see footnote 1 in the article *Industrial Production.*
(Source: *1961 Annual Survey of Manufactures.*)

Mining.—Rhode Island ranked 49th among the states in the value of its mineral production in 1961, with 0.02% of the national total. The mineral value ($3,079,000) was the second highest on record, 32% more than that of 1959, but 48% lower than the 1960 total. The drop in mineral output was due primarily to less demand for riprap stone used in construction of breakwater facilities at Newport.

Agriculture.—Cash farm income for the first nine months of 1962 (excluding government payments) totaled $16,397,000, compared with $15,227,000 for the corresponding period of 1961. For the full year 1961, income comprised $13,116,000 from livestock, $7,612,000 from crops, and $86,000 in government payments. Principal income sources in 1961 were wholesale milk, $6,751,000; greenhouse and nursery products, $3,520,000; eggs, $3,006,000; and potatoes, $2,649,000.

RHODE ISLAND CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Apples (1,000 bu.)	162	200	180
Corn, sweet (1,000 cwt.)	53	58	66
Hay (1,000 tons)	40	40	39
Potatoes (1,000 cwt.)	1,006	1,270	1,352
Tomatoes (1,000 cwt.)	46	27	29

(Source: U.S. Department of Agriculture.)

The state's 1,400 farms in 1959 had an acreage of 138,000 (34,000 in harvested cropland). Livestock on farms on Jan. 1, 1962, included 20,000 cattle, 10,000 hogs, and 391,000 chickens.

Events, 1962.—From early spring, when Mayor Kevin K. Coleman of Woonsocket made known his intention to seek the Democratic nomination for governor, until November 30, when the State Board of Elections finally announced that John H. Chafee (Republican) had been elected governor by 398 votes, politics dominated the headlines. Although Gov. John A. Notte, Jr., was endorsed by the Democratic State Central Committee, and Chafee was supported by the Republican organization, both men faced vigorous contests in the primary elections on September 11—the first same-day, same-place primaries in the state's history, and for the Republicans the first statewide primaries since 1948.

At the close of Election Day, November 6, Governor Notte led by an unofficial 47 votes, leaving the final decision dependent on nearly 7,000 absentee, shut-in, and servicemen's ballots. The validation and counting of these delayed the final decision to November 30. To serve with Chafee the voters reelected the incumbent Democratic state officers, and continued Democratic control in the General Assembly (29 to 17 in the Senate and 77 to 23 in the House). Democratic Representatives Fernand J. St. Germain and John E. Fogarty were returned to Congress by large majorities.

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After official count of ballots on November 30, John H. Chafee, a Republican, is told he has won governorship of Rhode Island. The election was held on November 6.

An effort to obtain reapportionment of seats in the House of Representatives led to a complicated struggle. In April, suits were begun in both state and federal courts to compel redistribution. Shortly afterward, a commission appointed in 1961 reported a plan which would amend the state constitution to expand House membership from 100 to 125. The Assembly approved, although Governor Notte opposed the idea. On July 24 the state Supreme Court ordered that reapportionment be made immediately on the basis of the 1960 census. A special session of the General Assembly on August 7 referred the problem to a seven-member commission, but the failure of this body to report by September 5 compelled abandonment of reapportionment for 1962. On October 18, both state and federal courts approved conduct of the 1962 election without reapportionment, leaving the problem for action in 1963.

Other items deferred to 1963 were the reports of a Little Hoover Commission for major reform of the state administrative structure and of a constitutional revision commission. Also postponed by reference to a special commission for study was action on a request from the Roman Catholic diocese for state aid for its parochial schools.

Recreation was centered on maritime activity.

In September, the United States defender *Weatherly* defeated the Australian challenger *Gretel* in the America's Cup 12-meter yacht races out of Newport. The same port was the starting point in June for the 635-mile yacht race to Bermuda. (See also SPORTS, GAMES, AND SHOWS.) Across Narragansett Bay, the 20th annual United States Tuna Tournament was held in September.

"Legislation" and "Events" by:
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RHODESIA AND NYASALAND

The Federation of Rhodesia and Nyasaland (also known as the Central African Federation) is bordered by the Republic of the Congo (Léopoldville) and Tanganyika on the north, Mozambique on the east, the Republic of South Africa and Bechuanaland Protectorate on the south, and Angola on the west. The federation comprises the self-governing territories of Southern Rhodesia and Nyasaland and the British protectorate of Northern Rhodesia, and has an aggregate area of 486,942 square miles. The total population of 8,630,000 (Dec. 31, 1961, est.) includes 8,290,000 Africans, 305,000 Europeans, 25,700 Asians, and 14,100 persons of mixed racial ancestry. Salisbury, in Southern Rhodesia, is the federal capital. The official language is English.

Government.—Federated as a British state since 1953, Southern Rhodesia, Northern Rhodesia, and Nyasaland retain their prefederation constitutional status. The federation's political future was under review in 1962. The queen is represented in the federation by a governor general (Lord Dalhousie since 1957). Party seating in the 59-member Federal Assembly (following elections of April 27, 1962): United Federal Party, 54; independent, 1 (excluding 4 specially elected or nominated seats). Prime Minister Roy Welensky, leader of the United Federal Party, appointed 10 ministers to the new cabinet on May 3, 1962. The highest judicial body is the Federal Supreme Court.

Education.—Federal school enrollment, 1961: 84,723. Number of schools (with enrollments, 1961): 352 primary and secondary (72,002 Europeans, 7,270 Asians, and 5,451 of mixed parentage); 1 university (University College of Rhodesia and Nyasaland); 1 teacher-training college. Territorial governments are responsible for African education up to the university level.

Finance.—Government revenue, fiscal year 1963 est.: £68,703,000 (£65,500,000 in fiscal year 1962); expenditure, £78,456,000 (£69,100,000). Expenditure on economic development in fiscal year 1962 was £8.1 million. Foreign exchange holdings increased by £11 million in 1961. Government loans in 1962 totaled £22 million.

Transportation and Communications.—Transport networks (miles, 1961): railways, 3,126; main roads, 11,600; local roads, 50,000 (est.). National airline: Central Africa Airways; 8 other airlines serve the federation. Other data for 1960: passenger cars, 121,271; commercial vehicles, 46,798; telephones, 97,240; radios, 61,000 (1959); television sets, 35,000 (1962).

Production.—Gross national product, 1961 est.: £555 million (up 3% from 1960). Manufacturing value, 1961: £58.3 million (up 6%), or 10.4% of gross domestic product; mining value, £148.7 million (down 4%), or 19.6% of gross domestic product. Chief minerals (metric tons exported, 1961): copper, 610,400; chrome ore, 476,000; asbestos, 133,500; and zinc, 28,000. Chief agricultural products (exports, 1961): maize, 311,461 metric tons; tobacco, 210.0 million pounds; tea, 30.1 million pounds; and peanuts, 51.0 million pounds.

Foreign Trade.—Total exports, 1961: £206.8 million (up 0.4% from 1960); imports: £155.0 million (down 1.1%). Principal exports (in millions, 1961): tobacco, £41.9; maize, £4.5; tea, £4.4; peanuts, £1.5; copper, £111.9; asbestos, £8.4; chrome ore, £3.0; zinc, £1.9; meat products, £3.3; pig iron, £2.5. Principal imports: foods, beverages, tobacco, clothing, vehicles, and other consumer goods and manufactures. The federation's chief trading partners are Great Britain, Republic of South Africa, and West Germany. Tourists in 1961 numbered 127,525.

Events, 1962.—Racial and political tensions in 1962 threatened to break up the nine-year-old federation, although the situation in Nyasaland continued to remain calm in anticipation of self-rule which Britain granted on November 23. African nationalists in Northern Rhodesia competed for votes in an important election on October 30. Southern Rhodesia experienced its bitterest racial bloodshed of the century over the issue of minority African representation in its new legislature. African nationalist agitation in the three territories was further aggravated by an antifederation campaign among United Nations members that was initiated by the Afro-Asian bloc of members and was backed by the Communist bloc. The campaign was aimed particularly at Southern Rhodesia.

To head off rumors of complicity in the death of the late UN Secretary General Dag Hammarskjöld at Ndola, Northern Rhodesia (on Sept. 18, 1961), a federal inquiry commission on February 9 blamed pilot error for the air crash.

At the opening session of the Federal Assembly on February 12, Federal Prime Minister Sir Roy Welensky said that the federation would not break up while he was prime minister. To ease criticism of the federation, he cautioned Southern Rhodesian whites to lessen their opposition to African political advancement. The British proposal to amend the constitution for Northern Rhodesia angered Welensky because it allowed for the possibility of an African legislative majority. In an effort to lessen British support for African nationalists, and knowing that the voting rules overwhelmingly favored his United Federal Party (UFP), Welensky resigned as federal prime minister on March 8 and dissolved the Assembly on the following day. He thus forced a federal election on April 27. The UFP won 54 of the 59 federal seats, thereby securing Welensky's maneuvered vote of confidence. But an election boycott by African and Asian voters, and criticism by liberal whites made Welensky's election victory a hollow one.

British relations with the federation, previously divided between colonial and Commonwealth offices, was assigned effective as of March 19 to the new Central African Office, headed by Richard A. Butler, the home secretary. Many observers believed that he would stand up to Welensky's government. Butler visited the federation on May 18–22 and won endorsement from Nyasaland's African leader, Dr. Hastings K. Banda, for a commission to study the implications of Nyasaland's withdrawal from the federation. Butler wanted time to gauge African nationalist strength in Northern Rhodesia and to study African reaction to Southern Rhodesia's new constitution, after which, it was thought, he might unveil Britain's blueprint for the federation's future. He sent a three-man British delegation in mid-July to investigate conditions under which the federation might be preserved.

Being sensitive to criticism, Welensky attacked Adlai E. Stevenson, U.S. ambassador to the United Nations, for a speech delivered in mid-April on the difficulties encountered by African countries which have large white populations. Another setback came on August 14 when Jasper Z. Savanhu, the lone African cabinet member, resigned as federal parliamentary secretary to the minister of home affairs because he believed the government's policy of racial partnership had not been implemented.

Welensky charged that pan-African and Communist agents were responsible for interparty African violence in Northern Rhodesia in April, and for violence preceding the government's banning of the Zimbabwe African People's Union in Southern Rhodesia on September 20. Foreign funds, he charged, were being used to stir up African nationalists in order to disrupt white rule in the federation in preparation for a Communist takeover. Welensky, who actively intervened in Northern Rhodesia's election campaign, was even more uncertain of the federation's future as a result of the election deadlock there on October 30 and the

formation of an African-dominated coalition government on December 14.

Southern Rhodesia

A self-governing British colony since 1923, Southern Rhodesia is bordered by the Republic of South Africa on the south, Mozambique on the east, and Bechuanaland Protectorate on the west. Area, 150,333 square miles; population, 3,200,000 (Dec. 31, 1961, est.), including 2,960,000 Africans (3,610,000 Africans according to the preliminary 1962 census est.), 221,000 Europeans, 7,100 Asians, and 10,700 others. Principal cities and estimated populations: Salisbury, the capital, 299,900 (205,000 Africans); Bulawayo, 195,600 (140,000 Africans); Umtali, 35,400 (27,000 Africans); Gwelo, 34,600 (26,000 Africans).

Government.—The unicameral Legislative Assembly has 65 members (elected Dec. 15, 1962), all of whom are Europeans. Party seating in the Assembly: Rhodesian Front Party, 35; United Federal Party, 29; independent, 1. An 8-member cabinet is headed by Prime Minister Winston Joseph Field (Rhodesian Front Party). The queen's representative is Governor Sir Humphrey Vicary Gibbs (since 1959).

Education and Religion.—Number of African schools (with enrollment, 1961): 3,082 (551,247, or over 80% of the school-age population). Government expenditure on education in the fiscal year 1963 was estimated at £4,800,000. Principal religious faiths: Anglican (39% of the European population in 1956), Presbyterian (13%).

Finance.—Government revenue, fiscal year 1963 est.: £25,462,000 (fiscal year 1962 est.: £24,210,000); total expenditure, £29,648,000 (£28,664,706). National debt as of June 30, 1961: £68,919,679.

Transportation and Communications.—Main roads, 5,115 miles; other roads, 31,162. There is an international airport at Salisbury. Other data for 1960: passenger cars, 89,000; commercial vehicles, 37,200; telephones, 80,378.

Production.—Total mineral value, 1961: £27,161,582 (£26,434,307). Chief minerals are asbestos, gold, chrome, coal, and copper. Chief crops are maize, beans, peanuts, rice, wheat, cotton, and tobacco. Livestock raising (principally cattle) is important to the economy.

Events, 1962.—On February 23 the UN Trusteeship Committee declared Southern Rhodesia's claim to be a self-governing colony was but a subterfuge to retain white rule. A special United Nations subcommittee warned on April 30 that unless Africans were granted equal rights, "serious conflict and violence would result." A resolution approved by the UN General Assembly on June 28 asked Great Britain to require Southern Rhodesian whites to enfranchise Africans. Prime Minister Sir Edgar Whitehead rejected the 73-to-1 vote of censure. The United States abstained from voting, as did Britain.

Strikes protesting low African wages spurred riots in Salisbury and Umtali on May 14. Tear gas, bayonets, and police dogs were used to quell the riots. Several Africans were killed and dozens were injured. The all-white legislature on August 21 strengthened its police powers to curb African political action.

The government on September 20 outlawed the Zimbabwe African People's Union (ZAPU) on charges that it had resorted to intimidation and terrorism, fomented violence, and possessed illegal explosives. Rhodesian planes dropped leaflets announcing the ban, 8,000 troops descended on African townships, houses were searched for weapons, ZAPU leaders were detained, and 1,603 Africans were arrested.

ZAPU's President Joshua Nkomo fled on September 23 from Northern Rhodesia to establish a government-in-exile in Tanganyika. He returned to Southern Rhodesia on October 2 and was confined by the government to the African reserve near Bulawayo where he was born.

The government was dismayed by the resignation on October 11 of Sir Hugh Foot as chief British delegate to the United Nations because of his disagreement with official British support for Whitehead's policies.

The stunning upset in the elections of December 15 swept the United Federal Party out of office. Whitehead promptly resigned as prime minister and was replaced by Winston Joseph Field, 58-year-old tobacco farmer and leader of the white supremacist Rhodesian Front Party.

Northern Rhodesia

A British protectorate since 1924, Northern Rhodesia is bounded by Angola on the west, the Republic of the Congo (Léopoldville) and Tanganyika on the north, and Nyasaland and Mozambique on the east. Area, 288,130 square miles; population, 2,510,000 (Dec. 31, 1961, est.), comprising 2,430,000 Africans, 75,000 Europeans, 8,000 Asians, and 2,000 others. Principal cities and estimated populations: Lusaka, the capital, 85,840 (72,000 Africans); Ndola, 82,400 (73,000 Africans); Broken Hill, 34,700 (30,000 Africans).

Government.—Party seating in the 45-member unicameral legislature (following incomplete election returns of Oct. 30 and Dec. 10, 1962): United Federal Party, 16; United National Independence Party, 14; African National Congress, 7. A coalition cabinet of 12 members (including 10 Africans) was announced on Dec. 14, 1962.

Sir Roy Welensky, the prime minister of the Federation of Rhodesia and Nyasaland, won a vote of confidence for himself and his United Federal Party in the elections on April 27.

AUTHENTICATED NEWS INTERNATIONAL

The queen's representative is Governor Sir Evelyn Dennison Hone (since 1958).

Education.—African school enrollment, 1961: 311,261 (about 64% of the school-age population), including 304,828 primary and 6,433 secondary pupils. There are 13 teacher-training schools, 16 trade schools, 18 domestic science schools for girls, and 2 technical colleges. Government expenditure on education, fiscal year 1961: £2,591,116.

Finance.— Government revenue, fiscal year 1962 est.: £19,789,800 (fiscal year 1961 est.: £18,239,705); expenditure, £19,775,002 (£18,637,854). National debt (June 30, 1960): £40,610,693 (including £20,413,853 assumed by the federal government).

Transportation and Communications.—Main roads, 3,800 miles; other roads, 16,000 (est.). Other data for 1960: passenger cars, 34,041; commercial vehicles, 13,012; telephones, 22,880.

Production.—Total mineral value, 1961: £121,122,591 (£128,730,838 in 1960). Northern Rhodesia is the world's second largest exporter of copper. Other minerals include silver and limestone. Chief crops are maize, millet, cassava, and peanuts. Timber production and livestock raising are important.

Events, 1962.—The election of October 30 focused on the competition for voter allegiance between the United National Independence Party (UNIP), under militant President Kenneth Kaunda, and the African National Congress (ANC), under moderate President Harry Nkumbula. At stake was the shift of political power from whites not only in Northern Rhodesia but throughout the federation. Realizing this, Welensky used his prestige to influence white voters. The election's key issue, he said on October 18, was whether or not the quarter of the world's known copper reserves in Northern Rhodesia could safely be turned over to Kaunda's irresponsible UNIP extremists. An unprecedented 92% of the 129,585 qualified voters cast ballots in 270 polling stations to fill 45 seats in the enlarged Legislative Council. About 92,000 Africans voted for the first time, many walking for miles the previous day and night to cast their vote.

The returns indicated a deadlocked vote on racial lines. Welensky's UFP won 15 seats; Kaunda's UNIP, 14; and Nkumbula's ANC, 5. One constituency election was postponed due to the death of a candidate. The deadlock hinged on the fact that no candidate for the 10 crucial so-called national seats received the necessary 10% of his opposite racial vote to qualify for victory. The Liberal Party, led by Sir John Moffat, did not win any seats. The election deadlock marked the failure of the Liberal Party to bring together moderate Africans and Europeans.

A caretaker government of British Colonial Office civil servants governed Northern Rhodesia until new elections were held on December 10 for the undecided 11

Sir Edgar Whitehead (sitting, at right), prime minister of Southern Rhodesia until his defeat in the December 15 election, hears natives at meeting in Salisbury, October 12.

UPI

seats. The ANC won 2 seats and the UFP one, but 8 seats remained undecided. Kaunda and Nkumbula in mid-December agreed to form a coalition cabinet. The UNIP-ANC coalition gave Africans a legislative majority for the first time in Northern Rhodesia's history.

Nyasaland

A British Protectorate since 1891, Nyasaland is bordered by Tanganyika on the north and east, Mozambique on the east, and Northern Rhodesia on the west. Area, 48,479 square miles (including 11,600 square miles of water); population, 2,920,000 (Dec. 31, 1961, est.), consisting of 2,900,000 Africans, 8,900 Europeans, 10,700 Asians, and 1,500 of mixed parentage. Principal cities and estimated populations: Zomba, the capital, 7,350 (6,500 Africans); Blantyre-Limbe, 62,600 (54,000 Africans); Lilongwe, 9,550 (9,000 Africans).

Government.—The Legislative Council has 33 members, of whom 28 are elected. Party seating (following elections of Aug. 15, 1961): Malawi Congress Party, 22; United Federal Party, 5; independent, 1. The 10-member Executive Council includes Dr. Hastings K. Banda, leader of the Malawi Congress Party, and 4 other party members. The queen's representative is Governor Sir Glyn Smallwood Jones (since 1961).

Education and Religion.—African school enrollment, 1961: 290,218. Principal religions: Roman Catholic (about 450,000 adherents), Church of Scotland (400,000), Moslems (500,000 to 1 million).

Finance.—Government revenue, fiscal year 1962 est.: £7,243,567 (fiscal year 1961 est.: £6,330,160); expenditure, £8,189,712 (£6,940,179); development fund expenditure, £3,961,481 (£3,456,445). National debt, June 30, 1961): £7,180,000 (the federal government was responsible for £5,180,000).

Transportation and Communications.—Railways, 500 miles; main roads, 2,800; other roads, 3,170. Other data for 1960: passenger cars, 6,355; commercial vehicles, 5,341; telephones, 5,199.

Production.—The territory is self-sufficient in agricultural products with the exception of sugar and wheat flour, which are imported. Chief crops for export are tea and tobacco. Cattle and goats are raised. Industry is practically nonexistent.

Events, 1962.—Dr. Hastings K. Banda, minister of natural resources and local government, continued to criticize the federation and Prime Minister Welensky. Banda's majority Malawi Congress Party enthusiastically prepared for Nyasaland's self-rule (granted November 23), Banda said on May 1 that he had succeeded in keeping Nyasaland quiet, much to the surprise of his white opponents. His opposition to everything federal resulted in cancellation on July 14 of a federally planned hydroelectric plant for Nyasaland.

Banda ran into opposition from missionaries who resent his party's threat to take over their traditional educational supervision of Africans. In August he accused some missionaries of telling African church members not to join his party. A new opposition political party, the Convention African National Union, was formed in August. Its announced policy of fighting "dictatorial tendencies" referred to Banda's hitherto undisputed power.

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RICE. See Grains.
RÍO DE ORO. See Spanish Territories.
RÍO MUNI. See Spanish Territories.
RIVERS. See Index entry.
ROADS. See Highways.
ROBBERIES. See Crime.
ROCKETS. See Missiles; Space Flight; and the Index entry, *Rockets*.

ROMAN CATHOLIC CHURCH

In the fifth consistory of his reign, March 19, 1962, Pope John XXIII created 10 new members of the Sacred College of Cardinals, raising the membership to 90 (of whom 87 are known). Aloisius Joseph Cardinal Muench (q.v.), the only United States member of the Vatican Curia, was one of five cardinals who died in 1962. Cardinal Muench, former bishop of Fargo, N. Dak., died in Rome on February 15. Other deaths were of Gaetano Cardinal Cicognani, February 5; Teodosio Clemente Cardinal de Gouveia, February 6; Teodosio Giovanni Panico, July 7; and Gabriele Acacio Coussa, July 29.

In 1962 the Roman Catholic population of the United States was listed at 42,876,665, a gain of 771,765 (about 1.8%) over the preceding year. The total world Catholic population was estimated (1961) at 550,356,721.

Catholic clergy of the United States in 1962 numbered 5 cardinals (after the death of Cardinal Muench), 34 archbishops, 195 bishops, and 55,581 priests; there were 17,156 parishes. The year's record of Catholic baptisms in the United States, according to *The Official Catholic Directory, 1962*, was 1,490,801; of converts, 128,430; and of marriages, 312,811. Conversions over a 10-year period totaled 1,354,968.

Eight archdioceses counted Catholic populations of over 1 million: Chicago, 2,163,380; Boston, 1,698,138; New York, 1,651,400; Newark, N.J., 1,495,298; Los Angeles, 1,421,478; Detroit, 1,396,341; Philadelphia, 1,251,938; and San Francisco, 1,121,595. The largest diocese was Brooklyn, with a membership of 1,493,164.

In the field of education, Catholic colleges and universities totaled 278 in 1962, with 336,614 students. Diocesan and parish high schools numbered 1,536, with 588,968 students; 10,177 elementary schools enrolled 4,367,076 pupils; and 453 private schools had 24,817 pupils. Catholic high school students engaged in released-time programs numbered 992,691; elementary released-time participants numbered 2,756,825. There were 353 homes for the aged, with 33,738 residents.

In the United States and Canada, the Catholic press was represented by 545 church-related weeklies and magazines, with 25,429,488 subscribers.

The annual report of the Commission for Catholic Missions Among the Colored People and the Indians showed the following, as of early 1962: Negro missions and parishes—664,000 Catholics, 507 churches, 760 priests, 24,379 infant baptisms, 12,008 adult baptisms, 349 schools, 97,981 pupils; Indians living on reservations—127,981 Catholics, 399 churches, 229 priests, 4,782 infant baptisms, 763 adult baptisms, 54 schools, and 9,043 pupils. Figures on Catholic Indians not living on reservations are incomplete.

Three new Catholic dioceses were created in the United States in 1962 by Pope John: Oakland, Stockton, and Santa Rosa, Calif., suffragan dioceses of the archdiocese of San Francisco. To the new dioceses were appointed, respectively, Bishop Floyd L. Begin, of Cleveland, Ohio, and Bishop Hugh A. Donohoe and Msgr. Leo T. Maher, both of San Francisco.

Archbishop Joseph T. McGucken succeeded Archbishop John J. Mitty, who died in 1961, in the archdiocese of San Francisco. Bishop Paul J. Hallinan of Charleston, S.C., was named archbishop of Atlanta, Ga. Atlanta was raised to the status of a metropolitan see, with suffragan dioceses in Charleston, Miami, and St. Augustine, Fla.—all formerly suffragans of the archdiocese of Baltimore.

The Catholic interracial movement, inaugurated in 1934, continued to expand. Latest in the increasing chains of Catholic Interracial Councils were those of San Francisco, Peoria, Ill., Rockville Centre, N.Y., Miami Valley, Ohio, and Cleveland. Several Southern dioceses, including Little Rock, Ark., and Charleston, adopted systematic schedules for parish and school instruction in the Catholic doctrine of interracial justice.

Schools continued to be quietly integrated. Despite dire predictions of failure, Catholic schools in the archdiocese of New Orleans were opened in September 1962 on an integrated basis, except in one parish (county) where the local political leader openly defied the church. (See Education; New Orleans.)

(See also Religion—*Catholicism.*)

John LaFarge, S.J.,
Associate Editor, "America."

ROOSEVELT, (Anna) Eleanor

U.S. humanitarian and writer, widow of President Franklin D. Roosevelt: b. New York, N.Y., Oct. 11, 1884; d. New York, Nov. 7, 1962.

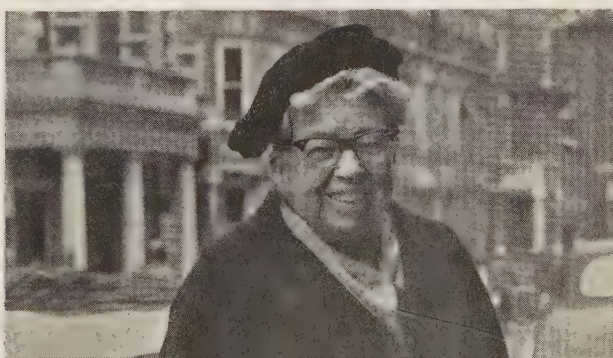
The niece of one president of the United States and the wife of another, Eleanor Roosevelt

entered public life at the age of 37. In the next 41 years she gained worldwide recognition, first as Franklin Roosevelt's wife and then in her own right, as a champion of humanitarian causes and a voice calling out for understanding, peace, and brotherhood. Widely called the "First Lady of the World," she was time and again named the world's most admired woman in polls. People who had never met her felt they knew her. She was on the side of the poor, the oppressed, the victims of the Depression and the war. After her death UN Ambassador Adlai E. Stevenson, her close friend and protégé, paraphrased a Chinese proverb to summarize her life: "She would rather light a candle than curse the darkness, and her glow has warmed the world." The New York *Times* editorialized simply: "We shall not soon see her like again. . . . She was one of the greatest of the Roosevelts, honored for character and deed and principle throughout the world."

Eleanor Roosevelt's father, Elliott (President Theodore Roosevelt's younger brother), was of a wealthy Dutch family; her mother, Anna Hall, was descended from Philip Livingston, an Albany, N.Y., merchant and signer of the Declaration of Independence. After her mother's death, when Eleanor was eight, the child went to live with her maternal grandmother in Tivoli, N.Y. Her father died a year and a half later. Instructed by tutors in her early years, she went to an English school when she was 15 and remained there three years, traveling on the Continent during her vacations.

Highlights from the life of Eleanor Roosevelt: (*clockwise from top left*) (1) As a child, age unknown; in 1903 (center); and at the time of her marriage to Franklin Roosevelt in 1905. (2) Four generations of Roosevelts celebrate Christmas 1929 in the executive mansion in Albany, N.Y. Seated in front are Franklin D., Jr., and John A. Roosevelt; in the middle row, from left, are Anne Dall, the Roosevelts' only daughter, with Anne Eleanor Dall; Eleanor and Franklin Roosevelt; Mrs. D. D. Forbes, an aunt of Roosevelt's, and Mrs. James Roosevelt, his mother; in back row are Curtis B. Dall (at left) and James Roosevelt. (3) At Hyde Park, N.Y., on July 4, 1941. (4) (*Left*) With a native guide in Auckland, New Zealand, in 1943; (*right*) addressing the 1960 Democratic National Convention. (5) At the United Nations in 1961 with Ambassador Adlai Stevenson. (6) Gathering material for a TV series in London, February 1962. (7) At her funeral in Hyde Park, Nov. 10, 1962: (front row, from left) Mrs. Kennedy, President Kennedy, former President and Mrs. Truman, and former President Eisenhower, with Vice President Johnson in back of Kennedy.

ALL PHOTOS FROM WIDE WORLD EXCEPT (4, RIGHT) UPI; (6) THE TIMES, LONDON



A shy and awkward girl, Eleanor Roosevelt returned to New York City in 1902 to make her debut, an event she remembered with distaste the rest of her life. It was at this stage that her fifth cousin, Franklin Delano Roosevelt, proposed marriage. He had just been graduated from Harvard College and was attending the Columbia University School of Law in New York City. Their wedding, on March 17, 1905, with President Theodore Roosevelt giving the bride away, was one of the highlights of the New York social season.

For the next 16 years Mrs. Roosevelt settled into a pattern of domesticity. She bore six children—Anna, James, Franklin D., Jr. (who died at the age of three months), Elliott, a second Franklin D., Jr., and John A. In the meantime the political career of Franklin Roosevelt had been progressing steadily—New York state senator in 1911–13, assistant secretary of the Navy under Woodrow Wilson in 1913–20, and Democratic vice presidential candidate under James D. Cox in 1920. After the Democrats were defeated in 1920, Roosevelt began practicing law in New York. In August 1921, while the family was spending the summer on Campobello Island, New Brunswick, Roosevelt was stricken with poliomyelitis, and it soon became evident that he would remain crippled the rest of his life.

Acting at the advice of the family physician and family friends, Mrs. Roosevelt began to take an active part in politics to restore her husband's interest in his career. Already familiar with the social routine of a politician's wife, she now joined the Women's Trade Union League and took an increasingly prominent part in the New York State Democratic Party, serving as financial chairman of the women's division from 1924 to 1928. She maintained her activities in other fields; in 1926 she founded a furniture factory near the Roosevelt home at Hyde Park, N.Y., to provide work for indigent men, and in 1927 she bought a private girls school in New York City, where she was vice principal and taught for six years.

With Roosevelt's election as New York's governor in 1928 his wife ended temporarily her active participation in politics, but she shared the problems and decisions of his office to a large degree. (In discussing the governorship, Roosevelt often used the phrase "Eleanor and I.") In addition, she became active in the Foreign Policy Association and the (New York) City Housing Corporation, and began writing a syndicated column. During Roosevelt's successful presidential campaign of 1932 his wife organized the women's side of the Democratic campaign.

After Roosevelt's inauguration on March 4, 1933, Eleanor Roosevelt became the first president's wife to hold press conferences—for women journalists. She traveled widely throughout the nation, representing the president at official dedications. More importantly, these sojourns enabled her to determine the mood of the people, and she brought back detailed and incisive reports to the president. She also accepted many speaking engagements, and was so active that a rash of "Eleanor jokes" gained circulation, in some cases expressing criticism of her part in government. Generally, Mrs. Roosevelt supported the humanitarian measures of the New Deal.

Mrs. Roosevelt had begun writing a nationally syndicated column, *My Day*, in 1936. Until 1939 it consisted primarily of topics of interest to women, but in that year she began writing of matters of national interest, becoming a sounding board for the Roosevelt administration. In 1941 commentator Raymond Clapper listed her as one of the 10 most important persons in Washington. During World War II she traveled extensively both at home and abroad to American installations and to orphanages and hospitals. Servicemen overseas invariably greeted her with enthusiasm. (She had served as assistant director of civil defense in New York City in 1941–42 but resigned over criticisms of her appointments.)

There was much resentment of Mrs. Roosevelt during her stay in the White House—by those who differed with her politics and ideals, who thought she was too active, who thought a first lady should shy away from controversy. But in the end the antagonism faded and was replaced by respect and affection. Thus her reputation stood at the time of President Roosevelt's death on April 12, 1945.

Then began the second phase of her career. President Truman appointed her a delegate to the General Assembly of the United Nations in 1945. The following year she was named chairman of the Commission on Human Rights of the UN Educational, Scientific and Cultural Organization. Here she helped to draft the Covenant on Human Rights, designed to set a standard of liberty for people throughout the world. Her longest fight—which she lost—was for acceptance of this covenant; but opposition from some colonial powers and some United States congressmen defeated the proposal.

Mrs. Roosevelt resigned the chairmanship of the commission in 1951 and, the following year, when President Eisenhower was elected, she resigned as a United Nations delegate. President Kennedy reappointed her a delegate to the General Assembly in 1961.

In the intervening years she continued her newspaper and magazine columns (*If You Ask Me* had begun appearing in a women's magazine in 1941) and was active in the American Association for the United Nations. She retained her keen interest in the Democratic Party, and she campaigned for Adlai Stevenson in 1952 and 1956, addressing the national convention in both of those years. In 1960 she fought for a Stevenson-Kennedy ticket, and seconded Stevenson's nomination. Identified with the reform faction of the party in New York State and New York City, she took active parts in the city primaries of 1961 and the state primaries of 1962.

Mrs. Roosevelt became ill in September 1962 and entered a New York City hospital, where she marked her 78th birthday. She returned to her New York City home three weeks before her death. On November 10 she was buried next to Franklin Roosevelt in the rose garden at Hyde Park.

Mrs. Roosevelt's books included *It's Up to the Women* (1933), *My Days* (1938), *If You Ask Me* (1946), *This I Remember* (1949), *India, the Awakening East* (1952), and *On My Own* (1958).

M. L. L.

ROWING. See SPORTS, GAMES, AND SHOWS.

RUANDA-URUNDI. See BURUNDI; RWANDA.

RUBBER

Rubber consumption in the United States in 1962 registered a new record high of 1,700,000 tons, topping the previous record year, 1959, by 72,000 tons. Synthetic rubber accounted for 73% of the total, continuing the increase in ratio, unbroken since 1954.

World rubber consumption (free world consumption plus imports into Soviet bloc countries) was 4.3 million tons, a new high for the eighth consecutive year. The total comprised almost exactly 2.1 million tons each of natural and synthetic rubber. Synthetic rubbers have thus reached demand parity with the natural variety in 20 years. Natural rubber has been marketed for over 120 years.

More than 139 million pneumatic tires were produced in 1962, including 77.5 million passenger car tires for replacement, 37 million for original equipment on new cars, and 15 million tires for trucks and buses. In addition, over 3.7 million

farm tractor and implement wheels were rubber-tired. Recapping of motor vehicle tires exceeded 39 million units.

Rubber consumption in the free world exclusive of the United States exceeded 2 million tons in 1962 for the first time, as compared with 1.9 million tons a year earlier. Synthetic types accounted for 840,000 tons, or 42%, as against 40% in 1961. Soviet bloc imports of natural rubber were about 500,000 tons, and of synthetic rubber, an estimated 50,000 tons.

WORLD RUBBER PRODUCTION, 1960–62
(In thousand long tons)

Country	1960	1961	1962[1]
Natural Rubber:			
Malaya	708	739	760
Indonesia	630	671	650
Thailand	167	182	185
Ceylon	97	96	100
Vietnam	75	78	80
Cambodia	37	39	42
British Borneo and Sarawak	72	70	72
Nigeria	59	55	60
Liberia	42	43	43
Congo (Léopoldville)	35	33	33
All other countries	78	84	75
Total	2,000	2,090	2,100
Synthetic Rubber:			
United States	1,436	1,404	1,550
Canada	160	164	170
United Kingdom	90	105	120
Germany	80	86	90
Italy	70	87	90
France	17	40	70
Japan	19	50	70
Netherlands	12	40	40
Total	1,885	1,977	2,200

[1] Estimated.

New Products and Materials.—Urethane foam made significant gains in 1962 with its adoption in the manufacture of mattresses and cushioning for the furniture, automotive, and aircraft industries. Extruded urethane thread, or spandex, also gained in figure-control and general clothing uses. Another development in clothing was a rubber latex that gives fabrics a "memory factor," making shirts, neckties, shoes, and hats retain their shape even after they have been twisted or crumpled.

The year saw the introduction of polyester fiber tire cord which could provide the strength, durability, and fatigue resistance of nylon, and the smooth, soft ride characteristic of rayon cord tires.

Various developments are under way for the growing aerospace industry, notably 16-foot-diameter tires for a manned lunar landing vehicle, and a full-scale research model of an inflatable space station. The latter is a three-story-high structure, shaped like a huge doughnut with a canister at its core, constructed of rubberized fabric.

(See also CHEMISTRY.)

LEONARD SMITH,
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RUMANIA

Rumania is a Communist-type people's democracy in southeastern Europe, situated on the Black Sea. Its area is 91,700 square miles, and its population (1961 est.) totals 18,566,932. The country is divided into 16 administrative regions, including the Hungarian (Magyar) Autonomous Region. The capital is Bucharest (Bucureşti), which has a population (1961 est.) of 1,354,836. Other principal cities and populations (July 1, 1961, est.)[1]: Bucharest, 1,229,135; Cluj, 163,166; Timişoara, 147,753; Braşov (formerly Stalin), 129,615; Ploeşti, 127,833; Iaşi, 124,715; Constanţa, 115,057; Arad, 113,531; and Brăila, 113,178.

Rumanians are the principal ethnic group. The largest minorities (1956 census) are the Hungarians, 1,587,675; Germans, 384,708; Jews, 146,264; Ukrainians, 60,479; and Yugoslavs (Serbs, Croats, and Slovenes), 46,517. The birth rate in Rumania has experienced the most marked decline of all Soviet-bloc countries, falling from 29.5 in 1938 to 18.9 in 1960.

[1] Excludes towns and communes included in the city's actual administrative territory.

Government.—The Rumanian People's Republic has a totalitarian government similar to those of other Communist-style states. The supreme legislative body is the Grand National Assembly of 465 deputies, who were elected to four-year terms on March 5, 1961. A 17-member State Council, which replaced the Presidium in 1961, is the supreme executive organ of the state. The chairman of the State Council is Gheorghe Gheorghiu-Dej, who is also first secretary of the Central Committee of the Rumanian Workers' Party (RWP), a Communist party which had about 500,000 members in 1962. Ion Gheorghe Maurer is chairman or premier of the Council of Ministers.

The government relies for political support on the Democratic Popular Front (DPF), a Communist-controlled mass organization. Regional and local people's councils are instruments of the central authorities. The RWP controls the country by means of an interlocking party-state system.

Education and Religion.—The country's educational system is state-controlled and secularized, and is modeled on that of the Soviet Union. Education is free and obligatory for seven years. School enrollment, 1961–62 school year: primary and secondary, 2,808,239; teacher-training and college, 9,267; vocational, 159,732; and higher, 83,749. Since 1959, Rumania has required students to work in industry for a certain time each year. In 1960 the government announced the distribution of free textbooks. The University of Bucharest is the most important institution of higher learning. The Rumanian Academy of Sciences in Bucharest is the country's principal center for research.

Over 75% of Rumania's population belongs to the Rumanian Orthodox Church. All religious communities have been persecuted and restricted in their activities. The Law on Religious Cults (1949), which theoretically guarantees freedom of religion, actually imposes full state control over the church.

Finance.—Government revenue, 1962 est.: 78,790 million lei (up 19.6% from 1961); expenditure: 77,790 million, including 49,511 million lei for national economy, 16,964 million for cultural and social affairs, and 3,989 million for national defense (the official exchange rate is 6 lei to the U.S. dollar). Total investments for 1962 were estimated at 32.5 billion lei (up 16.5% from 1961). The government in March 1962 increased taxes on the profits of consumers' and artisans' cooperatives by about 5% to 20% over previous levels.

Transportation and Communications.—Transport networks (miles, 1961): railways, 6,854 (mostly single track); national highways, 7,032 (including 3,540 miles of modernized roads). The economic plan for 1962 envisaged an increase of 11.5% in freight traffic, and the addition of 35 diesel locomotives to the rolling stock. Rumania has small Danube and Black Sea fleets. TAROM, the state airline, operates internal routes and flights to several European cities; Bucharest is also served by Sabena and four Communist-bloc airlines. Radio receiver licenses numbered 2,165,000 in 1961; television sets, 88,000. Five new television stations and two radio broadcasting stations were commissioned in 1962.

Agriculture.—In December 1961 it was announced that the socialized sector of agriculture comprised over

Soviet Premier Nikita Khrushchev (hand upraised) speaks to a farmer near Budapest on his visit to Rumania in June. State Council Chairman Gheorghe Gheorghiu-Dej is at right.

AUTHENTICATED NEWS INTERNATIONAL

90% of the country's arable land. Completion of collectivization was officially accomplished on March 17–18, 1962, or three years ahead of schedule. As private farms no longer exist, a new plan was drawn up for the wholesale reorganization of the country's agriculture.

The Grand National Assembly on April 30 approved the formation of a Higher Council of Agriculture, replacing the Ministry of Agriculture, to administer the collective farms. The executive committee of the Higher Council (about 15–25 members) is an organ of the Council of Ministers, and its president is Mihail Dalea, a secretary of the RWP Central Committee. The Higher Council includes 800–1,000 agricultural specialists on state farms, and scientists from research and educational institutes. Regional, district, and town agricultural councils were also organized.

In early 1962 about 50% of Rumania's livestock was still in private hands. An estimated 3 billion more lei than planned was invested in 1960–62 in agriculture, apparently to help induce peasants to enter collectives with their livestock. On May 13, 1962, the government announced that it would redistribute technical experts in agriculture, as less than half of 15,730 agricultural specialists has been actually working on state or collective farms. Collective farms were merged, and by the end of 1962 they numbered 5,558.

Rumanian agricultural production did not fulfill all the 1961 goals, and the 1962 harvest reportedly was one of the worst in recent years. In August 1962, rationing of bread and cornmeal was reported in Transylvania. Principal crops and yields in 1961 (in thousands of metric tons): wheat, 3,990.3; rye, 104.4; maize, 5,739.6; barley, 468.1; potatoes, 2,874.8; and sugar beets, 2,910.8.

Industry.—In 1961, the second year of Rumania's six-year plan, total production increased by 15.6% and overfulfilled the industrial plan by 4.2%. Labor productivity rose by 9.1% in 1960–61, and was highest in the ferrous metallurgy, machine building, metal processing, chemical, and oil processing industries.

The 1962 economic plan called for increases of 13.5% in industrial production and of 85% in labor productivity. Planned production increases for 1962 (in tons) were: pig iron, about 1.6 million; steel, over 2.5 million; finished rolled products, 1.9 million; crude oil, 11.8 million; high octane gas, 500,000. Electric power was to be increased by 14%; output of the chemical industry, by 25%; and chemical fertilizer production, 50%.

Industrial production in Rumania increased an average 13% annually from 1950 to 1960. Output of producer goods rose 14.8%; consumer goods, 10.7%; and the machine building and chemical industries, 20% each. Rumania had the highest rate of industrial growth of all Soviet satellite countries in 1960, and maintained this high level in 1961. Major industrial products (in thousands of metric tons, 1961): coal, 8,704; pig iron, 1,099; crude steel, 2,127; petroleum, 11,582; cement, 3,308; cotton yarn, 60; wool yarn, 22; and electric power, 8,657 million kw.-hr.

Foreign Trade.—Total exports, 1961: 4,757.1 million lei; imports, 4,886.7 million. The volume of trade rose by 18% and was principally with other Communist countries, although efforts were made to expand commerce with Western and economically underdeveloped countries. The 1962 economic plan called for a 15% increase in foreign trade over 1961, and was to surpass the 1959 level by more than 80%. Rumania's principal exports are industrial machinery, petroleum, chemicals, pharmaceuticals, wood products, cereals, food products, and ores; principal imports are coke, iron ore, metal products, yarns, and machinery.

A new protocol to Rumania's 1961 trade agreement with Cuba was signed on Jan. 25, 1962. Rumania agreed to provide oil-processing installations, tractors, refrigerating compressors, and chemical products in exchange for mineral ores, sugar, and coffee. Under a trade agreement with Great Britain concluded on January 26, Rumania will purchase goods valued at $14.7 million (a 23% increase over 1961), and Britain will import $13.3 million in Rumanian goods. Belgium announced on January 26 that contracts had been signed for the delivery of chemical plants and equipment to Rumania; Belgian exports to Rumania were estimated at $6.2 million in 1961. A protocol signed in Moscow on Jan. 31, 1962, stated that Rumanian-Soviet trade will total 600 million rubles in 1962, a 10% increase over 1961. A new trade agreement with Bulgaria signed in late January provided for an estimated increase of 17% in trade over 1961.

Events, 1962.—Gheorghe Gheorghiu-Dej, Rumanian Communist Party chief for more than a decade, has continued to conform to Soviet policies. Observers have reported signs of a relaxed atmosphere in Rumania, however. De-Stalinization measures were decreed by the Central Committee of the Rumanian Workers' Party in November 1961, and as of March 15, 1962, outward symbols and reminders of Stalinism had disappeared from the country. On May 17, the RWP Central Committee invited former members of defunct peasant and bourgeois parties to join the RWP, although membership was barred to former high officials of the parties.

In addition to the wholesale reorganization in agriculture (see above, *Agriculture*), Bucharest authorities also decentralized leadership in cultural activities. It was announced on June 6 that the Ministry of Education and Culture was to be replaced by a new Ministry of Education, headed by Ilie Murgulescu, and a new State Committee for Culture and Art, under Constanta Craciun, former deputy minister of education and culture. The move was regarded as an attempt to reduce the bureaucracy and to expand cultural activity at the regional and district levels.

Soviet Premier Khrushchev visited Rumania from June 18 to 25. His mission apparently was to explain Soviet policy in regard to Yugoslavia, and to discuss the further building of the "socialist commonwealth."

In July, Bulgarian Communist chief Todor Zhivkov visited Bucharest to discuss plans with Rumanian officials for a hydroelectrical project on the Danube River in the area of Islaz Somovit. Yugoslavia and Rumania held negotiations late in the year to complete plans for a hydroelectric project (first proposed in 1956) at the Iron Gate on the Danube. The dam would impound more than 35 billion cubic feet of water, and would provide a navigable passage through the Iron Gate. The project would eventually supply over 10 billion kw.-hr. of electric power annually. The total cost was estimated at nearly $300 million.

WAYNE S. VUCINICH,
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RURAL ELECTRIFICATION ADMINISTRATION. See FARM SERVICES.

RUSK, (David) Dean

U.S. secretary of state: b. Cherokee County, Georgia, Feb. 9, 1909.

In an aside during an address to the Foreign Policy Association on November 20 in New York, Secretary Rusk remarked: "Perhaps I shouldn't say this, but I think it is of some importance that, at a time when the United Nations is voting unanimously for disarmament, 70 nations are asking the United States for military assistance." The world's hopes for peace and its fears of war both ran high in 1962, and the American secretary of state was certainly a principal in the drama of determining whether the one or the other would be realized. But, although his year was a succession of international conferences, Rusk to most of the public remained a relatively little-known figure—the efficient but largely anonymous instrument of a foreign policy that was more vividly personified by a dynamic president.

Dean Rusk was educated at Davidson College in North Carolina (B.A., 1931) and at St. John's College, Oxford, as a Rhodes scholar. From 1934 to 1940 he taught at Mills College, Oakland, Calif. An Army officer during World War II, he rose to deputy chief of staff for the China-Burma-India theater. In the postwar years he alternately filled several posts in the State and War departments before being named director of the Office of Special Political Affairs (1947–49). Elevated to deputy under secretary in charge of policy coordination, he voluntarily stepped down in March 1950 to accept the trouble-shooting post of assistant secretary for Far Eastern Affairs, and in June he was instrumental in the United Nations decision to intervene in Korea. He also played a prominent role in negotiating the Japanese peace treaty. In 1952 he left to become president (July 1) of the Rockefeller Foundation, and in eight years directed the spending of over $247 million on worldwide welfare projects. He was named secretary of state by President-elect Kennedy on Dec. 12, 1960, and was sworn in on Jan. 21, 1961.

At the instigation of Secretary Rusk, the foreign ministers of the Organization of American States (OAS) gathered at Punta del Este, Uruguay, on January 22–31 "to meet the mounting Communist offensive" in the Western Hemisphere. The conference failed to fulfill American wishes for the other member nations to break off diplomatic relations with Cuba and to boycott its trade, but Rusk did succeed in having Cuba excluded from the activities of the OAS and in winning a formal condemnation of the Marxist-Leninist form of government as "incompatible with the inter-American system." President Kennedy on February 1 expressed the "greatest pride and satisfaction" in the results, and Rusk in a television address to the nation on February 2 called them "deeply reassuring." It was generally recognized that the secretary of state had done much to restore confidence in the United States, which had suffered disastrously after the abortive invasion of Cuba in April 1961. Some observers, however, questioned whether the gains made at the conference warranted the divisions which it revealed, especially in the abstention of most of the larger nations in the vote to ostracize Cuba.

Rusk met frequently throughout the year with Soviet Foreign Minister Andrei Gromyko and Ambassador Anatoly F. Dobrynin to discuss East-West differences over Berlin and nuclear disarmament, but little progress toward a permanent settlement of either problem was evident. On March 27, after attending the 17-nation disarmament conference at Geneva, Rusk stated his belief that the existing balance of power could provide a basis for limiting the arms race, which he predicted would, if not checked, double the world's destructive capacity by 1966. On March 1, he revived an earlier suggestion of President Kennedy's that an international authority be created to guarantee Western access to Berlin. Fearful of an American withdrawal, the West Germans opposed the proposal, and in April the secretary accused the Bonn regime of committing a "breach of confidence" by revealing certain details of the United States position. Angered by Rusk's tone, Chancellor Adenauer denounced the proposal, and German-American relations were strained until the American plan, lacking Soviet support, gradually expired.

Rusk visited five capitals of nations belonging to the North Atlantic Treaty Organization (NATO) on June 19–28 (when he traveled his 150,000th mile abroad as secretary of state). In Paris, he conferred with President de Gaulle and Foreign Minister Couve de Murville on the possibility of reconciling the French ambition for an independent nuclear striking force and the American desire for close coordination of the strategic forces of all NATO members. On June 21, in Berlin, Rusk called the wall enclosing East Berlin "an affront to human dignity," and promised that it would be brought down. Later, in Bonn, he and Chancellor Adenauer affirmed the unity of their stand against Communist threats. Rusk visited Rome on June 23, before going on to London where he, Prime Minister Macmillan, and Foreign Secretary Lord Home discussed Great Britain's proposed entry into the Common Market. On June 27, Rusk traveled to Lisbon, where he helped assuage feeling against the United States for its refusal to support Portuguese colonialism.

Addressing 19 Latin American ambassadors in Washington, September 5, Rusk reiterated the determination of the United States to prevent the export of communism from Cuba, and a week later, in response to a Soviet warning that action by the United States against Cuba or against Soviet ships bound for Cuba would precipitate nuclear war, he said, "We are not nervous or afraid. We'll proceed as we find it necessary." Appearing before Senate committees soon after, he advocated continuing surveillance of Cuban waters despite the risk of incidents. State Department pressure was brought to bear on nations shipping Soviet goods to Cuba, and on September 27, Turkey became the first NATO member to ban its vessels from doing so.

WIDE WORLD

U.S. Secretary of State Rusk (left) and Germany's Chancellor Adenauer outside the chancellery in Bonn, on June 22.

Rusk was first informed of the photographs of offensive missile sites in Cuba on October 15, and beginning the next morning he deliberated, in secrecy, with the group later known as the Executive Committee of the National Security Council (the top-echelon crisis policy panel). He participated in President Kennedy's meeting with Foreign Minister Gromyko on October 18, and on October 22—the day of the first public announcement of the crisis—he informed Ambassador Dobrynin of the discovery of the missiles and the planned quarantine a few minutes before the president's speech.

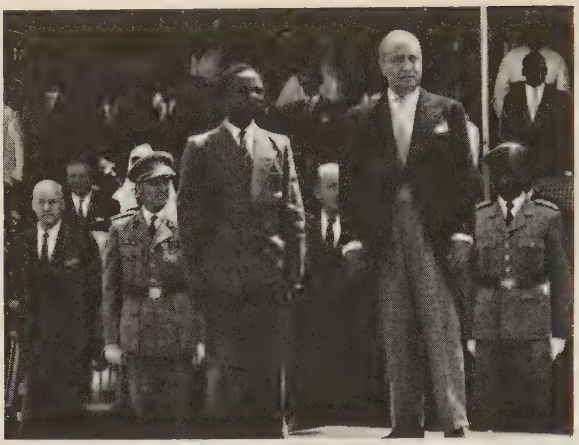
That this information came as a complete surprise to the Soviet Union, after it had been the subject of intense discussions in Washington for a full week, reflected favorably on the State Department. Acting as representative to the meeting of the OAS the next day, Rusk won unanimous approval of a resolution authorizing the use of force to implement the quarantine. The secretary of state was given much of the credit for the powerful backing which members of the OAS and NATO gave the United States during the crisis; this support was considered by some to be the decisive factor in the Soviet acquiescence.

Rusk conferred with Soviet Deputy Premier Anastas I. Mikoyan on November 29–30 in Washington, and on December 10 stated that, despite the removal of the offensive missiles, the United States would not tolerate the continued presence of Soviet military personnel in Cuba. At the opening session of the annual conference of NATO foreign ministers in Paris on December 13, Rusk, on a note of cautious optimism, declared that the Cuban affair had given the Western nations new opportunities for putting the Communist bloc on the defensive.

(See also Foreign Policy of the United States; Inter-American Affairs.)

E. H. S.

RUSSIA. See Union of Soviet Socialist Republics.



UNITED NATIONS

President Grégoire Kayibanda of the Republic of Rwanda (at left) stands with Baron Guillaume Logiste, Belgian ambassador, in Kigali on July 1 as Rwanda marks its independence.

RUSSIAN LITERATURE. See Soviet Literature.

RWANDA

Formerly part of the Belgian-administered United Nations trust territory of Ruanda-Urundi, the Republic of Rwanda attained independence on July 1, 1962. Rwanda is a mountainous country of east-central Africa, and is bounded by the Kingdom of Burundi on the south, Tanganyika on the east, Uganda on the north, and the Republic of the Congo (Léopoldville) and Lake Kivu on the west. The total area is 10,169 square miles.

The population at the end of 1960 totaled 2,694,749, excluding a few thousand Belgians. The majority Hutu (Bahutu) tribesmen formerly served in the role of serfs to the large minority of aristocratic Tutsi (Batutsi or Watusi), but the traditional feudal-like social system was abolished in 1961 when the Hutu deposed the Tutsi mwami (king) and formed a republic. The capital of Rwanda is Kigali (1961 est. pop., 5,000).

The Rwanda flag has three equal vertical stripes of red, yellow, and green, and is inscribed in the center with a black letter "R."

Government.—Rwanda is a presidential republic. President Grégoire Kayibanda (elected by the Legislative Assembly on Oct. 26, 1961) heads a 16-member cabinet. The Legislative Assembly consists of 44 members elected by direct universal suffrage; in elections to the Assembly on Sept. 25, 1961, the Republican Democratic Movement, principal political party of the Hutu, won a dominant majority of 35 seats. There is a Supreme Court of five magistrates.

Education and Religion.—About half of the male population is literate. Education is provided principally by Roman Catholic missions. School enrollment in native schools (for Ruanda-Urundi, 1960): 267,393 (about 20% of the school-age population). About half the population is Catholic.

Transportation.—As Rwanda has no railways or navigable rivers, transport is confined to road traffic and to shipping services on Lake Kivu. Roads in the former trust territory aggregated 6,600 miles, most of which were dirt roads. Kigali and Astrida have airfields.

Economy.—The economy is predominantly agricultural. Main subsistence crops are maize, manioc, sorghum, sweet potatoes, bananas, beans, and peanuts. Chief cash crops are coffee, cotton, palm oil, and pyrethrum. Livestock raising is important. Industry is confined largely to the processing of foodstuffs. Minerals mined in small quantities include tin ore and gold. Chief exports are coffee, cotton, and hides and skins. (For financial and economic statistics on the Ruanda-Urundi trust territory, see Burundi.)

Events, 1962.—Independence for the Republic of Rwanda was celebrated quietly in Kigali on June 28. President Kayibanda expressed "sincerest gratitude" to Belgian administrators, United Nations officials, and all others who had helped Rwanda to become independent, and he called on his people to "remain calm" and to "work courageously" for their country. Although Belgium had given the new nation a sizable grant to be spent on independence celebrations, the Rwanda government chose to use the money for the construction of schools and other purposes more in keeping with the country's newly initiated austerity program.

Another reason for the subdued ceremonies was the fear that riotous celebrations might lead to renewed outbreaks of violence between Hutu and Tutsi tribesmen. In the first half of the year there were many sporadic attacks by Tutsi terrorists against the Hutu. Belgian troops succeeded in greatly reducing the number of attacks by midyear, and in the first few weeks after independence only one minor terrorist outbreak occurred. There were indications that most Tutsi tribesmen had at last accepted the recent social revolution that had brought political ascendancy and social equality to the Hutu, and that large-scale tribal warfare would not be renewed. All Belgian troops were withdrawn from the country by August 28.

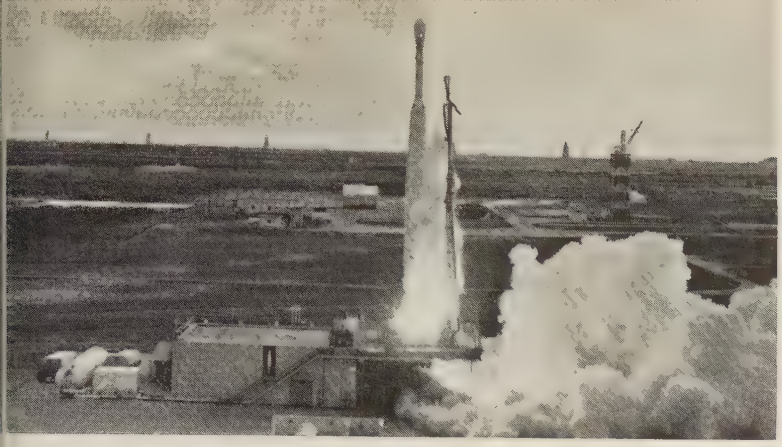
With a measure of political stability achieved, the Rwanda government was free to tackle the country's serious economic problems. As a beginning toward alleviating the widespread poverty in underdeveloped Rwanda, the government obtained economic aid and technical assistance from the United Nations, and from Belgium and other countries.

Rwanda was admitted to the United Nations on September 18. (For details on United Nations actions leading to independence for the Ruanda-Urundi trust territory, see Burundi; United Nations.)

W. R. F.

RYE. See Grains.

RYUKYU ARCHIPELAGO. See Pacific Islands.



SPACE FLIGHT—Tiros V weather satellite is fired from Cape Canaveral, Fla., by Delta rocket on June 19.

AUTHENTICATED NEWS INTERNATIONAL

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SAFETY. See INDUSTRIAL HEALTH AND SAFETY and the Index entry, *Safety*.

SAHARA, Spanish. See SPANISH TERRITORIES.

SAILING. See SPORTS, GAMES, AND SHOWS—*Yachting*.

SAINT CHRISTOPHER. See WEST INDIES FEDERATION.

SAINT CROIX. See VIRGIN ISLANDS OF THE U.S.

SAINT HELENA

This British crown colony in the South Atlantic (aggregate area, 119 square miles; pop., 5,417 in 1960) comprises the island of St. Helena (area, 47 sq. mi.; pop., 4,707), and two widely separated island dependencies: Tristan da Cunha (38 sq. mi.; pop., 281), a small group of islands lying 1,500 miles southwest of St. Helena and including the uninhabited islands of Gough, Nightingale, and Inaccessible; and the island of Ascension (34 sq. mi.; pop., 429), which is 700 miles northwest of St. Helena. Jamestown (1955 pop., 1,568) is the capital and St. Helena's chief port.

The colony is administered by a governor (Sir John O. Field, appointed Feb. 27, 1962, to succeed Sir Robert E. Alford), who is assisted by an Executive Council of not more than 7 members, and by an Advisory Council of not more than 10 members. Government revenue in 1960 totaled £195,606; expenditure, £188,276.

The resettlement in England of the population of Tristan da Cunha following the eruption of the island's volcano in October 1961 proved unsuccessful, as homesickness and illness gripped the islanders. A small group of islanders returned to Tristan da Cunha in August 1962 to survey conditions and to repair damaged homes. It was announced on December 3 that the remaining islanders, who had been resettled at a former military base near Southampton, had voted to return to Tristan da Cunha.

St. Helena.—Cultivation of New Zealand flax is the principal industry on the island. In 1960, 823 tons of hemp and 399 tons of tow were produced. Manufactures include rope, twine, and lace. The important fish catch includes mackerel, albacore, tuna, and bonito. In 1961, exports were valued at £68,000; imports, £233,000. Trade is conducted mainly with Great Britain. All-weather roads total 65 miles.

Ascension.—This island is a barren, rocky peak, volcanic in origin, and destitute of vegetation except for about 10 acres on which vegetables and fruits are grown for the inhabitants of Georgetown, the only settlement. Ascension is the site of an important cable and wireless station, and lies near the terminus of the Atlantic range for rockets fired from Cape Canaveral, Fla.

Tristan da Cunha.—The island consists of a volcano rising 7,640 feet, which erupted in October 1961 and forced the population to flee the island. The island had a habitable area of 12 square miles, of which about 30 acres were cultivated. Fishing for crawfish was the principal industry.

SAINT JOHN. See VIRGIN ISLANDS OF THE U.S.

SAINT KITTS-NEVIS. See WEST INDIES FEDERATION.

SAINT LAWRENCE SEAWAY. See Index entry.

SAINT LOUIS

With a population (1960 census) of 750,026, St. Louis, Mo., ranks 10th among cities of the United States and is the most populous city of the Mississippi River Valley. Covering an area of 61 square miles, it is the center of a standard metropolitan area (3,187 square miles) which includes three counties in Missouri and two in Illinois and has a total population of 2,060,103.

The city's mayor-council government is headed by Raymond R. Tucker (Democrat), serving a third four-year term as mayor. Democrats won all election contests in the city in 1962, but lost control of important offices in St. Louis County. The post of supervisor (chief executive) and a majority of the county council seats were won by Republicans.

Public school enrollment for 1962 reflects the different growth patterns in the city and in the county. County enrollment increased by 8,740 pupils to a total of 134,525, while the city total increased by only 4,736 to 109,899.

Steel production increased from 163,059 tons in September 1961 to 166,492 tons in September 1962, but employment showed a decrease from 842,700 to 827,100 during the same period. Unemployment, however, declined from 47,000 to 39,000.

Tangible results of the city's efforts to redevelop some of its blighted areas appeared in 1962. Some apartments were occupied in the Mill Creek area, and the major building program of St. Louis University was well under way in the same area. Significant progress was made during the year toward completion of the Jefferson National Expansion Memorial. The railroad tracks along the riverfront were relocated in a tunnel, and footings were completed for the 630-foot-high "Gateway to the West" arch.

City voters on March 6 authorized a $23,180,000 school construction program which is designed to ease overcrowded classroom conditions. The four-year program includes both new construction and the expansion of existing facilities, and provides also for fire safety improvements in all school buildings. The vote marked the first success in five school bond proposals over a two-year period.

At the same time, approval was given to six public improvement bond issues totaling $14,986,000. Chief of these is the expenditure of $6,000,000 for work around the site of the planned new athletic stadium.

New facilities for higher education were assured by voter approval of a junior college district including all of the city and county. First classes were scheduled for February 1963. A change of leadership at Washington University was marked by ceremonies on October 12 when Thomas H. Eliot was installed as chancellor.

A unified transit system for the metropolitan area was practically assured when a purchase

agreement was reached whereby the Bi-State Development Agency will buy the facilities of the St. Louis Public Service Company, the largest transit system in the area.

A major step toward ending pollution of the Mississippi River was taken on November 6 when voters overwhelmingly approved a $95 million bond issue for the construction of two sewage treatment plants.

CARL A. MCCANDLESS,
Chairman, Department of Political Science, Washington University; Former Associate Director, Metropolitan St. Louis Survey.

SAINT LUCIA. See WEST INDIES FEDERATION.

SAINT PIERRE AND MIQUELON

Comprising the islands of St. Pierre and Miquelon, and a group of small islands, this French overseas territory is situated off the Grand Bank south of Newfoundland. The territory's total area is 93 square miles, and its population is 5,000 (1961 est.), composed mainly of Breton, Norman, and Basque descendants. The town of St. Pierre (est. pop., 3,400) is the capital and principal settlement. The territory is administered by a French-appointed administrator (Michel Maillard), who is assisted by a 14-member General Council elected by universal suffrage. The economy is based on fishing (mainly cod), and to a lesser extent on the raising of fur-bearing animals. Exports in 1961 totaled 609 million francs CFA; imports, 1,130 million (246.85 francs CFA equal U.S. $1). Imports come mainly from Canada and France; most exports go to the United States and France.

SAINT THOMAS. See VIRGIN ISLANDS OF THE U.S.
SAINT VINCENT. See WEST INDIES FEDERATION.
SALES. See BUSINESS DATA, U.S.; RETAIL STORE SALES; WHOLESALE SELLING.

SALT

In 1961 the United States produced 25,707,000 short tons of common salt (sodium chloride), 27% of the world output. United States production was 25,481,000 short tons in 1960, the increase being largely the result of a rise in evaporated salt. The 1961 output was produced by 57 companies at 95 plants, and it included 4,387,000 tons of evaporated salt, 6,439,000 tons of rock salt, and 14,881,000 tons of salt in brine. Four leading companies, operating 22 plants, accounted for 48% of the national total.

Dry salt imports for consumption totaled 1,050,000 tons in 1961, compared with 1,057,000 tons in 1960, a slight decrease. Exports rose from 420,000 tons in 1960 to 642,000 tons in 1961, an increase of 55%. Most of the increase went to Japan and Canada. Apparent consumption declined from 26,118,000 tons in 1960 to 26,115,000 tons in 1961. Of the total consumption, 39% was used in making chlorine and caustic soda, an increase of 800,000 tons over that of 1960.

(See MINERAL PRODUCTION for table showing output of major countries.)

SALVADOR. See EL SALVADOR.

SALVATION ARMY

The Salvation Army in 1962 maintained operations in 86 countries and colonies and preached the Gospel in 140 languages. In its service in 1961 were 27,030 commissioned officers and cadets, 29,064 full-time employees, and several hundred thousand volunteer lay members. At its headquarters in London, England, Gen. Wilfred Kitching continued as international leader.

Among The Salvation Army's worldwide services are 133 hospitals, dispensaries, and clinics, treating 175,354 inpatients and 769,192 outpatients annually; 141 children's homes; 866 day schools, with 128,269 pupils; 216 residences for various age groups; 10 industrial homes for women; 89 homes for unwed mothers; 142 goodwill centers and slum posts; 216 shelters and workshops for men; 55 employment bureaus; 7 leprosaria; and 10 institutes for the blind.

The United States command of The Salvation Army continued in 1962 under Commissioner Norman S. Marshall. There are also four regional commissioners; (Eastern) Holland French, (Central) Samuel Hepburn, (Southern) William Davidson, and (Western) Glenn Ryan. The Salvation Army's 8,551 centers of operation in the United States, including 6,405 service extension units, are administered by 4,962 officers, assisted by 13,015 employees.

The Salvation Army's social institutions in the United States include 127 treatment centers aiding 65,563 men annually; 55 camps providing camping experience for 21,468 children and 3,948 adults, including senior citizens; 260 boys' and girls' clubs and community recreation centers, with 55,444 members; 54 Salvation Army–USO and Red Shield clubs for servicemen, with attendance of 2,700,388; and 15 Evangeline residences for young businesswomen. The Salvation Army also provided care and guidance for 8,227 unwed mothers in 34 homes and for 13,052 unwed mothers not in residence. It furnished care in general hospitals or related institutions for 17,252 patients, and clinic or outpatient care for 35,711 patients.

Other services include missing persons bureaus, employment bureaus, emergency disaster services, day nurseries and settlements, care and treatment of alcoholics, programs for the aged, and aid for immigrants.

The Salvation Army United States delegation of five, headed by Col. Jane Wrieden, national consultant for women's and children's services, joined 20 other worldwide Salvation Army delegates at the 11th International Conference of Social Work in Rio de Janeiro, Brazil, in August 1962. Colonel Wrieden served for the second time as secretary to the entire United States delegation from all agencies in attendance at the conference.

JOHN GRACE,
National Chief Secretary, The Salvation Army.

SAMOA. See AMERICAN SAMOA; WESTERN SAMOA.

SAN FRANCISCO

San Francisco, the second largest city in California and the 12th largest in the nation, had a population in 1960 of 740,316, a decline of 4.5% since 1950. During the same period, however, the population of the metropolitan area—of which it is the business, financial, and cultural center—increased by 24.2%, to 2,783,359.

The present city charter provides for a consolidated city and county government headed by a mayor (in 1962, George Christopher, whose second four-year term ends in November 1963) and an 11-man Board of Supervisors. For the 1962–63 fiscal year the city budget was fixed at $322,789,546, an increase of $45,643,103. Of this sum, the property tax (the rate of which was raised from $8.31 to $9.39 per $100 assessed valuation) was expected to provide $141,028,573. A new source of revenue is a 3% tax on hotel rooms, which went into effect on July 1, 1961. During the first year it yielded $1,144,029.

New construction valued at $162.6 million was under way on June 30, 1962, an increase of 16.2% over that in mid-1961. Major projects include the $32.5 million Federal

Office Building and the 1,200-room Hilton Hotel; both were to be completed in 1963. The number of building permits issued in the first six months of the year was up 1.4% over the same period in 1961, and the number of dwelling units increased 59.6%.

In the hotly contested election of Nov. 6, 1962, San Francisco followed the statewide trend. In the race for governor, the incumbent, Edmund G. Brown, Democrat, polled 180,298 votes in the city to 107,165 for Richard M. Nixon. Mayor Christopher, unsuccessful candidate for lieutenant governor on the Republican ticket, was outpolled in the city (147,859 to 134,272) by the Democratic candidate, incumbent Glenn M. Anderson.

The two San Francisco congressmen, William S. Mailliard (Republican) and John S. Shelley (Democrat) were reelected by substantial majorities, as were the incumbent candidates for assessor and public defender. The $793 million bond issue of the Bay Area Rapid Transit District, made up of San Francisco, Alameda, and Contra Costa counties, was approved by a narrow margin; a 60% favorable vote was required for the measure to carry. The San Francisco vote was 163,559 for and 80,967 against. This ambitious project, which will include the building of a tube beneath the bay and 75 miles of high-speed electric railway, is expected to go into partial operation in 1966 and to be completed by 1971.

Continued progress was made on two large-scale redevelopment projects: the rebuilding of 40 acres of outmoded residences in the "Western Addition," and the conversion of the former wholesale produce district into a complex of tall office and apartment buildings and landscaped open spaces. Other urban renewal projects in the planning stages included the rebuilding of the blighted area south of Market Street and the rehabilitation of Market Street itself, which in recent years has deteriorated badly.

Josef Krips was named permanent conductor of the San Francisco Symphony Orchestra, replacing Enrique Jordá. Krips had held a similar post in Buffalo, N.Y.

Fire on September 7 razed the 71-year-old St. Mary's Roman Catholic Cathedral. The edifice had survived the 1906 earthquake and fire.

On June 11, three convicted bank robbers escaped from the federal penitentiary at Alcatraz, but were presumed to have drowned in San Francisco Bay. Late in December it was announced that the Alcatraz penitentiary would be closed by July 1963.

In sports, the San Francisco Giants defeated the Los Angeles Dodgers in a playoff for the National League pennant, but then lost to the New York Yankees in an exciting World Series, 4 games to 3. The franchise of the Philadelphia Warriors in the National Basketball Association was transferred here for the start of the 1962–63 season.

Oscar Lewis,
Co-editor of "A History of San Francisco"; Author of "The Big Four" and other books.

SAN MARINO

The smallest republic in the world, San Marino is situated 140 miles north of Rome in the Apennine Mountains of Italy. It has an area of 23 square miles, and a population (1961 est.) of 17,000. The town of San Marino (pop., 2,481) is the capital. The population speaks Italian and is mainly Roman Catholic. Italian and Vatican City currencies are in general use, but San Marino issues its own stamps and coins. A 60-member Grand Council, elected every five years by universal suffrage, is the principal governmental body. In the elections of Sept. 12, 1959, the Christian Democrats won 27 seats; Democratic Socialists, 9; left-wing Socialists, 8; and Communists, 16. The council appoints two regents as chief administrators for 6-month periods. Wine, woolen goods, hides, and quarry stone are exported. Tourism is an important source of income.

SANITARY ENGINEERING

The foreseeable landing of astronauts on the moon has raised questions about the possible contamination of the lunar environment. In correlative fashion, a subject for discussion in 1962 at an international conference on Medicine and Public Health in High Latitudes was the need for protecting existing resources surrounding the poles of the earth itself. Convened by the World Health Organization, the conference considered the provision and protection of water supplies; the safe and sanitary disposal of liquid and solid waste matters; physical and mental discomfort caused by armies of biting insects in the lands straddling the Arctic Circle; and high rates of accidents within the native and immigrant populations.[1]

Settlement of northern lands and exploration of the polar antipodes are in keeping with the mounting need for space onto which the growing population of the earth eventually can spill. Unfortunately, not only temperatures but also rates of precipitation become lower toward the poles. The stored masses of frozen water, although large, are not a quickly renewable asset; hence, they must be kept clean.

Development of Community Water Supplies.—In other directions, too, 1962 was a year for international councils on sanitary engineering matters. Noteworthy was a meeting in Washington, D.C., of the Inter-American Association of Sanitary Engineers, representing the American republics, on the general purport of the engineering control of man's environment. An important theme for discussion and information was the worldwide plan for providing organized communities with acceptable water supplies. The International Bank for Reconstruction and Development, the Inter-American Development Bank, and the Special Fund of the United Nations all have a part in this program for community water supply, and the World Health Organization is furnishing some of the required technical personnel and educational leadership.

Desalination of Water.—The Office of Saline Water of the U.S. Department of the Interior continued to administer a program of research and development for the production of cheap freshwater from the sea or from inland brackish sources. A desalination research conference[2] concluded that practical methods of desalting seawater might yet spring from basic research; that existing methods employ rapid but thermodynamically quite inefficient semipermeable membranes or interfaces between phases (liquid-vapor, liquid-solid, or liquid-liquid); and that fundamental information was needed on the structures of liquids and solutions, their thermodynamic properties, the passage of both matter and energy across phase boundaries, and the properties of membranes, including the membranes of living organisms.

Water Pollution Research.—At the level of scientific and technological research, a first International

[1] U.S. Public Health Service, *Alaska, Frontier for Health Services,* Public Health Reports, 10:877 (1960).

[2] *Desalination Research and the Water Problem,* National Academy of Sciences-National Research Council, Publication 941 (1962).

Apparatus for removing strontium-90 from milk is shown by Dr. Harry Gregor at Polytechnic Institute of Brooklyn.

THE NEW YORK TIMES

Conference on Water Pollution Research was convened in London. It called attention to the mounting competition for water, the necessity for protecting existing resources, and the research in which engineers, chemists, and biologists must engage if we are to solve the pollution problems created by the modern revolution in science and technology.[3]

Synthetic Detergents.—Synthetic detergents now compose about 75% of the entire soap and detergent industry in the United States, and about 90% of the annual volume of products of this kind used in American households.[4] Most of the synthetic cleaners are members of a family of petrochemical compounds commonly referred to as alkylbenzenesulfonates (or ABS) and prepared by linking molecules of propylene gas to form chains of about 12 carbon and associated hydrogen atoms. Structurally, the chains are branched rather than straight, and it has been shown that this is responsible for the failure of ABS to be biologically degradable. Consequently, ABS remains intact and manifests itself as foam over long stretches of natural bodies of water into which raw or treated water-carried wastes are discharged.

Natural surface waters loaded heavily with such waste waters become unsightly, and their value to household and industry is depressed. Groundwaters, too, may retain foaming residuals of ABS that come from leaching devices in household sewage disposal, for example. There has been much dissatisfaction with this situation, and the German Federal Republic has become the first government to prohibit (by 1964) the use of nondegradable synthetic detergents. Since development of a reasonably satisfactory degradable petrochemical detergent has been reported, the ban is not expected to be deferred beyond that date.

Epidemiology of Air Pollution.—Published in 1962 was a report,[5] issuing from a symposium of the World Health Organization, on the epidemiology of air pollution. The report points out that, although air pollution has been described as one of the worst environmental evils to which industrial populations are exposed, it has been almost impossible to provide epidemiological evidence of its true dangers by available air-sampling techniques. Widespread damage has, on occasion, become manifest within 24–48 hours of the onset of serious pollution by stagnation of the atmosphere. It is estimated, for example, that during the great London fog of December 1952 approximately 4,000 deaths were caused by high levels of air pollution. However, effects of this kind have been evident mostly in persons afflicted with circulatory or respiratory diseases, and most deaths in the London episode occurred among medically handicapped elderly people.

Effects deferred in time and chronic or long-term effects still remain to be identified with an adequate degree of certainty. In Britain, postmen living where there was much thick polluted fog showed a higher incidence of bronchitis than a control group of postmen living in relatively clear areas. In the general literature of air pollution, this is a particularly significant study, because postmen are drawn from a relatively homogeneous class. All too often, economic factors oppose great obstacles to comparisons of the response of people to differing environmental hazards.

Not fully resolved remains the relative effect of atmospheric pollution and cigarette smoking in the production of lung cancer. The responsible benzpyrene and related polycyclic hydrocarbons are reported to play a dual role by virtue of their presence in both cigarette smoke and polluted air. Although particulates are widely measured by control agencies, their health significance in the pollution of the atmosphere above cities and towns remains to be fully established.

Radioactive Fallout.—Again in 1962 the resumption of tests of nuclear weapons in the atmosphere increased the radioactivity of the environment. Fallout radiation appeared in water supplies and in milk and other foodstuffs in varying degree. However, responsible authorities did not consider the increased intake of radioactive iodine in milk and of other radionuclides in water and solid foodstuffs sufficiently great to propose countermeasures. (See also ATOMIC ENERGY; PUBLIC HEALTH.)

(See also CONSERVATION OF NATURAL RESOURCES; GEOGRAPHY AND EXPLORATION; INDUSTRIAL HEALTH AND SAFETY.)

GORDON M. FAIR,
Gordon McKay Professor of Sanitary Engineering, Harvard University.

SANITATION. See SANITARY ENGINEERING and the Index entry *Food* (Sanitation).

SÃO TOMÉ. See PORTUGUESE TERRITORIES.

SARAWAK. See BORNEO.

SARDINIA. See ITALY.

SASKATCHEWAN

Central of the three prairie provinces of Canada, Saskatchewan extends over 251,700 square miles, including 13,727 square miles of lakes. The estimated population on June 1, 1962 totaled 930,000 (925,181 in the 1961 census). The largest cities (1961 census) are: Regina, the capital, 110,281; Saskatoon, 92,367; Moose Jaw, 33,065; and Prince Albert, 23,559.

Government.—The crown is represented by the lieutenant-governor, Frank L. Bastedo. The Executive Council (cabinet), drawn from the majority party in the unicameral legislature, is headed by Premier Woodrow S. Lloyd. Elected for a maximum term of five years, the Legislative Assembly is subject to dissolution on advice of the cabinet. The Co-operative Commonwealth Federation (CCF) party has been in office since 1944, and in the current legislature, elected in 1960, holds 34 seats, while the official Liberal opposition as of the end of 1962 had 21. The province is represented by 16 Progressive Conservative members and one Liberal member in the federal House of Commons, and has six seats in the Senate.

Finance.—Estimated budgetary revenues for the fiscal year ending March 31, 1963, were $171,826,040; and expenditures, $174,218,190. The net debt of the province was $19,492,000 on March 31, 1961.

Education.—During the 1960–61 school year there were 165,476 pupils in elementary schools, 47,643 in

[3] *Proceedings of the International Conference on Water Pollution Research,* London, September 1962 (to be published).

[4] Technical Advisory Council, The Soap and Detergent Association, *Synthetic Detergents in Perspective, Their Relationship to Sewage Disposal and Safe Water Supplies* (1962).

[5] Lawther, P. J., Martin, A. C., and Wilkins, E. T., *Epidemiology of Air Pollution,* Public Health Papers, 15, World Health Organization, Geneva.

secondary schools, 3,873 in private schools, and 4,351 in the government correspondence school. The University of Saskatchewan had 5,103 full-time degree students, while the two teachers colleges graduated 917.

Transportation and Communications.—There are 120,000 miles of municipal and provincial roads, 36,000 miles of which are surfaced, including 2,600 miles of bituminous and oil-treated surface. Railway mileage in the province is 8,700. On Dec. 31, 1961, there were 344,527 licensed motor vehicles. The major cities are served by national airways, while the provincial government operates an air service to the north and an air ambulance. There were 244,388 telephones, 14 radio stations, and 6 television stations in service at the end of 1961.

Agriculture.—Cash farm income in 1961 was estimated at $621,000,000, the major items being: wheat, $365,000,000; oats, $6,800,000; barley, $20,800,000; flax, $22,000,000; cattle, $107,735,000; dairy products, $30,434,000; poultry and eggs, $17,200,000; and hogs, $28,100,000. The preliminary estimate of grain production for 1962 was (in millions of bushels): wheat, 337; oats, 104; barley, 46; rye, 5; and flax, 5.6.

Minerals.—Preliminary figures for 1961 indicate that the value of mineral production was $218,201,000. Values of the chief minerals were: uranium, $44,600,000; copper, $19,800,000; zinc, $7,400,000; gold, $2,618,900; coal, $5,100,000; sodium sulfate, $4,000,000; salt, $1,600,000; structural materials (cement, clay, sand, gravel), $11,300,000; oil, $116,800,000; and natural gas, $2,500,000.

Other Production.—Net commodity production in 1961 totaled $723 million, including agriculture ($181 million), construction ($205 million), mining ($167 million), manufactures ($125 million), and forest and fisheries ($7 million). Personal income in 1961 totaled approximately $1,120 million.

Events, 1962.—Favorable weather conditions resulted in grain production more than double that of 1961. Production of the chief minerals remained constant, with the major new developments being the commencement of potash mining in the Esterhazy field, and the announcement of a plant to process helium from proved reserves in southwestern Saskatchewan. Among new commercial ventures was a plant opened at Watrous to harvest brine shrimp. Increased tourist traffic was reported, particularly to northern lakes, and the government stocked fish in 38 lakes and dams and nine angling waters.

The Medical Care Plan for universal compulsory prepaid medical insurance, established under the Saskatchewan Medical Care Insurance Act of 1961, was the dominant public issue throughout the year. Although vigorously opposed by the Saskatchewan College of Physicians and Surgeons, the government proceeded to put the plan into effect on July 1. Thereupon the medical profession withdrew normal services, doctors closing their offices but maintaining a hospital-based emergency service. The government position—that this was an act democratically passed by the legislature in response to a mandate received from the people—was endorsed by agricultural and labor organizations. At the same time numerous "Keep our Doctors" committees sprang up, vigorously supporting the stand of the profession. In the emergency period a number of doctors left the province, while the government imported some 100, principally from the United Kingdom, and several community clinics were organized to employ doctors willing to practice under the plan.

On July 24 the doctors returned to normal practice when, aided by Lord Taylor, a British consultant brought in by the premier, the government and the college agreed to a modified plan. This plan was given effect by amendments to the act passed at a special session of the legislature on August 2. The revised act preserved the principles of universal coverage and administration by a commission responsible to the government. At the same time it met the objective of the doctors by specifying safeguards for professional freedom, allowing doctors to practice outside the plan, and providing for the continued operation of existing doctor-sponsored voluntary insurance schemes.

The former minister of public health, J. Walter Erb, who had introduced the original bill and had been transferred to another department, resigned over the government's handling of the issue, and subsequently joined the Liberal opposition.

WIDE WORLD

Residents of Saskatchewan picket the Legislative Building in Regina, July 11, demanding repeal of government medical care insurance plan, which led to strike of physicians.

ALLAN R. TURNER,
Provincial Archivist,
Saskatchewan Archives Board.

SATELLITES, Earth. See SPACE FLIGHT and the Index entry, *Satellites, Earth.*

SAUDI ARABIA

This kingdom comprises the major portion of the Arabian Peninsula and is bordered on the north by Jordan, Iraq, and Kuwait; on the east by the Persian Gulf, Qatar, the Trucial States, and Muscat and Oman; on the south by Aden Protectorate, and Yemen; and on the west by the Red Sea. The international boundaries of Saudi Arabia have not been fully delimited. The area of the country has been estimated at 621,626 square miles.

Population.—It is estimated that Saudi Arabia has 6.15 million inhabitants, divided among the four provinces as follows: Hejaz, 1,250,000; Asir, 900,000; Nejd, 1,500,000; and al-Hasa, 2,500,000. Between 60% and 85% of the population is seminomadic or nomadic (Bedouin). Jidda (est. pop., 250,000), on the Red Sea, is the principal commercial and marketing center. Mecca (125,000) is the most holy of Muslim cities and one of the two official capitals of Saudi Arabia; the other capital is Riyadh (200,000), the main residence of the ruling Saud family and the location of most of the ministries of the government. Other important cities are Ras Tanura, Dammam, Dhahran, Abqaiq, al-Khobar, and Hofuf, all on the eastern coast; and the interior towns of al-Taif, al-Kharj, Hail, Anaiza, Medina (the second most holy city of Islam), and Buraida.

Government.—Saudi Arabia is an absolute monarchy under the control of the Saud family, headed by King Saud ibn Abd al-Aziz ibn Abd al-Rahman al-Faisal Al Saud (b. 1901; acceded 1953). Although the realm has been unified since 1932, the former kingdoms of Hejaz and Nejd are still administered separately by viceroys. The king is advised by a cabinet or Council of Ministers, which has both legislative and executive powers, but whose actions may be vetoed by the king. The heir to the throne is the king's brother, Crown Prince Faisal ibn Abd al-Aziz ibn Saud, who was again appointed prime minister in 1962 (see below, *Events, 1962*). Much of the local administration is in the hands of tribal sheikhs, who wield considerable power. Justice is administered according to Islamic law by religious courts.

Religion and Education.—With the exception of al-Hasa, where the Shi'ites are numerous, most of the inhabitants follow the Sunni sect of Islam, adhering to the Hanbalite juridical practices and being strongly influenced by the puritanical Wahhabi reform movement of the 18th century. The Wahhabis are the keepers of the holy places and control the pilgrimage to Mecca and Medina, in which more than 200,000 Muslims participate annually.

Primary education is free, but only the large towns have schools. There are about 150,000 primary school pupils and a considerable number in secondary, teacher-training, and technical schools. For the fiscal year 1963, a large share of the educational budget was allocated for the

WIDE WORLD

On a brief visit to Washington, King Saud of Saudi Arabia is met by President Kennedy at White House on February 13.

expansion of vocational and industrial educational programs. In 1960 the King Saud University was opened at Riyadh, and the Islamic Sharia College at Medina.

Finance.—The budget for the fiscal year 1962 was balanced at 2,007 million silver riyals (4.5 silver riyals equal U.S.$1), including a surplus of 66 million riyals to be used for debt retirement. It is expected that the entire Saudi public debt will be discharged by the end of 1963. Some 248.2 million riyals were allocated to the private treasury of the royal family, and 400 million riyals were expended on new development projects. Other large amounts were spent for defense, civil aviation, education, health, and public works. About 88% of revenue comes from oil royalties and income tax on oil operations. The finances of the country in 1962 were much improved over conditions in 1958. In November 1961 the gold holdings of the Saudi Arabian Monetary Agency totaled 721.7 million riyals, which entirely covered its note issue, and the banking department of the agency held 429.5 million riyals in gold, silver, and foreign exchange, against government deposits of 441.2 million riyals.

Transportation and Communications.—Jidda, on the west coast, and Dammam and al-Khobar, on the east coast, are the main ports; Ras Tanura handles nearly all petroleum exports. Other petroleum exports go through a pipeline operated by the Trans-Arabian Pipe Line Company (TAPLINE) from Qaisumah to Sidon in Lebanon. No railroads operate in the west, but work proceeded on the repair and rebuilding of the 525-mile Hejaz Railroad, connecting Medina to Maan in Jordan. An agreement was signed in Amman on July 28, 1962, to share construction costs equally among Saudi Arabia, Jordan, and Syria. In the east, a 357-mile line connects Riyadh and Dammam.

In the west three hard-surfaced highways connect Jidda with Mecca and Medina, and the latter with the new port of Yenbo'. Other roads under construction connect Mecca with al-Taif and Riyadh, and Medina with Tabuk on the Gulf of 'Aqaba. In the east, hard roads join all major centers of al-Hasa. New road projects aggregating 800 miles were approved in 1961.

Trans-World Airlines and five other international airlines use Dhahran Airport, and Jidda is served by foreign lines. Saudi Arabian Airlines serves Riyadh and other towns with flights to most Middle Eastern states. There are radio stations and telephone exchanges in all cities, two daily newspapers, and in Riyadh there is a television station serving more than 6,500 television sets.

Agriculture.—Saudi Arabia is essentially a subsistence agricultural and pastoral country. Due to lack of water, less than 15% of the land is arable and only about 500,000 acres are cultivated. To increase agricultural land, 10,000 acres of swamp are being drained at Qatif. About 500,000 tons of dates are produced annually, but imports of dates from Iraq are required to meet the local demand. The oasis of Hofuf (25,000 acres) and the al-Kharj irrigation project (5,000 acres) produce fine vegetables, dates, and rice. An artesian well with a flow of 440,000 gallons of water per hour was found in 1961, and in 1962 there was more drilling for water than for oil. Dams have been completed at Medina, Riyadh, and al-Taif.

Petroleum Resources.—The Arabian American Oil Company (ARAMCO) holds concessions (granted in 1933 and 1939, and extending until 1993) for about 365,000 square miles, covering most of the eastern half of the country, all offshore areas, and a large area to the west of the main concession. In the first quarter of 1962 the company's crude oil output averaged 1,534,405 barrels per day (up 3.4% from the same period in 1961), of which about 20% was pumped by TAPLINE to Lebanon, 12% went to Bahrain through an underwater pipeline, 20% was refined at Ras Tanura, and the balance was shipped by tanker from Ras Tanura. Saudi Arabia has estimated proved oil reserves of over 50 billion barrels.

The Paul Getty Oil Company holds the concession for Saudi Arabia's share of the Neutral Zone, and pays royalties of $0.55 per barrel and 25% of net profits from the sale of crude oil. Neutral Zone offshore rights are owned by the Arabian Oil Company, Ltd., a Japanese firm which began to export oil from Saudi Arabia in 1961.

ARAMCO participates in Saudi Arabian economic and industrial development in many ways. It financed a water and sewage project in the Dammam-al-Khobar area; assisted the Dhahran Electric Supply Company, which owns a natural-gas power plant; and trains many Saudis in local technical-training schools and in colleges abroad. In 1962 one of the daily work shifts in AMARCO's refinery at Ras Tanura consisted of an all-Saudi crew.

Events, 1962.—Following his return from medical treatment in the United States and two conferences with President Kennedy, King Saud announced in March 1962 the formation of a new 14-man Council of Ministers. He retained the position of prime minister but named Crown Prince Faisal as deputy prime minister and foreign minister, and appointed other members of his family to important cabinet posts. The new officials included his son, Prince Muhammad ibn Saud, who became minister of national defense, and a commoner, Ahmad Zaki Yamani, who was named minister of petroleum and mineral resources. The considerable reorganization of the government signaled the return to a strong government; and the dropping of Sheikh Abdallah Turaiki, the independent petroleum minister, was regarded as a move to placate the oil interests. A further move to strengthen the government was made in September 1962 after the civil war in Yemen (q.v.) had embroiled Saudi Arabia and the United Arab Republic (UAR) as rivals there. Prince Faisal on October 17 was named prime minister, and he took over full responsibility for the administration.

Early in the year Prince Faisal said that he would "fight to the finish" in case of a conflict between Saudi Arabia and the UAR. Another indication of the deep rift between the Saudis and UAR President Nasser was the rejection by Saudi Arabia in May 1962 of the annual offering of a gold-embroidered covering for the holy Kaaba in Mecca, a privilege Egypt had enjoyed for centuries. King Saud later offered to fly the Egyptian pilgrims at his own expense as a gesture of goodwill, but the offer was rejected by the UAR.

In August 1962, Prince Talal, another brother of King Saud, left the country and spoke out in Beirut against Saud's government. He called for a constitutional regime having limited democracy. The breach between Prince Talal and his brother became complete when his property was confiscated. Three of his brothers joined him in exile, along with several other members of the royal family.

In 1962, steps were taken to merge Saudi armed forces with those of Jordan. The forces of both nations cooperated on the Saudi-Yemeni frontier in assisting the Yemeni royal family in trying to overthrow the republican regime.

SYDNEY N. FISHER,
Professor of History,
The Ohio State University.

SAVINGS

Liquid savings of individuals in the United States totaled approximately $258 billion at the beginning of 1962. During 1961 these savings, which include currency, checking and savings accounts, and United States government securities, increased by more than $17 billion. This was the largest gain in many years and brought the total increase in holdings over the past five years to more than $50 billion. Saving in these liquid forms appears to have continued at a record peacetime rate in the first three quarters of 1962.

ESTIMATED LIQUID ASSET HOLDINGS OF INDIVIDUALS IN THE UNITED STATES
(In billions of dollars, end of years shown)

Assets	1959	1960	1961[1]
Currency	22.0	22.0	22.2
Demand deposits	37.0	37.2	39.0
Time deposits	90.2	94.5	102.3
Savings and loan shares	48.9	55.4	63.2
U.S. government securities	32.8	31.5	31.4
Total[2]	230.9	240.6	258.1

[1] Preliminary. [2] Includes the holdings of farmers and professional persons, but not trust funds administered by corporate trustees. (Sources: Federal Reserve Board and Securities and Exchange Commission; data adjusted for differences in coverage.)

Growth in savings accounts (including shares in savings and loan associations) accounted for nearly all of the increase in total liquid assets, as is shown in the accompanying table. Savings accounts amounted to $165.5 billion at the end of 1961, a gain of nearly $16 billion during the year. Demand deposits and currency, forms of liquid assets which earn no interest, rose only moderately. The increase, amounting to $2 billion, brought total holdings of these assets to $61.2 billion. Individuals reduced their holdings of United States government securities only slightly in 1961, compared with the significant reduction in 1960.

IRVING SCHWEIGER,
Professor of Marketing,
University of Chicago.

SAVINGS AND LOAN ASSOCIATIONS. See SAVINGS.
SAVINGS BONDS. See TREASURY DEPARTMENT, U.S.

SCHELL, Maximilian

Swiss actor: b. Vienna, Austria, Dec. 8, 1930.

For his performance as the German defense lawyer in *Judgment at Nuremberg*, the New York Film Critics Circle and the Academy of Motion Picture Arts and Sciences named Maximilian Schell

Maximilian Schell won a 1962 Academy Award for his performance in *Judgment at Nuremberg*.

UNITED ARTISTS

best film actor of 1961. He received his Academy Award "Oscar" on April 9, 1962, four years after his American screen debut as the Nazi lieutenant in *The Young Lions*.

The son of a poet-playwright father and actress mother, Maximilian Schell has a brother and two sisters (one of them is Maria Schell) who are also actors. In 1938 the family fled to Zurich, where they became Swiss citizens. While studying philosophy and art history at the universities of Zurich and Munich, Schell earned money as a professional athlete; at the same time he was appearing in university and professional dramatic productions, and later he spent four years acting in European theaters (he speaks four languages). His first film was the German *Kinder, Mütter, und ein General* (*Children, Mothers, and a General*). In 1958 he played the romantic lead in Ira Levin's *Interlock* on Broadway, receiving good notices although the play ran only 4 performances.

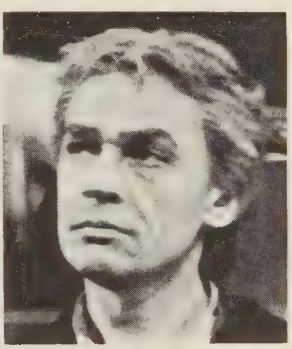
Rather than accept motion pictures parts that he disliked, Schell turned to television and was twice nominated for an Academy of Television Arts and Sciences "Emmy" award for single appearances in 1959; one of these roles was the defense lawyer in Abby Mann's original production of *Judgment at Nuremberg*. Since making the screen version of the play, he has portrayed the German tutor in the film *Five Finger Exercise* (1962) and St. Joseph of Cupertino in *The Reluctant Saint* (1962).

SCHIRRA, Walter Marty, Jr. See biographical sketch under SPACE FLIGHT.
SCHOLARSHIPS. See the Index entry, *Scholarships and Fellowships.*
SCHOOLS. See COLLEGES AND UNIVERSITIES; EDUCATION; and the *Education* section of articles on countries and states.
SCHROEDER, Gerhard. See biographical sketch under GERMANY.
SCIENCE. See articles on the various sciences: ASTRONOMY, CHEMISTRY, PHYSICS, etc.

SCOFIELD, (David) Paul

English actor: b. Hurstpierpoint, Sussex, England, Jan. 21, 1922.

"Not content just to applaud, much of the audience stands and noisily shouts its appreciation for his movingly perfect performance," reported *Time* (Dec. 15, 1961) of Paul Scofield in Robert



Paul Scofield, who appeared in *A Man for All Seasons*, was given an Antoinette Perry Award for the 1961–62 New York drama season.

BARRY HYAMS

Bolt's *A Man for All Seasons*. Awarded an Antoinette Perry "Tony" as best starring dramatic actor of 1961–62 for his portrayal of Sir Thomas More in the Bolt play, he has been ranked by some critics with Sir Laurence Olivier and Sir John Gielgud.

Scofield studied dramatics at the Croydon Repertory Theatre and London Mask Theatre schools. After playing with student repertory and armed services entertainment companies during World War II, he joined Basil C. Langton's Travelling Repertory Theatre (1942) and Sir Barry Jackson's Birmingham Repertory Company (1944). By 1946, when he became a member of the Festival Company at the Shakespeare Memorial Theatre in Stratford-on-Avon, he had played some 20 roles under Sir Barry's direction.

Successes in such Shakespearean parts as Don Armado (*Love's Labour's Lost*), Mercutio (*Romeo and Juliet*), and Sir Andrew Aguecheek (*Twelfth Night*) won Scofield his first London starring roles, Alexander the Great in Terence Rattigan's *Adventure Story* (1949) and Konstantin in Chekhov's *The Seagull* (1949). In 1950 he opened in the Fry-Anouilh *Ring Around the Moon*, playing the twin brothers in a production that ran two years in London. Thereafter he appeared in numerous

classical and contemporary works, including a long-run *Hamlet* in 1955–56 and a musical, *Expresso Bongo* (1958). His first screen role was Philip II of Spain in *That Lady* (1955).

Between the London and New York engagements of *A Man for All Seasons,* in 1961, he received rave notices for his Coriolanus and Don Armado at the Stratford (Ontario) Shakespeare Festival. Following his triumphant New York debut as Sir Thomas More, he returned to England in 1962 to play King Lear in Peter Brook's much-admired Stratford production.

SCOTLAND

Comprising 33 counties and 194 burghs in the northern part of the island of Great Britain, Scotland has an area of 30,411 square miles, and a population (1961 preliminary census) of 5,178,490. The principal cities (with 1961 census populations) are Glasgow, 1,054,913; Edinburgh, the capital, 468,378; Aberdeen, 185,379; and Dundee, 182,959. Important island groups lying off Scotland are the Orkney Islands (area, 375.5 sq. mi.; 1961 pop., 18,743); the Shetland Islands of Zetland (551 sq. mi.; 1961 pop., 17,809); and the Hebrides or Western Islands (2,812 sq. mi.; 1951 est. pop., 53,000).

Scotland is represented by 16 peers in the House of Lords and by 71 members in the House of Commons. The chief member in the British cabinet responsible for Scottish affairs is the secretary of state for Scotland (in 1962, John Scott Maclay). There are also several special administrative bodies for Scottish affairs.

In 1960–61 there were 2,845 primary schools (with 582,387 pupils), 771 secondary schools (271,847 students), and 1,119 other centers of education (245,524 students). University enrollment totaled 19,414 in 1961–62 (St. Andrews, 2,739; Glasgow, 6,885; Aberdeen, 2,417; and Edinburgh, 7,373).

Arable land in 1961 totaled 3,428,000 acres, of which 1,893,170 acres were allocated to clover and rotation grasses; 1,050,860 to corn crops; and 460,010 to green crops. In 1961 the fish catch (excluding salmon and sea trout) was 240,579 tons, valued at £13.5 million. Principal industries are shipbuilding, steel manufacturing, and coal mining.

Reversing its 1959 decision, the Church of Scotland entered into talks with the Church of England in Durham on July 10–12, 1962. A permanent standing committee of the two churches, together with the Presbyterian Church of England and the Episcopal Church of Scotland, was established to study further possible Anglican-Presbyterian unity.

The first official visit of a foreign head of state to Scotland took place on Oct. 16–19, 1962, when King Olav V of Norway visited Scotland.

SCULPTURE. See PAINTING AND SCULPTURE.
SEATTLE WORLD'S FAIR. See CENTURY 21 EXPOSITION.

SECRET SERVICE, U.S.

An investigative bureau of the Treasury Department, the Secret Service was established July 5, 1865. Protection of the president, members of his immediate family, and the vice president continues to be the paramount responsibility of the service.

Counterfeiting of the currency of the United States reached the highest peak in the history of the service in the fiscal year ending June 30, 1962. During that year 737 persons were arrested for counterfeiting offenses, and 31 plants for the manufacture of counterfeit money were captured. A total of $4,114,323.35 in counterfeit money appeared, of which amount $3,565,567 was seized from counterfeiters before it could be passed upon the public. The loss to the public was held to $548,756.35. Seven out of every eight counterfeit notes manufactured were seized before they could be successfully passed on the public. The largest domestic seizure of counterfeit money ever made—over $1 million—was accomplished in New York City on Feb. 8, 1962.

Investigation of 40,351 forged endorsements of government checks involving $4,244,133.16 was completed during the year ending June 30, 1962, and 3,414 persons were arrested for this offense. The forgery of government savings bonds dropped slightly; 7,894 forged bond cases involving a value of $758,781.54 were completed, and 82 persons were arrested.

Arrests for other offenses brought the total of arrests made by the service to 4,402. There were 3,444 convictions, representing 98.3 percent of all convictions in all cases prosecuted.

JAMES J. ROWLEY,
Chief, U.S. Secret Service.

SECURITIES. See STOCKS AND BONDS.
SECURITIES AND EXCHANGE COMMISSION. See STOCKS AND BONDS.
SECURITY, National. See NATIONAL SECURITY.
SECURITY COUNCIL (UN). See UNITED NATIONS.
SECURITY COUNCIL, National. See the Index entry, *National Security Council.*
SEGNI, Antonio. See biographical sketch under ITALY.
SEGREGATION, Racial. See CIVIL LIBERTIES; EDUCATION; and the Index entry, *Race Relations.*

SEISMOLOGY

The outstanding seismic event of 1962 was undoubtedly the Iranian earthquake of September 1, at 10:50 P.M. Iranian time. It was not an unusually large quake, being only of magnitude 7 to 7.5 on the Richter scale, and hence much smaller (though more disastrous) than the San Francisco earthquake of 1906 (magnitude 8.3).[1] Despite its small magnitude, the Iranian quake caused about 12,400 deaths and destroyed 294 villages. The quake's center was southwest of Teheran and about 13 miles below the earth's surface. Most of the destruction occurred within a 150-mile-sided equilateral triangle with apexes at Kazvin in the north, Hamadan in the west, and Saveh in the east.

Next in importance to the Iranian quake was the earthquake of July 30 in central and western Colombia. This was only of magnitude 6.5, but 40 persons were killed and property damage occurred over an area of 400,000 square miles.

The Mediterranean area was shaken by half a dozen damaging quakes. Southern Italy was hardest hit on August 21, when 17 persons were killed and extensive property damage was done around Naples. Makarska, a village in Yugoslavia, had been jolted earlier, when two persons were killed on January 7 and two more on January 11. Severe damage was done in the first quake, and the village was almost completely destroyed in the second. On June 11 considerable earthquake damage again occurred in Yugoslavia, mostly in Sarajevo. On August 28 the whole rim of the Mediterranean was shaken, one person being killed in Corinth,

[1] While the Richter scale to express earthquake magnitude is popularly called a scale from 0 to 10, technically this is incorrect, since the scale has no upper limit. Since the largest quakes ever recorded, however, have reached only 8.9 (Ecuador-Peru in 1906 and Japan in 1933), it is unlikely that a quake of magnitude 10 will ever occur, so 10 is given as an upper limit. Since the scale is logarithmic, such a quake would have a magnitude more than 10 times greater than the largest recorded quakes—an unlikely eventuality.

Woman walks through the rubble of a village in Iran after the country's worst earthquake, September 1, destroyed nearly 300 villages and killed over 12,000 persons.

PARIS MATCH

Greece, and moderate property damage occurring in southern Italy, Sicily, Crete, Malta, and Yugoslavia.

The only other area to be visited by earthquake fatalities was Mexico. On May 11, three were killed and extensive property damage caused by the quake and resulting seismic sea wave in Acapulco. Again on May 19, three were killed and much property was damaged. Both earthquakes were of magnitude 7.25.

Seismological Research.—A great step toward lessening the damage done by earthquakes was made by the United Nations Educational, Scientific and Cultural Organization (UNESCO). A team of expert seismologists, including Americans, Russians, Frenchmen, Japanese, and Australians, was sent to the South American, Mediterranean, and Pacific areas where damaging earthquakes occur. There they inspected the terrain for earthquake sites, met with local seismologists, and held seminars. They submitted reports on each area, indicating safe building codes and other factors to lessen earthquake damage. If their suggestions are carried out, such loss of life as occurred in the Agadir, Morocco, earthquakes of 1960 and the Iranian quake of 1962 will be considerably reduced.

Nuclear Test Detection.—Improvement in the detection of nuclear tests by seismic means claimed the attention of most other available seismologists. During the year, on at least a dozen occasions, an epicenter (the center of a quake) was located at Novaya Zemlya, at approximately latitude 74°N. and longitude 52°E. Since no natural earthquakes have been known to occur in this area, but a Soviet testing site is located there, the events so recorded are assumed to have been nuclear blasts. Seismic instrumentation has improved to such an extent that even comparatively small Russian nuclear blasts are detected and located.

One of the problems in the detection of nuclear explosions is getting away from such background vibrations as those caused by traffic. The waves from a blast that are most useful in pinpointing its location are the short-period waves, known as P (compression) and S (shear) waves. Enough energy is transmitted in these waves to carry great distances, but at the recording station they may be masked by local vibrations of about the same period. It has been suggested that this difficulty could be overcome by burying the seismograph pickup deeper than usual for earthquake recording. This would put the pickup further away from the sources of local disturbances and hence out of their reach, but still within reach of the somewhat deeper vibrations from a distant blast. Experiments have been carried out at various depths, and an optimum depth of about 500 feet has been established. This is not a prohibitive depth, and with the combined information from these short-period P and S waves and that from the longer surface waves, which are not affected by local vibrations, even small nuclear blasts can now be detected at great distances.

(See also Coast and Geodetic Survey; Geology.)

J. Joseph Lynch, S.J.,
Director, Fordham Seismic Observatory.

SELECTIVE SERVICE

Men are registered by the Selective Service at age 18, classified as to availability for military service, and selected to fill calls issued by the Department of Defense. Temporary deferments are provided for persons engaged in study or other civilian activities vital to the nation; in cases where induction would result in extreme hardship to dependents; and for apprentices, agricultural occupations, and satisfactory participation in the reserves and National Guard. Exemptions are provided for ministers and divinity students, some aliens, and sole surviving sons.

Men who fail to qualify for military service under current standards also are deferred. Those disqualified for any military service are placed in Class IV-F. Those qualified only in war or emergency are placed in a new Class I-Y, established by Executive Order in January 1962. The executive order also amended Selective Service regulations to provide for the priority induction of men who enlist in the Ready Reserve up to age 26 and who subsequently fail to participate satisfactorily. The amendment effects recent legislation. Previously only such reservists who enlisted in the Ready Reserve prior to age 18½ were liable to priority induction for unsatisfactory participation.

The Selective Service System also manages the Standby Reserve. These reservists, subject to recall in the event of war or national emergency declared by Congress, may be recalled, however, only after they have been determined by local boards to be available.

Inductions since 1948 total 2,923,762, including Department of Defense requisitions through October 1962. Of these 2,811,554 were inducted into the Army, 84,199 into the Marine Corps, and 27,562 into the Navy. The total inducted, plus outstanding calls, through October 1962 for the preceding 12-month period was 110,037.

The Selective Service System has its national headquarters in Washington, D.C., and 56 state headquarters—one in each state, New York City, the District of Columbia, Guam, Puerto Rico, the Virgin Islands, and the Canal Zone. Nearly 4,000 local boards are manned by about 40,000 volunteers.

Lewis B. Hershey,
Lieutenant General, U.S. Army;
Director, Selective Service System.

SENATE, U.S. See United States Congress and the Index entry *United States Congress.*

SENEGAL

The Republic of Senegal is an independent member of the French Community situated on the west coast of Africa. It has an area of 76,124 square miles, and a population (est. mid-1961) of 2,980,000. The major ethnic groups are the Wolof (over 700,000), Peul (323,000), Serer (304,000), Tukulör (246,000), Diola (111,000), Malinke (84,000), and European (61,000), mainly French. French is the official language. Principal cities (with 1960 est. pop.): Dakar, the capital and chief port (300,000); Rufisque (49,800); Kaolack (46,800); and Saint-Louis (39,800).

Government.—The Republic of Senegal, proclaimed on Nov. 25, 1958, joined with Soudan on Jan. 17, 1959, to form the Federation of Mali, which on June 20, 1960, proclaimed its complete independence from France. Senegal withdrew from the federation on Aug. 20, 1960. Under the Senegalese constitution, adopted on Aug. 25, 1960, the president (Léopold Sédar Senghor, elected Sept. 5, 1960) serves as head of state. Executive power was vested in the premier (Mamadou Dia), who was appointed by the president but was responsible to the National Assembly. Following the attempted coup d'état of Dec. 17, 1962, the president assumed full executive power (see below *Events, 1962*). In the elections of March 22, 1959, the Progressive Senegalese Union won all 80 seats in the National Assembly.

Education and Religion.—About one fourth of the school-age population attend school. Number of schools (with enrollments), 1959: 567 primary (91,900); 37 secondary (7,000); 19 technical (2,000); 1 higher (1,315). Principal religions: Islam in the north; animism in the south; Roman Catholicism among the Europeans and the Diolas.

Finance.—Government expenditure, 1961: 36,145 million francs CFA, of which 30,006 million was for administration, and 6,139 million for equipment (246.85 francs CFA equal U.S.$1). French loans and grants to Senegal in 1961 totaled about 1.3 billion francs CFA. The 4-year development plan (1961–65) envisages the expenditure of 92,067 million CFA francs (50,561 million from public sources, and 41,506 million from private sources).

Transportation and Communications.—Transport networks (miles, 1958): railroads, 730; asphalt roads, 446; all-weather roads, 2,000; other roads, 4,500. There is a major international airport at Yoff (near Dakar), which is served by 14 international airlines.

Agriculture.—More than 90% of the population is engaged in agriculture and livestock raising. Chief crops (metric tons, 1960): peanuts, 930,000; millet and sorghum, 390,000; rice, 80,000; manioc, 75,000; and beans, 20,000. In 1960 the fish catch totaled 97,000 metric tons.

Manufactures and Minerals.—Gross national product, 1959: $517 million. Chief industrial products (metric tons, 1960): peanut oil, 143,000; cement, 182,000 (1961); electric power, 151 million kw.-hr. (1961); aluminum phosphate, 105,300; titanium (ilmenite), 32,266; zirconium, 10,349. Production of calcium phosphate, begun in August 1960, was estimated at 500,000 to 600,000 metric tons in 1962.

Foreign Trade.—Total exports, 1961: 30,657 million francs CFA; imports, 38,344 million. Chief exports: peanuts, 11,440 million francs CFA; peanut oil, 11,592 million. Chief imports: foodstuffs (rice, wheat, corn), petroleum products, textiles, and machinery. France in 1961 supplied 66% of total imports and bought 76% of exports.

Events, 1962.—Senegal experienced its first attempted coup d'état on December 17, when troops under Premier Mamadou Dia occupied the National Assembly and arrested some of its members in order to forestall a motion of censure against the Dia government. Troops loyal to President Senghor arrested Dia on December 18, after the deputies voted 55–0 to strip Dia of his parliamentary immunity and to abolish the office of premier. Senghor assumed the powers of head of government.

The Republic of Senegal accused Morocco on March 3 of plotting to overthrow its government and of training commandos in neighboring Mali for this purpose. On April 4, four persons were convicted for participating, with Senegalese exiles in Mali, in a plot to overthrow the government. Relations with Morocco were restored to normal, following a visit to Dakar on April 24 by Ahmed Alaouli, Moroccan minister of information. Relations with Mali, however, remained strained.

Dakar was the site for a trade union conference of delegates from 28 African states and territories in mid-January. The delegates decided on January 14 to establish the Pan-African Trade Union Conference, with headquarters in Dakar. The new organization, composed of trade unionists in the "Monrovia group" of African states, is a rival of the All-African Trade Union Federation, which was formed in 1961 by trade unionists in the "Casablanca group" of states. (See also AFRICA.)

In an effort to harmonize relations between the Monrovia and Casablanca groups, President Léopold Senghor of Senegal and President Sékou Touré of Guinea agreed to establish a permanent joint commission to coordinate activities for African unity. The joint commission is to meet periodically in Dakar and Conakry.

On June 14, during a visit of Premier Dia to Moscow, agreements on trade and economic and technical cooperation were signed by the Soviet Union and Senegal. Both countries also agreed to establish diplomatic relations, and signed a convention on cultural cooperation.

J. L. L.

SEYCHELLES

Situated in the Indian Ocean north of Madagascar, this British crown colony comprises the Seychelles (Mahé, Praslin, Silhouette, La Digue, Curieuse, and Félicité islands) and dependencies: the Aldabra, Farquhar, Amirante, and Alphonse island groups, and Coëtivy Island. The colony's 92 islands and coral reefs total 156 square miles; the population is 43,000 (1961 est.). Victoria (pop., 10,504), situated on Mahé Island (area, 55½ square miles) is the capital and chief port.

The colony is administered by a British-appointed governor (the Earl of Oxford and Asquith, appointed in 1961), who is assisted by an 8-member Executive Council and a 12-member Legislative Council. In 1960 there were 5,900 students in primary schools, and 886 in secondary and vocational schools.

The economy is based on agriculture supplemented by fishing. Chief crops (metric tons, 1960): cinnamon leaves, 7,339; cinnamon bark, 1,240; breadfruit, 986; and coconuts, 32,632,249 nuts. Total exports, 1961: £533,000; imports, £901,000. The chief export is copra (4,689 tons in 1960). Exports are sent mainly to India and Great Britain; imports come mainly from Great Britain, India, and Thailand. There are 102 miles of roads on Mahé Island. There is no air service to the Seychelles; steamships stop twice monthly at Victoria.

SHETLAND ISLANDS. See SCOTLAND.
SHIPBUILDING. See MERCHANT MARINE.
SHIPPING. See Index entry.

SHOE INDUSTRY

The United States shoe industry in 1962 produced an estimated 626 million pairs of shoes (excluding rubber boots and shoes), marking the second record year in shoe production history. The 1959 production of 637 million pairs rates first. However, this was a gain of 5.6% over the 1961 production of 593 million pairs.

The use of leather substitutes, which began in 1961, continued, and by 1962 was very nearly perfected. These chemical products are used as shoe uppers and soles. They are durable, flexible, and can "breathe" almost as well as leather does; their chief advantage over leather is their unlimited supply.

The shoe manufacturing industry in the United States comprises approximately 850 companies, employing 240,000 workers (excluding rubber-shoe workers) in more than 1,300 factories in 38 states. Production in 1962 was distributed among the various categories of shoes in the same pattern as the previous year. Men's shoes made up about 18% of total production; women's, 48%; misses' and children's, 12%; and infants' shoes, slippers, and specialty type shoes, 22%.

World production continued to increase, but at a slow rate. In 1962 it reached 2.1 billion pairs, an increase over 1961 of about 70 million pairs.

SHOE PRODUCTION, BY MAJOR COUNTRIES
(1962 estimates)

Country	Millions of pairs	Country	Millions of pairs
United States	635	Argentina	38
USSR	312	Australia	37
United Kingdom	162	Japan	31
West Germany	137	Spain	28
France	98	Netherlands	23
Brazil	72	Sweden	22
Italy	62	Turkey	21
Canada	50	South Africa	20
India	44	Egypt	15
Mexico	43	Switzerland	15

(Source: National Shoe Manufacturers Association.)

HARRIET BERGLAS,
Statistician, National Shoe Manufacturers Assn.

SHOOTING. See SPORTS, GAMES, AND SHOWS.
SHOWS. See FAIRS AND EXHIBITIONS; SPORTS, GAMES, AND SHOWS. For musical and theatrical shows, see DANCE; MOTION PICTURES; MUSIC; THEATER; and for art shows, see PAINTING AND SCULPTURE.
SIAM. See THAILAND.
SICILY. See ITALY.

SIERRA LEONE

An independent state within the Commonwealth of Nations since April 27, 1961, Sierra Leone is a tropical country on the western coast of Africa. This former British colony and protectorate has an area of 27,925 square miles, and a population (1960 est.) of 2,450,000. The population consists of a great majority of Africans and small minorities of about 3,000 Asians and 2,000 Europeans. Freetown, the capital and chief port, has a population (1960 est.) of 125,000. The most important tribes are the Mende in the south, the Temne in the center, and the Limba in the north. Creoles, descendants of the original founders of the former colony, play a leading role in the life of the country. The official language is English.

Government.—The government is nominally headed by a governor general (Henry J. L. Boston, appointed May 5, 1962, to succeed Sir Maurice H. Dorman). Executive power is vested in a prime minister (Sir Milton Margai) and a cabinet responsible to a unicameral legislature. The House of Representatives consists of 62 elected members and 12 tribal chiefs selected by district councils. In the election of May 25, 1962, the ruling People's Party won 28 seats; the opposition All-People's Congress and its allies, 20 seats; and independents, 14 seats. (See also below, *Events, 1962.*)

Education and Religion.—The estimated literacy rate in 1961 was 80% in the former colony and 5% in the former protectorate. Number of schools (with enrollments), 1960–61: 586 primary (86,244); 37 secondary (7,512); 2 technical (331); 6 teacher-training (629); and 1 university (302). Animism is practiced by many tribesmen. There are large groups of Christians and Muslims.

Finance.—Government revenue, 1961–62 est.: £13,924,000 (£12,854,807 in 1960–61); expenditure, £13,785,953 (£12,426,597). The net public debt as of March 31, 1961, was £6,680,152, excluding an exchequer loan from Great Britain of £3,000,000.

Transportation and Communications.—Sierra Leone's railways aggregate 342 miles of track and extend from Freetown to Pendembu, South Eastern Province, with a branch line to Makeni, Northern Province. Main public roads total 1,775 miles; local roads, 2,200. An international airport at Lungi, near Freetown, is served by seven foreign airlines; Sierra Leone Airways provides internal service. Other communications data for 1960: trucks and buses, 3,919; passenger cars, 5,468; radio subscribers, 3,573; and telephones, 4,200 (1961). A television service was inaugurated in August 1962.

Production.—Most of the population is engaged in agriculture. Principal subsistence crops (tons, 1961): manioc, 49,000; rice, 251,000; millet and sorghum, 24,000. Principal cash crops (tons exported, 1961): coffee, 5,024; cacao, 2,792; piassava, 5,732; palm kernels, 57,764; ginger, 592. About 80,000 persons are engaged in mining (chromite, diamonds, and iron ore) and in light industries.

Foreign Trade.—Total exports, 1961: £25,166,000 (£29,630,000 in 1960); imports, £32,539,000 (£26,342,000). Principal exports, 1961: diamonds, £15,969,057; iron ore, £4,672,835; palm kernels, £2,437,622. Chief imports include textiles, machinery, transport equipment, fuel, and food. In 1960, Great Britain bought 82% of total exports, the Netherlands received 9%, and West Germany, 4%; Great Britain provided 42% of total imports, and Japan provided 11%.

Events, 1962.—Prime Minister Sir Milton Margai's People's Party lost its parliamentary majority in the national elections of May 25, but was able to form a new government with the support of 12 of the 14 independents elected to the legislature. The People's Party, a conservative group supported by the Creoles on the coast and the tribal chiefs in the interior, won 28 seats. The All-People's Congress, a progressive party backed by the trade unions and most of the country's young people, won 16 seats. Its ally, the Progressive Independence Movement, won four seats. The opposition forces were further strengthened in September when the United Progressive Party and the All-People's Congress merged.

In June a preliminary 10-year development plan costing £164 million was announced. The plan called for the introduction of sugarcane, bananas, rubber, and other crops, and the expansion of industry by encouraging the manufacture of soap, cooking oil, cosmetics, and furniture. Expenditure in the first five years was estimated at £138 million, of which £82 million was to come from external sources.

J. L. L.

SIGHT. See OPHTHALMOLOGY.
SIKKIM. See INDIA.

SILK

According to statistics compiled by the American Silk Council, Inc., United States consumption of raw silk up to and including the first 10 months of 1962 amounted to 37,792 standard bales of 132,275 pounds. Compared with the consumption for the same period in 1961 (38,582 bales), this is a decrease of about 2%. Imports of 36,521 bales were 1.5% higher than for the corresponding period in 1961 (35,964 bales). Consumption for the full year 1961 was 47,907 bales, and imports totaled 45,998 bales.

World Production.—World silk output totaled 31,813 metric tons in 1961 (an increase of 1.5% from 1960), as shown in Table 1.

Table 1—RAW SILK PRODUCTION, BY MAJOR COUNTRIES, 1961

Country	Metric tons	Country	Metric tons
Brazil	93	Japan	18,679
Bulgaria	30	Korea, South	500
China	7,000	Lebanon	15
France	9	Poland	7
Greece	18	Rumania	15
Hungary	20	Spain	40
India	1,264	Syria	8
Indochina	178	Turkey	72
Iran	145	USSR	2,900
Italy	760	Yugoslavia	60

World Consumption.—Raw silk consumption in 1961 totaled 22,879 metric tons (as against 24,355 metric tons in 1960), with Japan by far the leading user and the United States in second place, as shown in Table 2.

Table 2—RAW SILK CONSUMPTION, BY MAJOR COUNTRIES
(In metric tons)

	1961 (12 months)	1962 (for period shown)
France	867	659 (8 months)
Germany	291	98 (6 months)
Great Britain	197	89 (6 months)
India	1,369	...[1]
Italy	1,940	506 (3 months)
Japan	14,715	10,193 (8 months)
Korea, South	206	...[1]
Switzerland	420	337 (9 months)
United States	2,874	1,356 (6 months)

[1] Not available.

While there were fluctuations in price, raw silk still showed a healthy balance between supply and demand in 1962, with very moderate stocks both in Japan and in New York.

(See also TEXTILE INDUSTRY.)

HANS VATERLAUS,
Executive Vice President,
International Silk Association (U.S.A.), Inc.

SILVER

In 1961 world output of silver declined to 231,800,000 troy ounces, or 3.5% from that of 1960, according to data compiled by the U.S. Bureau of Mines. Of the world output, the United States accounted for 15%, the same portion as in 1960.

United States.—Mine output of silver rose from 30,766,327 ounces in 1960 to 34,794,456 ounces in 1961. Minted silver production declined from 36,800,000 ounces in 1960 to 34,900,000 ounces in 1961. In the first nine months of 1962, output from mines totaled 27,621,983 troy ounces, compared with 26,429,847 ounces in the comparable period of 1961.

Canada.—In the first nine months of 1962, silver production was 23,077,177 ounces, compared with 23,047,790 ounces in 1961. In 1961, silver output was 31,168,283 ounces, compared with 34,016,829 ounces in 1960.

Mexico.—In the first seven months of 1962, output of silver was 23,878,067 ounces, compared with 24,024,160 ounces in the same period of 1961.

(See MINERAL PRODUCTION for table showing output of major silver-producing countries.)

SINGAPORE

A self-governing state within the Commonwealth of Nations, Singapore and its adjacent islands have a total area of 224.5 square miles and a population (Dec. 31, 1961 est.) of 1,712,600, including 1,287,700 Chinese, 240,200 Malaysians, 142,900 Indians and Pakistanis, and 13,800 Europeans. English, Malay, Chinese, and Tamil are the official languages.

Government.—Exercising full internal self-government since June 3, 1959, Singapore is under a British commissioner (Earl of Selkirk), who is also commissioner general for Southeast Asia and is responsible for Singapore's defense and foreign affairs. There is a nominal head of state (Inche Yusof bin Ishak, sworn in Dec. 1, 1959) and a prime minister (Lee Kuan Yew took office on June 5, 1959) who heads a 9-member cabinet chosen from the legislators. The 51-member Legislative Assembly is elected by universal suffrage for a 5-year term. In the election of May 30, 1959, the People's Action Party (headed by Lee Kuan Yew) won 43 seats in the assembly.

Education and Religion.—School enrollment, 1961: 399,470 (over half the school-age population). Number of schools (with enrollments), 1960: 589 primary (289,172); 121 secondary (58,710); 5 technical (1,345); 1 teacher-training (2,327); 3 higher (5,808). Principal religions: Buddhism, Confucianism, and Taoism (adherents are the Chinese); Islam (Malaysians and Pakistanis); and Hinduism (Indians).

Finance.—Government revenue, 1962 est.: M$386 million (M$397 million in 1961); expenditure, M$561 million (M$385 million in 1961). The Malayan dollar equals U.S.$0.3267. Expenditure included M$225 million for development and public works.

Transportation and Communications.—Singapore is the major port and warehouse of Southeast Asia. Cargo loadings, 1961: 6,622,000 tons (5,376,000 in 1960); unloadings, 11,940,000 (9,756,000 in 1960). A 16-mile railroad connects Singapore with Malaya. Roads aggregate 488 miles (1961). The international airport at Paya Lebor is used by Malayan Airways and 10 other airlines. Other communications data for 1961: passenger cars, 77,500; commercial vehicles, 15,800; telephones, 59,722 (1960); licensed radio receivers 142,000 (1960).

Economy.—Singapore is the world's largest rubber market and pepper trading center. Chief industries are rubber processing, shipbuilding and repairing, marine engineering, oil refining, tin smelting, and iron and steel rolling. Production (tons, 1960): coconut oil, 24,539; remilled rubber, 126,700; sago palm products, 21,408; rubber footwear, 1,789,200 pairs; rubber compound, 645,100 pounds; soya bean sauce, 2,324,800 gallons. Agricultural output (tons, 1960): mixed vegetables, 20,320; root crops, 10,260; and 14 million coconuts. In 1961, tourism accounted for 256,000 visitors (225,000 in 1960).

Foreign Trade.—The chief shipping and receiving center for Malaya, Singapore handles about 40% of Malaya's imports and 30% of her exports. Total exports, 1961: M$3,314 million; imports, M$3,964 million. Chief exports (excluding Malaya, 1961): rubber, M$1,120.8 million; mineral fuels, M$308 million. Chief imports (excluding Malaya, 1961): food, M$642 million; crude rubber, M$502 million; mineral fuels, M$574 million. Chief suppliers: Indonesia, Malaya, and Great Britain; chief customers: Malaya, Great Britain, and the United States.

Events, 1962.—Singapore voted in a referendum on September 1 to join the projected federation of Malaya, Sarawak, Brunei, and North Borneo, scheduled to be established in 1963 as the Federation of Malaysia (see MALAYA). The results of the voting for three alternative proposals were as follows: for federation with retention by Singapore of control over matters of education and labor, 397,626; for unconditional federation, 9,419; for federation on unspecified terms no less favorable than those to be granted to British Borneo, 7,911. Some 144,000 blank ballots were cast by about 25% of the electorate after the left-wing Socialist Front called for the casting of blank votes as a protest to the alternatives of the referendum. The ruling People's Action Party energetically supported federation with the self-rule guarantees.

The uncertainty surrounding the establishment of the Federation of Malaysia resulted in a considerable slowing down in private investment and development during the year.

J. L. L.

SKATING. See SPORTS, GAMES, AND SHOWS.
SKIING. See SPORTS, GAMES, AND SHOWS.
SKYBOLT MISSILE. See GREAT BRITAIN; MACMILLAN; MISSILES.

SMITHSONIAN INSTITUTION

During 1962 the Smithsonian Institution[1] continued its scientific investigations, chiefly in the fields of anthropology, astrophysics, biology, and geology. Several field expeditions were in progress. Construction work continued on the institution's $36 million Museum of History and Technology in Washington, D.C.

[1] The institution administers 12 bureaus supported partly or in whole by federal appropriations: the United States National Museum, Bureau of American Ethnology, Astrophysical Observatory, National Collection of Fine Arts, Freer Gallery of Art, National Air Museum, National Zoological Park, Canal Zone Biological Area, International Exchange Service, National Gallery of Art (with separate board of trustees), National Portrait Gallery, and National Cultural Center (with separate board of trustees).

The National Museum collections added 854,000 specimens during the year, bringing the total to 56 million. A newly modernized hall depicting the cultures of the Pacific Ocean areas and Asia was opened to the public. The National Gallery of Art received 1,437 accessions and held 17 special exhibits. The National Collection of Fine Arts sponsored 19 special exhibits; its traveling exhibition service circulated 27 new shows. The Freer Gallery of Art acquired several specimens of Oriental art. Among the accessions of the National Air Museum were the *Freedom 7*, a Mercury capsule used in the first United States manned suborbital space flight.

At the National Zoological Park, a male lowland gorilla was born in 1962, the second gorilla born in captivity in the United States and the fourth in the world. The park also added 1,340 animals to its collection, including a female African rhinoceros, two female Masai giraffes, an Indian elephant, an East African golden cat, and two king cobras.

Anthropologists on the staff of the Bureau of American Ethnology continued their researches and publication in archaeology and ethnology. The work of the Smithsonian Astrophysical Observatory (with headquarters at Cambridge, Mass.) continued along several principal lines—solar astrophysics, meteors and meteorites, artificial satellites, geophysics, and space science. Studies of plants, birds, insects, fishes, limnology, ecology, and photography were carried on at the Canal Zone Biological Area, Barro Colorado Island, Panama.

Eighty-five publications appeared under the Smithsonian imprint in 1962, including *Folk Religion in Southwest China* by David C. Graham, *Dimensional Relations for Flying Animals* by Crawford H. Greenewalt, *European Military Museums* by J. Lee Westrate, *Robber Flies of the World* by Frank M. Hull, *John Baptist Jackson: 18th Century Master of the Color Woodcut* by Jacob Kainen, *Mohave Ethnopsychiatry and Suicide* by George Devereux, and *Seneca Thanksgiving Rituals* by Wallace L. Chafe.

PAUL H. OEHSER,
Chief, Editorial and Publications Division.

SOCCER. See SPORTS, GAMES, AND SHOWS.

SOCIAL SECURITY

The Social Security Administration is a constituent unit of the Department of Health, Education, and Welfare. Before Jan. 28, 1963, the agency had federal responsibility for three major programs under the Social Security Act: old-age, survivors, and disability insurance; public assistance; and health and welfare services for children (as well as research on child life). It also administered the Federal Credit Union Act. As of Jan. 28, 1963, the secretary of health, education, and welfare set up a new unit—the Welfare Administration, headed by a commissioner of welfare—to direct the department's programs (chiefly federal-state in nature) for the welfare of children, the aging, and families and individuals in need. Transferred from the Social Security Administration to the Welfare Administration were the Children's Bureau, the Bureau of Family Services, and the Cuban refugee program. The Juvenile Delinquency and Youth Development Staff and the Staff on Aging, which formerly reported directly to the secretary, are also the responsibility of the commissioner of welfare. (Another Social Security Act program—federal-state unemployment insurance—is the responsibility of the Department of Labor.)

The Social Security Administration directs the federal program of old-age, survivors, and disability insurance; it studies methods of providing economic security and related subjects; and it also administers the Federal Credit Union Act.

Study of the welfare provisions of the Social Security Act and concern with proposals to help the aged pay their medical care bills marked much of the legislative activity in 1962. No new provisions to take care of the problems of the aged and their medical care costs were passed, but significant revisions of the Social Security Act's public assistance provisions, along with changes in the provisions relating to child welfare services, were made in the Public Welfare Amendments of 1962, signed July 25.

The Migration and Refugee Assistance Act, signed June 28, authorizes a program of aid to Cuban refugees to continue the activities carried on under 1961 presidential directives to help these Cubans on their migration to the United States with their problems of health, education, training, employment, and resettlement, and to provide financial aid when necessary.

On March 15 the president signed the Manpower Development and Training Act, which set up a 3-year program to make maximum use of the nation's manpower and upgrade the skills of the unemployed and those who cannot qualify for full-time jobs without training. The law authorizes federal funds for manpower research, for job training in educational institutions and on-the-job facilities, and, in certain circumstances, for subsistence allowances during the training period.

In October 1962 the Civil Service Retirement Act was amended to provide for automatic increases in retirement benefits for federal employees, related to rises in the cost of living.

Old-Age, Survivors, and Disability Insurance.—During 1962, employers and employees paid contributions at a 3⅛% rate, and the self-employed at 4.7%. The rates for 1963 are 3⅝% for employers and employees, and 5.4% for the self-employed. In the year ended June 1962, about $13,669,000,000 was paid in monthly benefits and lump-sum death payments, including $1,011,000,000 for disabled workers and their dependents. Nearly 17,300,000 beneficiaries were on the rolls in June 1962. The average retired worker's benefit (not counting payments to his dependents) was $76.03; for disabled workers the average was $89.73.

Public Assistance.—The federal government makes grants to help the states finance their assistance programs for four groups of needy persons—families with dependent children, the blind, the permanently and totally disabled, and the aged. Another type of aid is given to the aged whose need is related to their inability to take care of their medical care costs.

The 1962 amendments to the public assistance provisions of the Social Security Act put new emphasis on rehabilitative and other social services to prevent or reduce dependency. The major amendments include:

(1) Revising the formula for federal sharing in state expenditures for the needy aged, the blind, and the disabled so that states will be able to raise monthly payments by about $4.

(2) Increasing to 75%, under certain conditions, the amount of federal sharing in administrative costs of certain social services to the needy and staff training activities, instead of the 50% for all other administrative costs.

(3) Changing the name of the program for needy children to "aid to families with dependent children."

(4) Extending for 5 years aid to needy children of unemployed parents, and making permanent aid to certain children receiving foster-home care.

(5) Permitting, in aid to families with dependent children, federal sharing in: (a) payments to a second parent in specified circumstances; (b) "protective" payments, under certain conditions, to another person concerned with a needy child if the relative cannot manage the funds to the child's best interests; and (c) payments for work done by a relative of a needy child in states with

community work and training programs for assistance families.

During 1962, federal funds were being used for old-age assistance, aid to the blind, and aid to families with dependent children in all states, the District of Columbia, Guam, Puerto Rico, and the Virgin Islands. Programs of aid to the permanently and totally disabled were operating in 51 jurisdictions at the end of the year. In July 1962, payments under medical assistance for the aged were being made in 24 states, Guam, Puerto Rico, and the Virgin Islands.

In July 1962, old-age assistance payments were going to 2,233,400 persons; payments were being made for 102,900 persons through medical assistance for the aged; about 100,200 needy blind persons were receiving aid; and there were 419,000 recipients of aid to the permanently and totally disabled. Recipients of aid to dependent children totaled 3,640,900, 45,400 of whom were in families with unemployed parents. Average payments in July 1962 were $73.15 per needy aged person; $205.36 for the medically indigent aged; $31.40 per individual getting aid to dependent children; $77.49 for the needy blind; and $71.43 for the permanently and totally disabled.

State and local governments administer the "general" assistance program without federal funds. In July 1961 about 798,000 persons were getting this type of aid; the average payment was $27.61.

Maternal and Child Health and Child Welfare.—The Social Security Act authorizes federal grants to states to extend and improve health and welfare services for mothers and children.

In the year ended June 1961, federal grants to the states for maternal and child health services totaled $23,852,000. Grants amounting to $24,092,000 were made for services for crippled children. The states received grants totaling $18,646,000 for child welfare services.

The 1962 amendments relating to child welfare services: (1) increased the authorized amount for appropriation from $25 million to $30 million for the fiscal year 1963 and, by gradual steps, to $50 million for fiscal year 1969 and thereafter; (2) provided for coordinating the services, beginning July 1963, with those under aid to families with dependent children; (3) earmarked part of the program appropriation for day-care services and set specific requirements for such services under state plans; (4) authorized grants to institutions of higher learning for projects for training child welfare personnel; and (5) clarified the definition of child welfare services.

Federal Credit Unions.—The Social Security Administration is responsible for the chartering and supervision of credit unions organized under the Federal Credit Union Act. These are cooperative organizations, designed to promote thrift among their members and create a source of loans for provident and productive purposes. Membership is limited to groups having a common bond of association, occupation, or residence. On June 30, 1962, about 10,500 of these credit unions were in operation; their total membership was about 6,700,000, and their total assets amounted to $3,184,000,000.

(See also Old Age; Children and Youth; Social Welfare; and the Index entry, *Social Welfare.*)

Robert M. Ball,
Commissioner, Social Security Administration.

SOCIAL WELFARE

The Congress of the United States adopted the Public Welfare Amendments of 1962, containing the most extensive changes in the Social Security Act since its enactment in 1935. The most significant provisions of the law (Public Law 87–543), signed by President Kennedy on July 25, 1962, were designed to emphasize the preventive and rehabilitative aspects of the welfare program, to improve administration, and to fill gaps in existing legislation.

Amendment Provisions.—The provision for aid to dependent children of families in need due to the unemployment of a parent was extended to June 30, 1967, and assistance to dependent children in foster family care was made a permanent part of the program. Heretofore only one parent of dependent children could be included in the grant. Under the 1962 amendments it will be possible to include the second parent living in the home, if incapacitated or unemployed.

Further amendment provisions set up requirements under which protective payments may be made to guarantee that funds are used for the benefit of the children. Such payments may be extended to a maximum of 5 per cent of other recipients under the program.

Under carefully defined conditions, federal financial participation in aid to families with dependent children is authorized when relatives with whom a child is living engage in community work and training programs directed toward conservation of skill and development of new skills.

The 1962 amendments emphasize incentives for families to help themselves, through a requirement that all expenses involved in employment be taken into consideration in determining the public assistance grant, liberalized provisions for disregarding earned income in aid to the blind, and an optional provision for disregarding the first $10 of earned income of old-age assistance recipients plus one half of the remainder of their earned income up to $50 a month. Furthermore, states may make provision for setting aside all or a portion of a family's income for identifiable future needs of a dependent child, with particular attention to plans for education, special training, and employment.

The matching ratios for old-age assistance, aid to the permanently and totally disabled, and aid to the blind were liberalized so that, instead of the former federal participation in 80 per cent of the first $31 of the grant, the federal share, effective Oct. 1, 1962, was increased to $29 of the first $35 of the grant, with the average monthly maximum increased from $66 to $70, exclusive of vendor payments for medical care. A new matching formula was developed whereby the federal government will pay 75 per cent of the costs of staff training and for services in selected public assistance cases or the purchase of services under certain circumstances from other state public agencies.

The objective of combining categories on an optional basis was partially met through the addition of a new Title XVI to the Social Security Act, whereby a state may combine its categories of assistance for the aged, blind, and disabled, and medical assistance for the aged. Some changes will be necessary in state plan requirements. Additional federal funds for vendor payments for medical care for recipients of old-age assistance may be extended to the blind and disabled.

Special provision is made for demonstration projects in order to encourage experimentation in more effective administration and in service programs. Such projects may be initiated in any administrative jurisdiction. In both public assistance and child welfare, the new amendments emphasize training of personnel with provision for grants to institutions of higher learning and for various types of traineeships.

A clarified definition of child welfare services was adopted, and the amendments increase the authorization for grants to the states for these services by $5 million increments, from $25 million for the fiscal year 1962–63 to $50 million per year beginning in 1968–69. Recognizing the growing problem of proper care for young children

of working mothers, special provision was made for earmarked funds to be allotted among the states under the child welfare services plan to provide for day care services.

Trends in Assistance Programs.—Accompanied by an increasing proportion of cases in which old-age assistance is supplementary to old-age insurance benefits, the number of recipients of old-age assistance decreased from 2,296,000 in June 1961 to 2,237,000 in June 1962. The average payment to these recipients, including vendor payments for medical care, increased from $67.85 in June 1961 to $72.55 in June 1962.

Reflecting continuing population growth and large areas of high unemployment, the number of recipients of aid to dependent children increased from 3,383,000 in June 1961 to 3,693,000 in June 1962. During the year the average payment per individual, including vendor payments for medical care, continued its slow upward trend from $30.30 to $31.48.

For aid to the permanently and totally disabled, the case load increased from 384,000 in June 1961 to 417,000 in June 1962. The average grant, including vendor payments for medical care, rose from $68.19 to $72.06. With the increasing emphasis upon medical care costs, it is significant that in old-age assistance, $14.49 of the total payment for June 1962 was for medical care, while in aid to the permanently and totally disabled, payments for medical care averaged $15.58.

For aid to the blind, the case load continued its downward trend, dropping from 106,000 in June 1961 to 100,000 in June 1962. The average payment per case, including vendor payments for medical care, increased from $73.36 to $77.47. The general assistance case load showed the usual seasonal patterns. Supported entirely from local and state funds without federal matching, 406,000 cases were reported for June 1961 and 340,000 for June 1962.

Only 15 states had adopted the new program of aid to dependent children of unemployed parents by June 1962. They reported a total of 51,843 families, including 188,349 children, in the case load as of that month. A total of 13 states had adopted the new program of aid for dependent children in foster care, and reported 639 cases with 1,516 children as of June 1962.

Child Welfare.—One effect of the 1962 amendments is to emphasize inter-relationships between aid to families with dependent children and child welfare services, to the end that more effective services are provided for children in their own homes and for children who must be removed from their own homes, including increased attention to adequate day care facilities for children of working mothers. In 1961 an estimated 552,200 children were served by public and voluntary child welfare programs, with 354,400 served primarily by public agencies. (See also CHILDREN AND YOUTH.)

Services to the Aged.—Increasing attention is being given to specialized services needed by older citizens from all walks of life. Both the Department of Health, Education, and Welfare and national voluntary agencies are helping to direct increased attention to the needs of older people in such areas as living arrangements, recreational and educational opportunities, health care, protective services, and continued participation in community life. (See also OLD AGE.)

Medical Care.—State and local departments of public welfare are rapidly increasing the total amount of vendor payments for medical care both for older persons and for those under 65 years of age. The total amount expended for vendor payments under the public assistance and general assistance programs in June 1962 was $74 million, as compared with $56 million in June 1961.

UPI

Training for an overseas assignment, a Peace Corps volunteer works in a New York City children's day care center.

As of June 1962, 27 jurisdictions reported programs of medical assistance for the aged, serving over 101,000 persons. More than two thirds of the persons under these programs, authorized by the 1960 Kerr-Mills legislation, are in California, Massachusetts, New York, and West Virginia.

(See also SOCIAL SECURITY and articles on the states and countries.)

ELLEN WINSTON,
Commissioner, North Carolina State Board of Public Welfare.

SOCIALISM

The chief strength of the democratic Socialist movement continued in 1962 to reside in Europe, although many powerful Socialist parties existed on other continents.

The Socialist International.—The main coordinating agency for the world movement was the Socialist International, with affiliated parties in over 40 countries. On June 2–4, 1962, the Council of the Socialist International met in Oslo, Norway, and adopted a new declaration of principles entitled *The World Today—A Socialist Perspective.* The declaration, which reaffirmed the principles set forth in the Frankfurt Declaration of 1951, summarized the principles of its member parties, with their 11 million members and electorate of 70 million, as follows:

> We Democratic Socialists proclaim our conviction that the ultimate aim of political activity is the fullest development of every human personality; that liberty and democratic self-government are precious rights which must not be surrendered; that every individual is entitled to equal status, consideration, and opportunity; that discrimination on grounds of race, color, nationality, creed, or sex must be opposed; that the community must ensure that material resources are used for the common good rather than the enrichment of the few; above all, that freedom and equality and prosperity are not alternatives between which the people must choose but ideals that can be achieved and enjoyed together.

The declaration repudiated both what it termed the "soulless tyranny of Communism and the wasteful injustice of capitalism." It envisaged a democratic, flexible Socialist economy in which private, cooperative, and public industries each had their place. To achieve a fair distribution of wealth, it maintained, society requires "an extension of public ownership and control and other legislation to curb private monopolies, to effect a radical reform of the tax system, and to protect consumers."

In the international field, the declaration recognized "the right of all nations to self-determina-

tion"; declared that industrialized countries should provide at least 1% of their national income for grant aid programs; urged the strengthening of the United Nations, with world government as the ultimate goal; and warned the developing nations against communism. "Although the Communist countries use the strongest anticolonial language," the declaration stated, "they have enslaved scores of millions of people. Misusing the word 'socialism,' their one-party dictatorships represent, in fact, tyranny, denying those freedoms of speech, religion, criticism, voluntary organization, and contacts with the outside world which are the essence of a democratic society."

The Council at the Oslo meeting reiterated the Socialists' desire to achieve general and multilateral disarmament with adequate means of international inspection and control. It also denounced recent cases of suppression of human rights in developed and underdeveloped countries.

Approving in principle the Common Market, it urged the European Economic Community (EEC) to admit to membership Israel and the European countries that had submitted applications. It also recorded the hope that the EEC would become "what it was meant to be—an economic community of neighbors, avoiding high tariffs and other restrictive commercial practices, deeply conscious of their wider obligations to the world in general, particularly to the developing nations, anxious to see expanding economic development and world trade, and progressive, radical, and fundamentally international in its outlook."

Europe.—In Europe, Socialist and labor parties in 1962 remained in control of the governments in Denmark, Norway, and Sweden; were represented in the cabinets in Austria, Belgium, Italy, and Switzerland; constituted the chief opposition parties in Great Britain, France, the Netherlands, and West Germany; and were influential political forces in Finland and elsewhere. They registered considerable gains in the municipal and provincial elections in Great Britain, the Netherlands, and West Germany, and held their own in Denmark.

In the parliamentary elections in *France,* the Socialists increased their representation in the National Assembly from 41 to 64. In *Austria* they elected 76 members to the lower chamber, a loss of 2. In *Finland* the Social Democratic Party won 39 seats in the 200-seat Federal Parliament, a gain of 2, while the extreme left-wing Socialists lost 12 seats, retaining only 2. In *Great Britain,* the Labour Party during the year opposed Britain's entrance into the EEC unless further concessions were made. In *Italy,* the left-wing Socialists continued their support of Premier Amintore Fanfani's government, and Social Democrats were prominent members of the cabinet. In *Denmark,* on September 3, Jens Otto Krag succeeded Viggo Kampmann, who resigned the premiership because of illness.

Israel.—The Mapai (Socialist) Party continued to be the strongest party in the coalition government headed by David Ben-Gurion.

Australia–New Zealand.—Labour parties were the chief opposition in 1962. The New South Wales Labour Party remained the government party following the March elections, in which it won 59 out of 95 parliamentary seats.

Asia.—In *Japan* the Socialist Party won 66 seats in the Senate out of 250, a decrease of 2, while the more moderate Social Democratic Party won 11 seats, a loss of 5. In *India,* the Praja-Socialist Party won 12 seats in Parliament, a loss of 7; the party continued to cooperate with the Congress Party in the Kerala coalition government. In *Burma,* U Nu, Socialist premier, was ousted from office by a military group which, however, on assuming power, promised to adhere to the principles of socialism. In *Nepal, Indonesia,* and *South Korea,* Socialist parties were either suppressed or greatly restricted in their activities.

Africa.—Socialists throughout Africa were active throughout the year in independence movements. A Social Democratic movement continued in control of the *Malagasy Republic,* while leaders of many of the new nations maintained that their goal was an African Socialist commonwealth.

Western Hemisphere.—The most active Socialist movement on the North American continent was in *Canada.* The New Democratic Party (NDP), formed by the Cooperative Commonwealth Federation (CCF) and the Canadian Labour Congress, entered its first federal election, winning 19 seats in Parliament, an increase of 11 over the former representation of the CCF. In Saskatchewan, the NDP, in control of the government, fought bitterly against the province's medical society over its plan to pay doctors' fees out of the provincial treasury. While modifying the law, the government won its main objective.

In the *United States,* the Socialist Party–Social Democratic Federation, a member of the Socialist International, at its June conference, urged vigorous social planning to deal with unemployment, the effects of automation, and "sprawling" urban development. It criticized the government's support of specific reactionary regimes abroad and urged disengagement and the end of nuclear testing.

Socialists in Latin America supported progressive regimes in *Costa Rica, Venezuela,* and *Puerto Rico;* they denounced the dictatorship in *Cuba* and the forced exclusion of Victor Raúl Haya de la Torre by a military group from the presidency of *Peru.* In *Argentina,* Socialist Alfredo Palacios resigned from the Senate in protest against the president's decree recessing Parliament for at least a year, while the country's political parties were being reorganized.

A moderate Socialist, Hermes Lima, was appointed premier of *Brazil,* while Socialist and Labour parties in the *West Indies* continued to be dominant forces in the government.

In *British Guiana,* the Socialist movement was divided, with Premier Cheddi Jagan, left-wing Socialist, urging immediate independence for the island, and the People's National Congress, moderate Socialists, urging the welding of racial groups before independence.

(See also articles on the countries mentioned in this article.)

HARRY W. LAIDLER, *Executive Director Emeritus, League for Industrial Democracy; and* NORMAN THOMAS, *Chairman, Post-War World Council.*

SOCIETIES AND ORGANIZATIONS

The following pages contain a selected list of some of the principal associations, societies, foundations, and trusts of the United States and Canada. In each case, the information has been supplied by the organization concerned. Additional related material may be found in the articles on the principal government agencies, religious bodies, etc.

Adult Education Association of the United States of America.—Membership: 5,400. Publications: *Adult Education* (quarterly); *Adult Leadership* (monthly). Annual meeting: Detroit, Mich., Oct. 30–Nov. 1, 1962. President, Robert Sharer; exec. director, Glenn Jensen. Headquarters: 743 N. Wabash Ave., Chicago 11, Ill.

Alcoholics Anonymous (The General Service Board of AA, Inc.)—Membership: approx. 300,000 in over 9,000 affiliated international groups. Publications: *Alcoholics Anonymous; AA Comes of Age; Twelve Steps and Twelve Traditions; AA Grapevine* (monthly). Address: P.O. Box 459, Grand Central Station, New York 17, N.Y.

American Academy of Arts and Letters.—Membership limited to 50. Publications: catalogues of art and manuscript exhibitions; *Proceedings,* 2d Series, No. 12; *Yearbook,* 1962. On May 24, 1962, a public ceremonial was given jointly with the National Institute of Arts and Letters. (For details, see *National Institute of Arts and Letters* entry below.) The annual meeting is held in December in New York City. President, Douglas Moore; secretary, John Hersey. Headquarters: 633 West 155th St., New York 32, N.Y.

American Academy of Arts and Sciences.—Membership: 1,600. Endowment: $1 million. Publications: *Proceedings; Daedalus; Memoirs; Bulletin.* President, Hudson Hoagland; secretary, John R. Raper. Annual meeting is held the 2d Wednesday in May, in Boston. Headquarters: 280 Newton St., Brookline Station, Boston 46, Mass.

American Academy of Political and Social Science.—Membership (Jan. 1, 1962): 15,345. Publications (1962): *Crime and the American Penal System; Automation; Unconventional Warfare; American Foreign Policy Challenged; The Ethics of Business Enterprise; Liberalism and Conservatism in American Politics.* The 66th annual meeting was held in Philadelphia, April 13–14, 1962. President, James C. Charlesworth; editor, Thorsten Sellin. Headquarters: 3937 Chestnut St., Philadelphia 4, Pa.

American Association for the Advancement of Science.—Membership: 72,000. There are 298 affiliated societies with a combined membership of more than 7 million, not excluding duplicates. Endowment: $552,300. Publications: *Science* (weekly); *AAAS Bulletin* (quarterly); AAAS symposium volumes, 1962: *Fundamentals of Keratinization, Great Lakes Basin, Spermatozoan Motility.* Annual meeting and exposition of science and industry, Philadelphia, Pa., Dec. 26–30, 1962. President, Paul Gross; exec. officer, Dael Wolfle. Headquarters: 1515 Massachusetts Ave. NW, Washington 5, D.C.

American Association of University Professors.—Membership: 52,000 faculty members distributed among 1,500 institutions in the U.S. and abroad; 734 local chapters. Forty-five state and regional conferences facilitate the association's work. Publication: *AAUP Bulletin* (quarterly). Annual meeting: San Francisco, Calif., April 26–27, 1962. President, Fritz Machlup; gen. secretary, William P. Fidler. Headquarters: 1785 Massachusetts Ave. NW, Washington 6, D.C.

American Association of University Women.—Membership: 150,000 in 1,500 branches. Fellowship endowment: $3,500,000. Publication: *Journal* (issued Oct., Jan., March, and May). Biennial meeting—June 1963, Denver, Colo. President, Dr. Anna L. Rose Hawkes; gen. director, Dr. Pauline Tompkins. Headquarters: 2401 Virginia Ave. NW, Washington 7, D.C.

American Automobile Association.—Membership: over 7,500,000 in 746 member organizations and branches. Publications include *Sportsmanlike Driving* (4th ed.). Annual meeting: Detroit, Mich., Oct. 9–10, 1962. President, George F. Kachlein, Jr.; secretary, William B. Spencer. Headquarters: 1712 G St. NW, Washington 6, D.C.

American Bankers Association.—Membership: 17,582 banks and branches. Publication: *Banking* (monthly). The 88th annual convention was held in Atlantic City, N.J., Sept. 23–26, 1962. President, M. Monroe Kimbrel; vice pres., William F. Kelly; treas., J. Carlisle Rogers. Headquarters: 12 East 36th St., New York 16, N.Y.

American Bar Association.—Membership: 112,000. Publications: *American Bar Association Journal* (monthly); *American Bar NEWS* (monthly); *Annual Report;* numerous specialized manuals. Eighty-fifth annual meeting: San Francisco, Calif., Aug. 6–10, 1962. President, Sylvester C. Smith, Jr.; secretary, Joseph D. Calhoun. Headquarters: 1155 East 60th St. Chicago 37, Ill.

American Bible Society.—Membership: approx. 400,000. Publication: *Bible Society Record* (monthly). Annual meeting: New York City, May 10, 1962; May 9, 1963. President, Everett Smith; exec. secretary, Robert T. Taylor. Headquarters: 450 Park Ave., New York 22, N.Y.

American Book Publishers Council, Inc.—Membership: 171 publishing firms. Annual meeting: Skytop, Pa., April 24–27, 1962. President, William E. Spaulding; managing director, Dan Lacy. Headquarters: 58 West 40th St., New York 18, N.Y.

American Cancer Society, Inc.—Membership: 192 persons; 59 chartered Divisions. Publications: *Cancer; Cancer News; CA* (a journal for clinicians); *Annual Report.* Annual meeting: New York City, Oct. 22–26, 1962. President, I. S. Ravdin, M.D.; secretary, Charles R. Ebersol. Headquarters: 521 West 57th St., New York 19, N.Y.

American Chemical Society.—Membership: 95,000. Publications: *Journal of The American Chemical Society* (semimonthly); *Chemical and Engineering News* (weekly); *Analytical Chemistry* (monthly); *Industrial and Engineering Chemistry* (monthly, with quarterly supplements); *Biochemistry; Inorganic Chemistry; Chemistry;* Chemical Abstracts Service; Chemical Reviews; Journals of Agricultural and Food Chemistry, Chemical Documentation, Chemical and Engineering Data, Medicinal Chemistry, Organic Chemistry, Physical Chemistry. Meetings, 1962: Washington, D.C., March 20–29; Atlantic City, N.J., Sept. 9–14. Meetings, 1963: Cincinnati, Ohio, Jan. 13–18; Los Angeles, Calif., March 31–April 5; New York City, Sept. 8–13. President, Henry Eyring; exec. secretary, Alden H. Emery. Headquarters: 1155 16th St. NW, Washington 6, D.C.

American Civil Liberties Union.—Membership: 60,000, including that of 28 affiliates. Publications: *Civil Liberties;* various pamphlets. A biennial conference (June 22–24, 1962) is held in New York City and other major cities. Chairman, Ernest Angell; exec. director, John de J. Pemberton, Jr. Headquarters: 156 Fifth Ave., New York 10, N.Y.

American Council of Learned Societies.—Membership: 31 professional societies. Publications (1962): *Annual Report; ACLS Newsletter.* Annual meeting: Washington, D.C., Jan. 17–19, 1963. Chairman of Board of Directors, Robert M. Lumiansky; president, Frederick Burkhardt. Headquarters: 345 East 46th St., New York 17, N.Y.

American Council on Education.—Membership: 146 organizations; 1,085 educational institutions, school systems, and departments of education. Annual meeting: Chicago, Ill., Oct. 3–5, 1962; Washington, D.C., Oct. 2–4, 1963. Publications: *The Educational Record; Higher Education and National Affairs.* President, Logan Wilson; secretary, Byron K. Trippet. Headquarters: 1785 Massachusetts Ave. NW, Washington 6, D.C.

American Dental Association.—Membership (1962): 98,842 in 54 state and 443 local societies. Publications: *ADA Newsletter* (biweekly); *The Journal of the American Dental Association* and *Dental Abstracts* (monthlies); *Journal of Oral Surgery, Anesthesia and Hospital Dental Service* (bimonthly); *Index to Dental Literature* (quarterly and annual); *American Dental Directory* and *Accepted Dental Remedies* (annuals). The 103d annual session: Miami Beach, Fla., Oct. 29–Nov. 1, 1962. President, Dr. Gerald D. Timmons; secretary, Dr. Harold Hillenbrand. Headquarters: 222 E. Superior St., Chicago 11, Ill.

American Economic Association.—Membership: 10,800; and 4,100 subscribers. Publications: *American Economic Review;* Papers and Proceedings of annual meetings; occasional monographs. Annual meeting: Pittsburgh, Pa., Dec. 27–29, 1962. President, Edward S. Mason; secretary, Harold F. Williamson. Headquarters: Northwestern University, Evanston, Ill.

American Farm Bureau Federation.—Membership: 1,600,994 families. Publication: *Nation's Agriculture.* Annual meeting: Atlanta, Ga., Dec. 10–13, 1962. President, Charles B. Shuman; secretary-treas., Roger Fleming. Headquarters: 1000 Merchandise Mart, Chicago 54, Ill.

American Federation of Labor and Congress of Industrial Organizations.—See the article, LABOR.

American Geographical Society.—Membership: 4,200. Publications: *Geographical Review* (quarterly); *Focus, Current Geographical Publications,* and *Soviet Geography: Review and Translation* (10 issues a year); various books and maps. Annual dinner-address: New York City, Dec. 6, 1962. President, Walter A. Wood; director, Charles B. Hitchcock. Headquarters: Broadway at 156th St., New York 32, N.Y.

American Geophysical Union.—Membership: 7,200 individuals; 73 organizations. Publications: *Journal of Geophysical Research* (monthly); *Transactions* (quarterly); Geophysical Monograph Series; English editions of the following Soviet geophysical publications—*Izvestiya* (monthly); *Geodesy and Aerophotography* (monthly); *Geomagnetism and Aeronomy* (bimonthly); *Soviet Hydrology: Selected Papers;* Oceanology sections of *Doklady* and *Trudy,* Marine Hydrophysical Inst. Annual meeting, held in Washington, D.C.: April 25–28, 1962; April 17–20, 1963. President, Thomas F. Malone; gen. secretary, A. Nelson Sayre; exec. secretary, Waldo E. Smith. Headquarters: 1515 Massachusetts Ave. NW, Washington 5, D.C.

American Heart Association, Inc.—Membership: 34,500; 55 state affiliates; 296 chapters. Funds contributed by public, 1961: $26,437,931. Publications: *Circulation* (monthly); *Circulation Research* (monthly); *Heart Bulletin; Modern Concepts of Cardiovascular Disease; Annual Report.* Annual meeting and scientific sessions: Cleveland, Ohio, Oct. 26–30, 1962. President, Dr. James V. Warren; secretary, Ross Reid. Headquarters: 44 East 23d St., New York 10, N.Y.

American Historical Association.—Membership: approx. 10,000. Publications: *American Historical Review; Annual Report* (including *Writings in American History*); annual prize volumes; and various studies for teachers. Annual meeting: Chicago, Ill., Dec. 28–30, 1962. President, Carl Bridenbaugh; exec. secretary, Boyd C. Shafer. Headquarters: 400 A St. SE, Washington 3, D.C.

American Hospital Association.—Membership (1962): 8,085 institutional; 5,562 personal. Publications: *Hospitals; Trustee* (journal for hospital governing boards); *Auxiliary Leader* (journal for hospital auxiliaries); *This Month at the American Hospital Association; This Month in Washington; Public Relations Newsletter.* Annual meeting: Chicago, Ill., Sept. 17–20, 1962. President, T. Stewart Hamilton, M.D.; director, Edwin L. Crosby, M.D. Headquarters: 840 N. Lake Shore Dr., Chicago 11, Ill.

American Institute of Architects.—Membership: 15,100 in 139 chapters; 14 state organizations. Publications: *Journal* (monthly); *Memo* (biweekly). Annual meeting: Dallas, Texas, May 7–11, 1962; Miami, Fla., May 6–10, 1963. President, Henry L. Wright, FAIA; exec. director, William H. Scheick, AIA; secretary, Clinton Gamble, FAIA. Headquarters: The Octagon, 1735 New York Ave. NW, Washington 6, D.C.

American Institute of Chemical Engineers.—Membership: 21,884. Publications: *Chemical Engineering Progress* (monthly); *A.I.Ch.E. Journal* (bimonthly); *International Chemical Engineering* (quarterly); various monographs and the *Symposium Series.* Four meetings are held each year. President, W. R. Marshall, Jr.; secretary, F. J. Van Antwerpen. Headquarters: 345 East 47th St., New York 17, N.Y.

American Institute of Mining, Metallurgical, and Petroleum Engineers.—Membership: 36,740. Publications: *Journal of Metals* (monthly); *Transactions of the Society of Mining Engineers* (quarterly); *Society of Petroleum Engineers Journal* (quarterly); *Transactions of the Metallurgical Society* (bimonthly); *Mining Engineering; Journal of Petroleum Technology.* Annual meeting: New York City, Feb. 18–22, 1962; Dallas, Texas, Feb. 24–28, 1963. President, Lloyd E. Elkins; gen. secretary, Ernest Kirkendall. Headquarters: 345 East 47th St., New York 17, N.Y.

American Legion, The.—Membership: 2,679,255 in 58 departments and 16,753 posts. Publications: *The American Legion Magazine* (monthly). Activities include child welfare work, and American Legion baseball program, a national high school oratorical contest, boy scout work, and citizenship training. Forty-fourth National Convention: Las Vegas, Nev., Oct. 5–11, 1962. Headquarters: 700 N. Pennsylvania St. (P.O. Box 1055), Indianapolis 6, Ind.

American Library Association.—See separate article under its own heading.

American Mathematical Society.—Membership: approx. 8,500 individuals; 224 institutions; 16 corporations. Publications: *Bulletin; Proceedings; Transactions; Math-Doklady; Chinese Mathematics-Acta; Mathematics of Computation; Colloquium* publications; reviews, surveys, memoirs, lectures, and translations of monographs. Annual meeting: Berkeley, Calif., Jan. 24–28, 1963. President, Deane Montgomery; secretary, J. W. Green. Headquarters: 190 Hope St., Providence 6, R.I.

American Medical Association.—Membership: 190,000 in 54 state and territorial associations. Publications: *Journal of the AMA* (weekly); *AMA News* (biweekly); *Today's Health* (monthly); ten monthly journals devoted to special fields of medicine; *Cumulated Index Medicus; Current Medical Terminology; AMA Directory;* various books, pamphlets, and reprints. Annual meeting: Chicago, Ill., June 24–28, 1962; Atlantic City, N.J., June 16–20, 1963. President, George M. Fister, M.D.; exec. vice pres., F.J.L. Blasingame, M.D. Headquarters: 535 N. Dearborn St., Chicago 10, Ill.

American Museum of Natural History.—Fifty-eight exhibitions areas interpret every aspect of the natural world. The Museum sponsors extensive research in its laboratories and field stations, and conducts an extensive educational program. Membership: 124,210. Publications: (Technical) *The Bulletin, Novitiates, Anthropological Papers,* Contributions of the American Museum-Hayden Planetarium; (Popular) *Natural History* (10 issues yearly), *Junior Natural History;* (Professional Journal) *Curator.* President, Alexander M. White; director, James A. Oliver. Address: Central Park West at 79th St., New York 24, N.Y.

American National Red Cross.—Membership: 45,000,000 adults and youth in 3,600 chapters. In 1961–62, the Red Cross, during its largest disaster operation, gave emergency care to approximately 420,700 persons and rehabilitation grants to nearly 17,600 families affected by Hurricane Carla; collected over 2,500,000 units of blood from volunteer donors; became the coordinating agency for providing blood and blood products to the Defense Department on request or in a national emergency; agreed to provide gamma globulin needed to protect Peace Corps members against hepatitis; gave first aid training to Peace Corps members at 16 colleges and universities; provided technical assistance to Red Cross societies in Ceylon, Liberia, Indonesia, Togo, the Congo, Somalia, and Tanganyika. Chairman, E. Roland Harriman; president, Alfred M. Gruenther. Headquarters: 17th and D Sts., NW, Washington 6, D.C.

American Newspaper Publishers Association.—Membership: 857 daily newspapers. Annual convention: New York City, April 23–26, 1962; New York City, April 22–25, 1963. President, Irwin Maier; gen. manager, Stanford Smith. Headquarters: 750 Third Ave., New York 17, N.Y.

American Nurses' Association.—Membership: 171,000, in eight sections according to area of practice. Publications: *The American Journal of Nursing* (monthly); *Facts About Nursing* (annual). Biennial convention: Detroit, Mich., May 14–18, 1962; Atlantic City, N.J., June 15–19, 1964. President, Mrs. Margaret B. Dolan, R.N.; exec. director, Mrs. Judith G. Whitaker, R.N. Headquarters: 10 Columbus Circle, New York 19, N.Y.

American Philosophical Association.—Membership: 1,881. Endowment: $10,000. Publication: *Proceedings and Addresses of the American Philosophical Association.* Meetings: Eastern Division—New York City, Dec. 27–29, 1962; Pacific Division—Berkeley, Calif., Dec. 27–29, 1962; Western Division—Columbus, Ohio, May 2–4, 1963. Chairman, William Frankena; secretary-treas., Lewis E. Hahn. Address: Washington University, St. Louis 30, Mo.

American Philosophical Society.—Membership: 500 American and 75 foreign members. Publications: *Proceedings; Transactions; Memoirs; Year Book.* During 1961, the society awarded 193 grants from the Penrose Fund totaling $190,358; 64 grants totaling $51,972 from the Johnson Fund; and 3 fellowships totaling $25,000 from the Daland Fund. Two meetings are held annually, in April and November, in the historic hall on Independence Square. President, Henry Allen Moe; exec. officer, George W. Corner. Headquarters: 104 S. Fifth St., Philadelphia 6, Pa.

American Physical Society.—Membership: 20,000. Publications: *Physical Review; Reviews of Modern Physics; Bulletin.* Annual meeting: New York City, Jan. 24–27, 1962. President W. V. Houston; secretary, K. K. Darrow. Headquarters: 538–552 West 120th St., New York 27, N.Y.

American Political Science Association.—Membership: 9,000. Publication: *The American Political Science Review* (quarterly). Annual meeting: Washington, D.C., Sept. 5–8, 1962. President, Carl J. Friedrich; exec. director, Evron M. Kirkpatrick. Headquarters: 1726 Massachusetts Ave. NW, Washington 6, D.C. (See article, POLITICAL SCIENCE.)

American Psychiatric Association.—Membership: 12,890. Publications: *American Journal of Psychiatry; Newsletter* (monthlies). Annual meeting: St. Louis, Mo., May 6–10, 1963. President, C. H. Hardin Branch; secretary, Harvey J. Tompkins. Addresses: 1270 Avenue of the Americas, New York 20, N.Y.; 1700 18th St. NW, Washington 9, D.C.

American Psychological Association.—Membership: 20,700. Publications: *Contemporary Psychology* (monthly); *American Psychologist* (monthly); *Psychological Abstracts* (bimonthly); nine other journals in specialized fields. Annual meeting: St. Louis, Mo., Aug. 30–Sept. 5, 1962. President, Quinn McNemar; exec. officer, Arthur W. Brayfield. Headquarters: 1333 16th St., NW, Washington 6, D.C.

American Rocket Society.—Membership (1962): 21,000 individuals; 170 corporate members. There are 19 technical committees; 54 sections, which meet monthly; and 45 student chapters at universities and colleges. Publications: *ARS Journal* (monthly); *Astronautics* (monthly); Russian Supplement to *ARS Journal* (bimonthly); *Progress in Astronautics and Rocketry* (6–8 vols. a year); *ARS Roster* (annual). In 1962, the Society held nine specialist conferences, in addition to its annual meeting in Los Angeles, Calif., Nov. 13–18. Exec. secretary, James J. Harford. Headquarters: 500 Fifth Ave., New York 36, N.Y.

American Society for Microbiology (formerly SOCIETY OF AMERICAN BACTERIOLOGISTS).—Membership: 7,000. Publications: *Journal of Bacteriology; Applied Microbiology; Bacteriological Proceedings; Bacteriological News; Bacteriological Reviews; Antimicrobial Agents and Chemotherapy* (annual). Interscience Conference on Antimicrobial Agents and Chemotherapy in Washington, D.C., Oct. 28–30, 1963. Annual meeting: Cleveland, Ohio, May 5–9, 1963; President, Robert E. Starkey; secretary, Philipp Gerhardt. Headquarters: 115 Huron View Blvd., Ann Arbor, Mich.

American Society of Civil Engineers.—Membership: 48,549; 160 local sections and sub-units; 149 student chapters and sub-units; and 8 student clubs. Publications: *Civil Engineering* and *Proceedings* (monthlies); *Transactions* (annual); special manuals of engineering practice. Annual convention: Detroit, Mich., Oct. 8–14, 1962. President, Edmund Friedman; secretary, William H. Wisely. Headquarters: 345 East 47th St., New York 17, N.Y.

American Society of Composers, Authors, and Publishers.—Membership: 6,525 composers and authors; 1,991 publishers. The annual meeting is held in New York, N.Y., in March of each year. President, Stanley Adams; secretary, Deems Taylor. Headquarters: 575 Madison Ave., New York 22, N.Y.

American Society of Mechanical Engineers, The.—Membership: 50,000. Publications: *Mechanical Engineering* (monthly); *Applied Mechanics Reviews* (monthly); *Transactions* (issued as 5 quarterly journals, covering Applied Mechanics, Heat Transfer, Basic Engineering, Engineering for Power, and Engineering for Industry); *Mechanical Engineers' Catalog* (annual). Annual meeting: New York City, Nov. 26–30, 1962. President, C. H. Shumaker; exec. director and secretary, O. B. Schier, II. Headquarters: 345 East 47th St., New York 17, N.Y.

American Sociological Association.—Membership: 7,000; 9 regional and affiliated societies. Publications: *American Sociological Review* (bimonthly); *Sociometry; Employment Bulletin;* bulletins on applied sociology. Annual meeting: Washington, D.C., in conjunction with Fifth World Congress of Sociology, Sept. 2–8, 1962; Los Angeles, Calif., Aug. 26–29, 1963. President, Everett C. Hughes; secretary, Talcott Parsons; admin. officer, Janice H. Hopper. Headquarters: New York University, Washington Square, New York 3, N. Y. (See article, *Sociology.*)

American Youth Hostels, Inc.—Membership: 20,600. Publications: *AYH Hostel Guide and Handbook; National Sponsored Trips Travel Bulletin; AYH Newsletter.* President, A. L. Pranses; secretary, Lavinia Bierer; exec. director, Justin J. Cline. Headquarters: 14 West 8th St., New York 11, N.Y.

Art Institute of Chicago.—Membership: 25,430. AIC includes School of Art and Goodman Memorial Theatre and School of Drama. Principal exhibitions, 1962: Treasures of Versailles; 65th American and Chicago Exhibits; Thomas Eakins; Redon-Moreau-Bresdin; Jean Dubuffet Retrospective; Chinese Art Treasures; Last Works of Henri Matisse; Opening of new Morton Wing. Publications: *Art Institute of Chicago Quarterly;* exhibition catalogues. President, William McCormick Blair; director of fine arts, John Maxon; director of admin., Allan McNab. Address: Adams St. and Michigan Ave., Chicago 3, Ill.

Arthritis and Rheumatism Foundation.—Membership: 69 local chapters. Publications: *Manual for Nurses—Arthritis and Related Disorders; Manual for Arthritis Clinics; Primer on Rheumatic Diseases; Bulletin on Rheumatic Diseases.* For laymen: *It's Women Three to One; The Farmer Suffers Most; Questions on Arthritis; Action on Arthritis.* Annual meeting: New York City, Nov. 12, 1962. Chairman, Floyd B. Odlum; president, Gen. George C. Kenney; exec. dir., Thomas E. Freeman; medical dir., Dr. Ronald W. Lamont-Havers. Headquarters: 10 Columbus Circle, New York 19, N.Y.

Association of Better Business Bureaus, Inc.—Membership: 125 bureaus in the U.S., Puerto Rico, Canada, Israel, Mexico, and Venezuela, supported by more than 100,000 business firms. Annual meeting: New York City, May 21–25, 1962 (50th anniversary); Colorado Springs, Colo., May 26–31, 1963. President, Victor H. Nyborg. Headquarters: 405 Lexington Ave., New York 17, N.Y.

Association of the Junior Leagues of America, Inc.—Membership: 83,500 in 202 member leagues. Annual conference: French Lick, Ind., May 7–11, 1962; Colorado Springs, Colo., May 6–10, 1963. President, Barbara G. Johnson; admin., Mrs. Alexander S. Parr. Headquarters: The Waldorf-Astoria, New York 22, N.Y.

Benevolent and Protective Order of Elks.—Membership: 1,294,604 in 2,006 lodges. Publication: *The Elks Magazine.* Annual convention: Chicago, Ill., July 8–12, 1962. Grand Exalted Ruler, Lee A. Donaldson; grand secretary, Franklin J. Fitzpatrick. Headquarters: 2750 Lake View Ave., Chicago 14, Ill.

B'nai B'rith.—Membership: approx. 500,000 in 41 countries; 1,245 lodges, 900 women's chapters, and 1,552 youth affiliates in U.S. and Canada. Publications: *The National Jewish Monthly; The Shofar* (youth monthly); *Jewish Heritage* (quarterly). Triennial convention: Washington, D.C., May 12–16, 1962. President, Label A. Katz; exec. vice pres., Maurice Bisgyer. Headquarters: 1640 Rhode Island Ave. NW, Washington 6, D.C.

Boston Museum of Fine Arts.—Major Exhibitions (1962): Furniture of H. H. Richardson; The Civil War: The Artists' Record; Vincent van Gogh; Choice European Ceramics from Collection of R. Thornton Wilson; M. and M. Karolik Collection of American Drawings, Watercolors and Prints, 1800–1875. Outstanding Accessions (1962): *Time Unveiling Truth,* Tiepolo; *Madonna Immaculata,* 18th Century Schretzheim Faience; Egyptian Middle Kingdom Tile Façade from chapel at Kerma, Sudan; *Small Maternity,* Oscar Jespers; *Portrait of Willem Sandberg, Karel Appel; Double Portrait of Trudl,* Oscar Kokoschka. Publications: *Bulletin* (quarterly); *Calendar of Events* (monthly); *Annual Report.* President, Ralph Lowell; director, Perry T. Rathbone. Address: 465–479 Huntington Ave., Boston 15, Mass.

Boy Scouts of America.—Membership (Dec. 31, 1961): 5,210,294 in 529 scout councils. Publications: *Boy Scout Handbook; Explorer Manual;* three Cub Scout books; *Boy's Life* (monthly for boys); *Scouting* (monthly for leaders); various manuals and pamphlets. Annual meeting of national council: Portland, Ore., May 17–18, 1962; New York City, May 24, 25, 1963. President, Ellsworth H. Augustus; chief scout exec., Joseph A. Brunton, Jr. Headquarters: New Brunswick, N.J.

Boys' Clubs of America.—Membership: 552,000 in 601 clubs. Publications include *Program Service, The Boys' Club Bulletin, The Boys' Club Newsletter.* Annual convention: Philadelphia, Pa., May 6–10, 1962. Chairman, Herbert Hoover; president, Albert L. Cole; secretary, Grant G. Simmons; natl. dir., John M. Gleason. Headquarters: 771 First Ave., New York 17, N.Y.

Brookings Institution.—Devoted to research and education in economics and government, the institution also conducts a program of conferences on public affairs, and awards research fellowships in economics and political science and research professorships in economics and business administration. Publications (1962): *The Business Representative in Washington,* P. W. Cherington and R. L. Gillen; *Development of the Emerging Countries: An Agenda for Research,* R. E. Asher and Others; *Wage Policy and Long-Term Contracts,* J. W. Garbarino; *Competition and Monopoly: Legal and Economic Issues,* M. S. Massel; *Tax Credits and Intergovernmental Fiscal Relations,* J. A. Maxwell; *The United States and the Sino-Soviet Bloc in Southeast Asia,* O. E. Clubb, Jr.; *Effects of Federal Programs on Higher Education,* H. Orlans; *Federal Fiscal Policy in the Postwar Recessions,* W. Lewis; *Quiet Crisis in India: Economic Development and American Policy,* J. P. Lewis; *Federal Tax Treatment of State and Local Securities,* D. J. Ott and A. H. Meltzer. Acting Chairman of the board, Robert B. Smith; president, Robert D. Calkins; treas., Mildred Maroney; secretary, Edna M. Birkel. Headquarters: 1775 Massachusetts Ave. NW, Washington 6, D.C.

Camp Fire Girls.—Membership: 600,000. Publications: *The Camp Fire Girl* (5 issues a year); *Horizon Club Program Book; Outdoor Book; Handbook for Guardians of Camp Fire Girls; The Blue Bird Book; Book of the Camp Fire Girls.* Annual meeting: Cleveland, Ohio, Nov. 10–13, 1962. President, Leah Koester; natl. director, Martha F. Allen. Headquarters: 65 Worth St., New York 13, N.Y.

Canadian Library Association (Association Canadienne des Bibliothèques).—Membership: 1,700 persons and 590 organizations. Publications: *Canadian Index to Periodicals and Documentary Films* (monthly, with annual bound cumulation); *Canadian Library* (bimonthly); *Canadian Library Directory; The Library Trustee; Conference Proceedings.* Annual conference: Winnipeg, Man., June 24–29, 1963. President, Ruby Wallace; exec. director, Elizabeth Homer Morton. Headquarters: 63 Sparks St., Ottawa 4, Ont.

Canadian Medical Association.—Membership: approx. 16,000. Publication: *The Canadian Medical Association Journal.* Annual meeting: Winnipeg, Man., June 18–22, 1962; Toronto, Ont., June 10–14, 1963. President, Dr. M. R. MacCharles; gen. secretary, Dr. A. D. Kelly. Headquarters: 150 St. George St., Toronto 5, Ont.

CARE (Cooperative for American Relief Everywhere, Inc.).—Consists of 26 member agencies and works with other groups in overseas aid programs. MEDICO, which sends teams of American doctors and nurses abroad, merged with CARE in March 1962. By mid-1962, CARE had delivered $500 million worth of supplies in over 50 countries. President, Harold S. Miner; exec. director, Frank L. Goffio. Headquarters: 660 First Ave., New York 16, N.Y.

Carnegie Corporation of New York.—For the advancement and diffusion of knowledge and understanding among the people of the U.S. and certain areas of the British Commonwealth, excluding the United Kingdom, India, and Pakistan. Assets: approx. $227,000,000. Publications: *Carnegie Corporation of New York Quarterly; Annual Report.* President, John W. Gardner; secretary, Florence Anderson. Headquarters: 589 Fifth Ave., New York 17, N.Y.

Carnegie Endowment for International Peace.—Current programs include: study of the changing political role of military force in world affairs; analysis of the mutual impact of science and technology and foreign policy; publications dealing primarily with problems of international organization; a training program for young diplomats from newly independent countries; and a series of scholarly case studies on conflicts. Current assets: $24,118,150.71. Periodical: *International Conciliation* (5 issues yearly). Chairman of the board, Whitney North Seymour; president, Joseph E. Johnson; vice pres., Lawrence S. Finkelstein; treas., James M. Nicely; secretary, Lee B. Harris. Headquarters: United Nations Plaza at 46th St., New York 17, N.Y. European Center: 172 Route de Ferney, Grand-Saconnex, Geneva, Switzerland.

Carnegie Institution of Washington.—Integrated programs of fundamental research in the physical and biological sciences are carried on in the institution's 5 departments. Endowment: $32,000,000. President, Caryl P. Haskins; exec. officer, Edward A. Ackerman. Address: 1530 P St. NW, Washington 5, D.C.

Catholic Library Association.—Membership: 3,100. Publications: *Catholic Library World; Catholic Periodical Index; Guide to Catholic Literature; CLA Handbook and Membership Directory; Catholic Book List; Basic Reference Books for Catholic High School Libraries; Parish Library Manual; Workshop Manual for Elementary School Library Programs.* Annual convention: Pittsburgh, Pa., April 23–27, 1962; Los Angeles, Calif., April 16–19, 1963. President, Rev. Francis X. Canfield; exec. secretary, M. Richard Wilt. Headquarters: Villanova University, Villanova, Pa.

Catholic Welfare Conference, National.—See under *National.*

Chamber of Commerce of the United States.—Membership: More than 3,800 organizations representing more than 3,000,000 businessmen; more than 29,000 business firms and individuals. Publications: *Washington Report* (weekly); *Nation's Business* (monthly); special reports. The 50th annual meeting was held in Washington, D.C., April 29–May 2, 1962. President, H. Ladd Plumley; exec. vice pres., Arch N. Booth. Headquarters: 1615 H St., NW, Washington 6, D.C.

Chicago Natural History Museum.—During 1962, a new "Hall of Primitive Art" was opened containing objects from Africa and Oceanic areas of Melanesia, Polynesia, Micronesia, and Malaysia, and from Indian societies of North and South America. The "Civilization of China and Tibet" gallery is in process of being re-done, with the Chinese section two-thirds completed. Special exhibitions: *Tutankhamun Treasures,* displaying Egyptian antiquities from the tomb of Tutankhamun; *Art of Benin,* tracing the artistic and cultural life of the African kingdom from 1485 to the present, with specimens from the Fuller Collection. In the 1962 expeditions program, William and Janice Street and Douglas Lay went to Iran to study and collect Iranian mammals; Dr. Robert Inger and Dr. Bernard Greenberg traveled to Borneo to observe the breeding activity of frogs in tropical rainforests; Dr. Louis Williams went to Central America to research "The Flora of Guatemala"; and Dr. Paul Martin returned to the southwestern U.S. to continue the study of prehistoric Indians. Membership: 8,000. Director, E. Leland Webber. Address: Roosevelt Rd. and Lake Shore Dr., Chicago 5, Ill.

Christian Endeavor, International Society of.—See under *International.*

Cloisters, The.—See below, *Metropolitan Museum of Art.*

Commonwealth Fund, The.—Assets: $85,070,301. Appropriations for 1961–62: $5,503,054. Grants for medical education and community health activities amounted to $4,057,979; for medical research, $154,255; and for fellowships and awards in the health field, $751,000. During the academic year 1962–63, 71 Harkness Fellows were in residence in the U.S. An annual report is published in November. President, Malcolm P. Aldrich. Headquarters: 1 East 75th St., New York 21, N.Y.

Community Chests and Councils of America.—See under *United Community Funds.*

Council on Foreign Relations, Inc.—Membership: 1,385. Publications: *Foreign Affairs* (quarterly); *Political Handbook of the World* (annual); *United States in World Affairs* (annual); *Documents on American Foreign Relations* (annual); various books dealing with studies of foreign affairs. In furthering its purpose to study foreign policy problems and to increase information on and understanding of foreign policy issues, the Council grants numerous fellowships for research. President, Dr. Henry M. Wriston; secretary, Frank Altschul. Headquarters: 58 East 68th St., New York 21, N.Y.

Daughters of Isabella.—Uniting all Catholic women to promote their religious, social and intellectual growth. Membership: approx. 120,000. Biennial convention: Montreal, Que., Aug. 14–17, 1962; Washington, D.C., Aug. 10–14, 1964. President, Julia F. Maguire; secretary, Mary A. Barron. Headquarters: 375 Whitney Ave., New Haven 11, Conn.

Daughters of the American Revolution (National Society).—Membership: 185,146 in 2,861 chapters. Publi-

cations: *D.A.R. Magazine; D.A.R. Manual for Citizenship.* Annual conventions are held in Washington in April. President general, Mrs. Robert V. H. Duncan. Headquarters: 1776 D St. NW, Washington 6, D.C.

Elks, Benevolent and Protective Order of.—See under *Benevolent.*

Ford Foundation.—Primarily interested in the advancement of education, the Foundation also currently supports other activities in public affairs; urban and regional problems; youth development; problems of the aging; economics and business administration; humanities and the arts; science and engineering; population studies; international understanding, training, and research; and overseas development. Grants and other new program commitments in the fiscal year 1962 totaled $255,707,192. Assets (Sept. 30, 1962): $2.3 billion. Chairman, board of trustees, John J. McCloy; president, Henry T. Heald; secretary, Joseph M. McDaniel, Jr. Office: 477 Madison Ave., New York 22, N.Y.

Foreign Policy Association, Inc.—A nonpartisan, nonprofit educational organization exclusively concerned with nationwide citizen education in world affairs. Activities include community services and programs such as "Great Decisions," world affairs discussion program for local sponsorship. Publications: *Intercom* (7 issues yearly); *Headline Series* (bimonthly). President, Samuel P. Hayes; chairman of the board, Emile E. Soubry. Headquarters: 345 East 46th St., New York 17, N.Y.

4-H Clubs.—Enrollment: 2,285,592. The National 4-H Conference is held annually in April in Washington, D.C.; the National Congress, in November in Chicago, Ill. Administrator, Dr. E. T. York, Jr.; director, Mylo S. Downey. Address: Federal Extension Service, U.S. Dept. of Agriculture, Washington 25, D.C.

Franklin Institute.—Membership: 8,200. Publications: *Journal; Institute News; Laboratory Report.* The institute is presently concerned with the Benjamin Franklin Memorial; a science museum; Fels Planetarium; and 18 research laboratories engaged in work for private industry and the goverment. President, Wynn Laurence LePage; exec. vice pres., J. G. Richard Heckscher. Headquarters: 20th St. and Benjamin Franklin Pkwy., Philadelphia 3, Pa.

Freemasonry, Northern Masonic Jurisdiction, Supreme Council, 33°, Ancient Accepted Scottish Rite.—Membership: 493,786 in 15 states. Publications: *News-Letter* (ten issues a year); special reports; annual proceedings. Annual meeting: Philadelphia, Pa., Sept. 24–27, 1962. Sovereign grand commander, George E. Bushnell; grand secretary gen., Frank S. Merrill. Headquarters: 1117 Statler Bldg., Boston 16, Mass.

Freemasonry, Southern Jurisdiction, Supreme Council, 33°, Ancient and Accepted Scottish Rite of.—Membership: 500,000. Publication: *The New Age* (monthly). The Supreme Council meets biennially in Washington, D.C.: Oct. 21–25, 1963. Sovereign grand commander, Judge Luther A. Smith; grand secretary-general, Dr. Claud F. Young. Headquarters: House of the Temple, 1733 16th St. NW, Washington 9, D.C.

Future Farmers of America.—Membership: 388,000 in 50 state and territorial associations. Publications: *The National Future Farmer* (bimonthly); *Proceedings* of national conventions. Annual conventions are held at Kansas City, Mo., at the time of the American Royal Livestock Show—Oct. 10–12, 1962. President, Victor Butler; natl. advisor, A. W. Tenney; exec. secretary, Wm. Paul Gray. Headquarters: Office of Education, Dept. of Health, Education, and Welfare, Washington 25, D.C.

Garden Club of America.—Membership: approx. 11,000. Publication: *Bulletin* (bimonthly). Annual meeting: Lenox, Mass., June 25–29, 1962; Philadelphia, Pa., May 6–10, 1963. President, Mrs. Erastus Corning II; corresp. secretary, Mrs. Benjamin M. Belcher. Headquarters: 598 Madison Ave., New York 22, N.Y.

General Federation of Women's Clubs.—Membership: approx. 11,000,000 in 15,600 state, national, and international clubs and affiliates. Publication: *The Clubwoman* (monthly). Annual convention: Washington, D.C., June 25–29, 1962; Milwaukee, Wis., June 10–14, 1963. President, Mrs. Dexter Otis Arnold; exec. secretary, Mrs. Stephen J. Nicholas. Headquarters: 1734 N St. NW, Washington 6, D.C.

Geological Society of America.—Membership: 5,965. Endowment: $4,500,000. Publications: *Bulletin* (monthly); *Bibliography of Geology Exclusive of North America* (annual); *Treatises on Invertebrate Paleontology; Publications in Engineering Geology;* memoirs; special papers. Annual meeting: Houston, Texas, Nov. 12–14, 1962. Act. secretary, Agnes Creagh. Headquarters: 419 West 117th St., New York 27, N.Y.

Girl Scouts of the U.S.A.—One of 50 national associations comprising the World Association of Girl Guides and Girl Scouts. Membership: (Sept. 30, 1962) 3,435,103 girls and adults (Brownie Scouts, age 7–9, 1,350,853; Intermediate Scouts, age 10–13, 1,203,192; Senior Scouts, age 14–17, 133,672; Adults, 747,386). Publications include handbooks and leaders' guides for the three age levels, and two periodicals: *The American Girl* (monthly) and *The Girl Scout Leader* (9 issues yearly). Triennial meeting: Miami, Fla., Oct. 21–25, 1963. Honorary president, Mrs. John F. Kennedy; nat. pres., Mrs. Charles U. Culmer; natl. exec. director, Louise A. Wood. Headquarters: 830 Third Ave., New York 22, N.Y.

Grange, National.—See under *National.*

Guggenheim Memorial Foundation, John Simon.—Membership: 11. Endowment: $45,000,000. The foundation awarded 305 fellowships in 1962. President emeritus, Mrs. Simon Guggenheim; chairman of the board of trustees, Dale E. Sharp; president, Henry Allen Moe. Headquarters: 551 Fifth Ave., New York 17, N.Y.

Holy Name Society.—Membership: approx. 5,000,000. Publications: *Holy Name Journal* (monthly); various pamphlets. Director, Rev. Dennis B. McCarthy, O.P. Headquarters: 141 East 65th St., New York 21, N.Y.

Institute of Electrical and Electronics Engineers, Inc.—Formed in 1962 by a merger of the Institute of Radio Engineers and the American Institute of Electrical Engineers. Membership: approx. 145,000. Publications: *IEEE Proceedings; Electrical Engineering* (monthly). Annual convention: New York City, March 26–29, 1962. President, Dr. Ernst Weber; gen. manager, Donald G. Fink. Address: Box A, Lenox Hill Station, New York 21, N.Y.

International Council of Scientific Unions (Conseil International des Unions Scientifiques).—Membership: 49 national members; 14 scientific organizations. Endowment: $320,000. Publications: *ICSU Review; ICSU Year Book; A Layman's View of the International Council of Scientific Unions,* A. E. Decae. President, Sir Rudolph Peters (Cambridge); secretary, Prof. N. Herlofson (Stockholm). Headquarters: Paleis Noordeinde, The Hague, Netherlands.

International Labor Organization.—Specialized agency of the United Nations working to improve labor conditions and living standards everywhere. Membership: 103 countries. Publications: *Year Book of Labor Statistics;* numerous special studies. The 46th session of the International Labor Conference, held in June in Geneva, Switzerland, adopted the following: conventions concerning the equality of treatment of nationals and non-nationals in social security and the basic aims and standards of social policy; recommendations concerning the reduction of hours of work and vocational training; and a constitutional amendment increasing the membership of its governing body from 40 to 48. Other meetings included the Fifth Asian Regional Conference and the Second Session of the African Advisory Committee. In 1962, 886 experts were at work on technical assistance programs, and 543 fellowship awards were granted. Director-general; David A. Morse. Washington Branch Office: 917 15th St. NW, Washington 5, D.C.

International Society of Christian Endeavor.—Membership: 1,000,000 in 20,000 organizations. Publication: *The Christian Endeavor World.* Biennial convention: Washington, D.C., July 2–6, 1963. President, Bishop Clyde W. Meadows, D.D.; gen. secretary, Harold E. Westerhoff. Headquarters: 1221 E. Broad St., Columbus 16, Ohio.

International Political Science Association.—See the article, POLITICAL SCIENCE.

Kiwanis International.—Membership: approx. 262,000 in 5,100 clubs in the U.S., Canada, and Mexico. Publications: *The Kiwanis Magazine; The Keynoter* (for Key Club International); *Bulletin of Circle K International* (for college clubs). Annual convention: Denver, Colo., June 10–14, 1962; Atlantic City, N.J., June 30–July 4, 1963. President, Merle H. Tucker; secretary, O. E. Peterson; treas., Edward B. Moylan, Jr. Headquarters: 101 E. Erie St., Chicago 11, Ill.

Knights of Columbus.—Membership: 1,143,809. Publication: *Columbia* (monthly). From 1948 through 1960 a campaign has been conducted to correct misunderstanding of Catholic religion and thus promote better relations between peoples of different religious persuasions. Annual convention: Boston, Mass., Aug. 21–23, 1962. Supreme knight, Luke E. Hart; supreme secretary, Joseph F. Lamb. Headquarters: 71 Meadow St., New Haven 7, Conn.

Knights of Pythias.—Membership: approx. 250,000. Publication: *Pythian International.* Biennial convention: Chicago, Ill., Aug. 13–17, 1962; Washington, D.C., Aug. 17–21, 1964. Supreme chancellor, Joseph B. Hacker; supreme secretary, Melvin M. Ewen. Headquarters: 1202 Third St. SE, Cedar Rapids, Iowa.

League of Women Voters of the United States.—Membership: 132,000 in 1,150 local leagues. Publication: *The National Voter* (10 issues yearly). Biennial national convention: Minneapolis, Minn., April 30–May 4, 1962; Pittsburgh, Pa., April 20–25, 1964. President, Mrs. Robert J. Phillips; secretary, Mrs. William H. Wood. Headquarters: 1026 17th St. NW, Washington 6, D.C.

Lions International.—Membership: 660,000 in 16,600 clubs in 118 countries. Publications: *The Lion* (monthly) in Spanish, Portuguese, French, Italian, German, Finnish, Swedish, Farsi, Japanese, and English. Forty-fifth annual convention: Nice, France, June 20–23, 1962. President, Curtis D. Lovill; vice-presidents, Aubrey D. Green, Claude M. DeVorss, Walter H. Campbell. Headquarters: 209 N. Michigan Ave., Chicago 1, Ill.

Loyal Order of Moose.—Membership: 1,001,518 in 3,474 units, including women's auxiliary. Publication: *Moose Magazine.* Annual convention: Atlanta, Ga., and Moosehaven, Fla., July 1–5, 1962; 75th anniversary—Chicago and Mooseheart, Ill., June 16–20, 1963. Director general, Paul P. Schmitz; supreme secretary, Carl A. Weis. Headquarters: Mooseheart, Ill.

Masons.—See under *Freemasonry.*

Metropolitan Museum of Art, The.—The museum houses the largest collection of art in the Western Hemisphere, numbering some 365,000 works covering 5,000 years, representing ancient world cultures, as well as those

of the Far East, the Middle East, Europe, and America. Exhibition highlights, 1962: *Recent Additions to the Collection of European Drawings,* over 50 drawings marking the 1st anniversary of this newly established department; *Rowlandson's England,* a sardonic and candid portrait of late 18th century England, shown in the work of Thomas Rowlandson; *Drawings and Water Colors from British Collections,* more than 100 drawings and water colors by 78 English masters; *Archaeology—Exploring the Past,* an exhibition for children in the Junior Museum; *The Stone Guest,* dialogues between persons and statuary illustrated by prints; *Drawings by John Singleton Copley,* 19 recently acquired drawings.

The Cloisters, in Fort Tryon Park, is a branch of the museum devoted to medieval art. It incorporates within a modern structure sections from buildings such as a 12th century chapter house, five cloisters from medieval monasteries, a French Romanesque chapel, and the 12th century Romanesque apse from the Church of San Martín, Fuentidueña, Spain. Exhibited in this setting are sculptures, paintings, tapestries, stained glass, furniture, and metalwork of the Middle Ages. New acquisitions shown in 1962 included two 14th century Sienese panel paintings of the Crucifixion and Lamentation by the Master of the Codex of Saint George; two 12th century Spanish frescoes from San Baudelio de Berlanga; an armorial tapestry made for John Lord Dynham of England; and a late German woodcarving of the Crucifixion.

Publication: *The Metropolitan Museum of Art Bulletin* (10 issues yearly). President, Roland L. Redmond; director, James J. Rorimer; secretary, Dudley T. Easby, Jr.; treas., J. Kenneth Loughry; operating admin., Joseph V. Noble. Address: Fifth Ave. at 82d St., New York 28, N.Y.

Modern Language Association of America, The.—Membership: 14,000. Endowment: $160,000. Publications: PMLA (5 issues yearly); surveys and studies of modern foreign language enrollments in U.S. colleges and secondary schools. President, Prof. Kemp Malone; secretary, George Winchester Stone, Jr. Headquarters: 6 Washington Square, N., New York 3, N.Y.

Moose, Loyal Order of.—See under *Loyal.*

Museum of Modern Art.—Principal Exhibitions (1962): *Redon, Moreau, and Bresdin,* 250 works by three French masters of symbolism; *Photographs by Harry Callahan and Robert Frank; Orozco Drawings; Jean Dubuffet,* first major retrospective in an American museum; *Frank Lloyd Wright Drawings; Picasso in the Museum of Modern Art: 80th Birthday Exhibition; Recent Painting, U.S.A.: The Figure; Design for Sport,* presented in cooperation with "Sports Illustrated"; *Ernst Haas Color Photography,* a 10-year retrospective; *Mark Tobey,* a retrospective; *Time of Crisis, U.S.A.: The Lean Years, 1935–1941,* Farm Security Administration photographs; *European Acquisitions,* prints; *Arshile Gorky,* a retrospective. The Film Library screened daily programs of *The Films of Roberto Rossellini; William Wyler: 11 Films; The Films of Howard Hawks; The Dance Films of Gene Kelly; The Film in Sweden.* Publications: *Bulletin* (quarterly); four major catalogues annually; monographs. Chairman of the board, William A. M. Burden; president, Mrs. John D. Rockefeller 3d; director, René d'Harnoncourt. Address: 11 West 53d St., New York 19, N.Y.

Museum of Primitive Art.—Principal exhibitions (1962): *Two Private Collections: Gertrud A. Mellon and René d'Harnoncourt; Recent Acquisitions from Africa and the Americas; Gods with Fangs: Chavín Civilization of Peru; Four sculptures from the collection of Sir Jacob Epstein; Sculpture from the Pacific; Native Angola: A Pictorial Survey; Art of the Asmat, New Guinea: The Michael C. Rockefeller Collection; The Collection of John and Dominique de Menil.* Publications (1962): *Chavín Art: An inquiry into its form and meaning,* by John Howland Rowe; *The Great Bieri,* by Robert Goldwater; *The Art of the Asmat, New Guinea: Collected by Michael C. Rockefeller,* notes by A. A. Gerbrands; *The Collection of John and Dominique de Menil.* President and founder, Nelson A. Rockefeller; director, Robert Goldwater; curator, Douglas Newton. Address: 15 West 54th St., New York 19, N.Y.

National Academy of Design.—Membership: 250 academicians; 138 associates—painters, sculptors, aquarellists, graphic artists, and architects. Publication: *Catalog*—138th annual Exhibition in March 1963. Chairman of the school committee, Henry Gasser; pres. of the academy, Edgar I. Williams; secretary, Louis Bouché. Address: 1083 Fifth Ave., New York 28, N.Y.

National Academy of Sciences—National Research Council.—Academy membership: 651 leading U.S. scientists and engineers, members emeriti, and 66 foreign associates. The National Research Council was organized by the Academy, but participation in Council activities is not limited to members of the Academy. Council membership: 289 representing 115 scientific and technical societies and certain federal agencies. Publications: *Proceedings; News Report;* various technical reviews and reports. President of the Academy, Frederick Seitz; exec. officer of the Academy-Research Council, S. D. Cornell. Headquarters: 2101 Constitution Ave. NW, Washington 25, D.C.

National Association for Mental Health, Inc.—Membership: 800 state and local organizations. Publications: *Mental Hygiene* (quarterly); *Annual Report;* directory of psychiatric clinics and other resources in the U.S.; materials on mental health and related subjects. Twelfth annual meeting: St. Louis, Mo., Nov. 14–17, 1962. Exec. director, Philip E. Ryan. Headquarters: 10 Columbus Circle, New York 19, N.Y.

National Association for the Advancement of Colored People.—Membership: 388,300 in 1,500 branches, youth councils, and college chapters. Publication: *Crisis.* Annual meeting: Chicago, Ill., July 1–7, 1962. President, Arthur B. Spingarn; exec. secretary, Roy Wilkins. Headquarters: 20 West 40th St., New York 18, N.Y.

National Associaton of Manufacturers.—Membership: approx. 19,000, mostly manufacturing firms. Publications: *NAM News* (weekly); *Industrial Press Service* (biweekly); *Service for Company Publications* (monthly); *Program Notes for Women's Clubs* (bimonthly); pamphlets and economic studies. Annual Congress of American Industry: New York City, Dec. 5–7, 1962. President, Donald J. Hardenbrook; exec. vice pres., Charles R. Sligh, Jr.; gen. mgr., Kenneth R. Miller; secretary, David M. Reeves. Headquarters: 2 East 48th St., New York 17, N.Y.

National Audubon Society.—Membership: 41,000 adults; 250,000 juniors. Endowment: $3 million. Publications: *Audubon Magazine; Audubon Field Notes* (bimonthlies). The Canadian Audubon Society (Toronto) publishes *Canadian Audubon.* Annual meeting: Corpus Christi, Texas, Nov. 14, 1962. President, Carl W. Buchheister; secretary, Roger T. Peterson. Headquarters: 1130 Fifth Ave., New York 28, N.Y.

National Catholic Welfare Conference.—Membership: all Catholic archbishops and bishops of the U.S. Publications: *NCWC News Service* for Catholic weeklies; *Noticias Catholicas.* Chairman of the admin. board, Most Rev. Patrick A. O'Boyle, Archbishop of Washington, D.C.; gen. secretary, Rt. Rev. Msgr. Paul F. Tanner. Headquarters: 1312 Massachusetts Ave. NW, Washington 5, D.C.

National Conference of Christians and Jews, Inc.—Membership: 200,000. Publications: *NCCJ Newsletter; President's Annual Report.* Annual meeting: Washington, D.C., Nov. 18–21, 1962. President, Dr. Lewis Webster Jones; secretary, Oscar M. Lazrus. Headquarters: 43 West 57th St., New York 19, N.Y.

National Congress of Parents and Teachers.—Membership: 12,107,507 individuals, in 47,000 local units (P.T.A.'s). Publications: *The PTA Magazine; National Congress Bulletin* (monthly); *Proceedings.* National convention: Portland, Ore., May 20–23, 1962. President, Mrs. Clifford N. Jenkins; secretary, Mrs. Ralph Hobbs. Headquarters: 700 N. Rush St., Chicago 11, Ill.

National Council of the Churches of Christ in the U.S.A.—The Council consolidates the work of 13 separate interdenominational agencies and is the nation's largest religious organization. Its 33 constituent denominations have total memberships of 40,185,813. Triennial meeting: Philadelphia, Pa. December, 1963. President: J. Irwin Miller; gen. secretary, Rev. Dr. Roy G. Ross; treasurer, David B. Cassat. Headquarters: 475 Riverside Dr., New York 27, N.Y.

National Council of the Young Men's Christian Associations.—U.S. Membership: 3,878,980 in 1,821 organizations. Endowment: $90,241,800. Publications: *National Council Bulletin; The Intercollegian* (monthly); *YMCA Year Book.* Annual National Council meeting: Cincinnati, Ohio, May 10–13, 1962. President, Beach Vasey; gen. secretary, Herbert P. Lansdale, Jr. Corporate body: National Board of YMCA's, 291 Broadway, New York 7, N.Y.

National Education Association of the U.S.—Membership: 812,497 persons; 33 departments; 64 state and 7,810 local affiliates. Publications: *NEA Journal;* 27 professional magazines; nearly 200 other publications annually. Annual meeting: Denver, Colo., July 1–6, 1962; Detroit, Mich., June 30–July 5, 1963. President, Hazel A. Blanchard; exec. secretary, William G. Carr. Headquarters: 1201 Sixteenth St. NW, Washington 6, D.C. (See article, EDUCATION.)

National Federation of Business and Professional Women's Clubs, Inc.—Membership: approx. 175,000; 3,538 clubs. Publication: *National Business Woman* (monthly). National convention: Los Angeles, Calif., July 15–19, 1962. President, Katherine Peden; exec. director, Ruby G. Sills. Headquarters: 2012 Massachusetts Ave. NW, Washington 6, D.C.

National Federation of Music Clubs.—Membership: more than 600,000 in approx. 5,500 clubs. Major publications: *Showcase; Music Clubs Magazine; Junior Keynotes.* Annual convention: Pittsburgh, Pa., April 19–23, 1962. President, Mrs. C. Arthur Bullock; admin. director, Lois Winterberg. Headquarters: Suite 1215, 600 S. Michigan Ave., Chicago 5, Ill.

National Foundation, The (formerly THE NATIONAL FOUNDATION FOR INFANTILE PARALYSIS, INC.).—Activities include broad basic and clinical research in the fields of arthritis, birth defects (congenital malformations), virus diseases, poliomyelitis, and disorders of the central nervous system; education for the health professions; aid to patients; and support of clinical study centers and special treatment centers. Financial support is solely from voluntary contributions to the annual March of Dimes. Membership: 3,100 chapters. Publications: *National Foundation News; Annual Report;* various educational materials, including films, filmstrips, and exhibits for professional and lay groups, available for loan without charge. President,

Basil O'Connor. Headquarters: 800 Second Ave., New York 17, N.Y.

National Gallery of Art.—Major exhibitions (fiscal 1962): *Tiepolo Drawings* from the Victoria and Albert Museum, London; *A Thomas Eakins Retrospective; Tutankhamun Treasures; Art Treasures for America* from the Samuel H. Kress Collection; *English Drawings and Water Colors* from British Collections and from the Collection of Mr. and Mrs. Paul Mellon; *Exhibition of the Collection of Mr. and Mrs. André Meyer.* Recent acquisitions included paintings by Fragonard, Manet, Redon, and Sargent, as well as 92 Old Master paintings and 14 sculptures from the Samuel H. Kress Foundation. The 11th annual series of the A. W. Mellon Lectures in the Fine Arts was delivered by Kathleen Raine on *William Blake and Traditional Mythology.* Forty free concerts were given in the East Garden Court, ten by the National Gallery Orchestra. In the spring the Gallery held its 19th American Music Festival. Director, John Walker. Address: Constitution Ave. at 6th St., NW, Washington 25, D.C.

National Geographic Society.—See separate article under its own heading.

National Grange, Patrons of Husbandry, The.—Membership: 850,000 in approx. 7,000 Grange units. Publication: *The National Grange Monthly.* Annual meeting: Fort Wayne, Ind., Nov. 12–20, 1962; Portland, Ore., Nov. 11–21, 1963. Master, Herschel D. Newsom; secretary, Harry A. Caton. Headquarters: 1616 H St. NW, Washington, 6, D.C.

National Industrial Conference Board, Inc.—Membership: more than 3,700 subscribing associates. Publications: *Desk Sheet* (weekly); *Previews* (weekly); *Road Maps of Industry* (weekly economic charts); *Business Record* (monthly); *Management Record* (monthly); *Graphic Guide to Consumer Markets* (annual); *Chart Survey* (annual); *Economic Almanac* (biennial). Annual meeting: New York City, May 17–18, 1962. President, John S. Sinclair; secretary, Herbert S. Briggs. Headquarters: 460 Park Ave., New York 22, N.Y.

National Institute of Arts and Letters.—Membership: 250. Publications: *Proceedings,* 2d Series, No. 12; *Yearbook, 1962;* catalogues of art and manuscript exhibitions. On May 24, 1962, a public ceremonial was given jointly with the American Academy of Arts and Letters. New members were inducted, medals and honors awarded, and 18 arts and letters grants of $2,000 each were given. Exhibition was made of the works of newly elected art members, grantees in art, and the recipients of the Gold Medal for Fiction, William Faulkner; the Brunner Prize in Architecture, Ulrich Franzen; as well as manuscripts and scores by newly elected literature and music members, grantees in literature; recipient of the Fellowship of the Academy, Alan Dugan; the Gold Medal for History and Biography, Samuel Eliot Morison; the Marjorie Peabody Waite Award, Abraham Walkowitz; the Richard and Hinda Rosenthal Foundation Awards, Paule Marshall and Robert Andrew Parker; and the Award of Merit Medal for Painting, Charles Sheeler. Annual meeting: Jan. 24, 1962. President, Malcolm Cowley; secretary, Marchette Chute. Headquarters: 633 West 155th St., New York 32, N.Y.

National Recreation Association.—Affiliates: 1,955 public and private agencies; Associates: 4,545 individual workers; 14,737 contributing members; 120 local chests. Publication: *Recreation* (monthly). National Recreation Congress: Philadelphia, Pa., Sept. 30–Oct. 5, 1962. Chairman of the board, James H. Evans; exec. director, Joseph Prendergast. Headquarters: 8 West 8th St., New York 11, N.Y.

National Research Council.—See above, *National Academy of Sciences.*

National Research Council of Canada.—See separate article under its own heading.

National Safety Council.—Serving as a clearinghouse for information on causes and prevention of accidents. Membership: over 9,000 organizations and individuals. Publications: *National Safety News; Traffic Safety; The Industrial Supervisor; Safety Education; Safe Worker; Safe Driver; Safe Railroader; Safe Builder; Family Safety; Farm Safety Review.* National Safety Congress and Exposition: Chicago, Ill., Oct. 29–Nov. 2, 1962. President, Howard Pyle; secretary, R. L. Forney. Headquarters: 425 N. Michigan Ave., Chicago 11, Ill.

National Society for Crippled Children and Adults, Inc.—Membership: 52 state and territorial societies; 1,600 local societies. Publications: *Rehabilitation Literature; Easter Seal Bulletin* (monthlies); *Parent Pamphlet Series;* various pamphlets and reports. Maintains at headquarters a Rehabilitation Library and National Registry for professional rehabilitation personnel. Annual convention: Miami Beach, Fla., Nov. 16–20, 1962. President, Elwood M. Brooks; deputy exec. director, Carl K. Schmidt, Jr. Headquarters: 2023 W. Ogden Ave., Chicago 12, Ill.

National Travelers Aid Association.—Assists with 95 local societies and 976 cooperating representatives to provide a social service for non-residents and moving people in trouble, in the U.S. and abroad, regardless of their means of transportation. Publication: *Shifting Scenes.* President, Donald S. Stralem; secretary, Mary W. Milam; gen. director, Mrs. Savilla Mills Simons. Headquarters: 44 East 23d St., New York 10, N.Y.

National Tuberculosis Association.—Membership: approx. 5,000; 2,500 affiliated associations. Publications: *American Review of Respiratory Diseases; Bulletin; Tuberculosis Abstracts* (all monthlies); various books and pamphlets. Annual meeting: Miami Beach, Fla., May 20–23, 1962. President, William J. Martin; secretary, Judge Herman Dehnke. Headquarters: 1790 Broadway, New York 19, N.Y.

National Urban League.—Membership: 50,000 in 62 local leagues in 29 states and the District of Columbia. Annual convention: Grand Rapids, Mich., Sept. 1–5, 1962; Los Angeles, Calif., July 28–Aug. 1, 1963. President, Henry Steeger, Sr.; secretary, Mrs. Dorothy Hirshon; exec. director, Whitney M. Young, Jr. Headquarters: 14 East 48th St., New York 17, N.Y.

National Woman's Christian Temperance Union.—Membership: approx. 400,000 in U.S., including children and youth groups; World's WCTU includes 70 countries. Publications: *The Union Signal* (semimonthly); *The Young Crusader* (monthly for children). Annual convention: Miami Beach, Fla., Sept. 7–12, 1962. President, Mrs. Fred J. Tooze; corresp. and promotional secretary, Mrs. Herman Stanley. Headquarters: 1730 Chicago Ave., Evanston, Ill.

Parents and Teachers, National Congress of.—See under *National.*

Phi Beta Kappa.—Membership: 170,000 in 170 chapters. Publications: *The American Scholar* (quarterly); *The Key Reporter* (quarterly). In furthering its aim of recognizing and encouraging excellence in the liberal arts and sciences in colleges and universities, the Society annually awards the Mary Isabel Sibley Fellowship, $3,500 for study in the fields of Greek and French; the Christian Gauss Award, $1,000 for outstanding work of literary scholarship or criticism; $1,000 for an outstanding contribution to the literature of science by a scientist; and $1,000 to the author of an interpretive historical, philosophical, and religious study in the great tradition of humane learning. The Visiting Scholar Program annually brings 6 to 8 distinguished scholars in touch with college and university students. President, William C. DeVane; secretary, Carl Billman. Headquarters: 1811 Q St. NW, Washington 9, D.C.

Photographic Society of America.—Membership: over 10,000 members and over 1,200 camera clubs; 350 or more clubs affiliated through 20 camera club councils; about 450 additional miscellaneous members included in a list of firms, libraries, laboratories, and government bodies. Publications: *PSA Journal* (monthly); news bulletins. International convention: San Francisco, Calif., Aug. 14–18, 1962; Chicago, Ill., Oct. 1–5, 1963. Exec. secretary, Randolph Wright, Jr. Headquarters: 2005 Walnut St., Philadelphia 3, Pa.

Planned Parenthood Federation of America, Inc.—Membership: 97 state leagues and local committees which operate service clinics in 30 states and the District of Columbia. Annual meeting: New York City, Oct. 22–24, 1962; New York City, Oct. 21–23, 1963. Headquarters: 501 Madison Ave., New York 22, N.Y.

Red Cross, American National.—See under *American.*

Rockefeller Foundation.—To promote the advancement of knowledge and its effective application to human interests in specific fields of medical, agricultural, social, and natural sciences, and the humanities. Principal fund (market value Dec. 31, 1961): $553,530,293. Publications: *President's Review; Rockefeller Foundation Grants* (quarterly); *Annual Report.* President, J. George Harrar; secretary, Flora M. Rhind; treas., Edward Robinson. Headquarters: 111 West 50th St., New York 20, N.Y.

Rotary International.—Membership: 11,300 clubs in 128 countries; 527,000 Rotarians. Publications: *The Rotarian; Revista Rotaria* (in Spanish). Since 1947, Rotary Foundation Fellowships have been awarded to 1,594 college graduates from 71 countries for one year of study in 55 countries. Total grants awarded during the 15-year period amount to more than $4,000,000. Annual convention: Los Angeles, Calif., June 3–7, 1962; St. Louis, Mo., June 9–13, 1963. President, Nitish C. Laharry, Calcutta, India; gen. secretary, George R. Means. Headquarters: 1600 Ridge Ave., Evanston, Ill.

Russell Sage Foundation.—Devoted primarily to a program designed to increase the utilization of social science principles in various fields of social practice. Administration is handled by an 11-member board of trustees. Assets (market value, Sept. 30, 1962): approx. $30,000,000. Publications (1962): *Newer Dimensions of Patient Care: Part 2. Improving Staff Motivation and Competence in the General Hospital,* Esther L. Brown; *The Charities of Rural England, 1480–1660,* W. K. Jordan; *Cottage Six: The Social System of Delinquent Boys in Residential Treatment,* Howard W. Polsky; *Annual Report of Russell Sage Foundation, 1961–1962.* Chairman of the Board, Eli Whitney Debevoise; president, Donald Young; treas., Dave H. Morris, Jr.; secretary, Leonard S. Cottrell, Jr. Headquarters: 505 Park Ave., New York 22, N.Y.

Scottish Rite Masonry.—See under *Freemasonry.*

Seeing Eye, Inc., The.—Founded in 1929 to train dogs as guides for blind persons; to teach instructors how to train the dogs; and to teach blind persons how to use the dog guides. Membership: 15,000. President, James Carey; exec. vice president, George Werntz, Jr. Headquarters: Morristown, N.J.

Sloan Foundation, Alfred P.—Gives financial assistance to scientific research and provides for scholarships and fellowships. Fund reserves: $225,154,095. Total grants

(Dec. 31, 1961): $74,474,006. President, Everett N. Case; chairman of the board, Alfred P. Sloan, Jr.; vice pres. and exec. director, Arnold J. Zurcher; vice pres., secretary, and treas., James F. Kenney. Headquarters: 630 Fifth Ave., New York 20, N.Y.

Smithsonian Institution.—See separate article under its own heading.

Social Science Research Council.—Membership: 30 members of the board of directors, of whom 21 are designated by 7 national social science organizations and 9 are elected as directors-at-large. In 1961–62 the Council awarded 31 faculty research fellowships; 39 research training fellowships; 6 political theory and legal philosophy fellowships; 33 grants-in-aid for research unrestricted as to field; 10 grants for research on American governmental and legal processes; 9 senior awards for research on American governmental affairs; 4 grants for research on national security policy; jointly with the American Council of Learned Societies, 13 grants for African studies, 15 grants for Asian studies, 9 grants for research on contemporary China, 12 grants for Latin American studies, 9 grants for research on the Near and Middle East, and 19 grants for Slavic and East European studies; and 61 grants for travel to international conferences. President, Pendleton Herring; vice pres., Paul Webbink. Headquarters: 230 Park Ave., New York 17, N.Y.

Special Libraries Association.—Membership: approx. 5,500. Publications: (periodicals) *Special Libraries* (10 issues yearly); *Technical Book Review Index; Scientific Meetings; News and Notes;* (books, 1962) *Guide to Special Issues and Indexes of Periodicals.* The association maintains the SLA Loan Collection of Subject Heading Lists and Classification Schemes at Western Reserve University, and the SLA Translations Center at the John Crerar Library in Chicago, and in addition supports a consultation service and a placement service throughout the country. The 53d annual convention was held in Washington, D.C., in May 1962. President Ethel S. Klahre; exec. secretary, Bill M. Woods. Headquarters: 31 East 10th St., New York 3, N.Y.

Travelers Aid Association, National.—See under *National.*

Twentieth Century Fund.—An endowed foundation for research and public education on economic and social issues and problems. Assets (Dec. 31, 1961): $24,616,166. Publications (1962): *Of Time, Work, and Leisure; Economic Development in Burma, 1951–1960; Yugoslavia and the New Communism; Shaping the World Economy: Suggestions for an International Economic Policy.* Studies in progress include: distribution costs and methods; nuclear energy; poverty and affluence; economic policy in Latin America; economic development of South Asia; North Atlantic agricultural policy. Director, August Heckscher. Headquarters: 41 East 70th St., New York 21, N.Y.

United Community Funds and Councils of America, Inc. (formerly COMMUNITY CHESTS AND COUNCILS OF AMERICA, INC.).—Membership: 2,200 united funds, community chests, councils and affiliates in U.S., Canada, Australia and Philippines. Publication: *Community* (bimonthly); various bulletins, studies, and manuals. For 1962, $501,693,627 was raised for the support of voluntary health and welfare services. National conferences are held biennially: San Francisco, Calif., March 11, 1962; Cincinnati, Ohio, Feb. 2–7, 1964. President, John S. Hayes, secretary, James D. Ewing; exec. director, Lyman S. Ford. Headquarters: 345 East 46th St., New York 17, N.Y.

USO (United Service Organizations, Inc.).—A private, nonprofit, independent agency providing welfare, recreation, and live entertainment for American armed forces in the U.S. and overseas. Recognized by the Department of Defense as the principal civilian agency for assisting military authorities, it operates with minimum staff, plus volunteer help, 209 off-post clubs and hospitality centers for servicemen. USO is financed solely by direct public contributions raised through community funds or other campaigns. Chairman, Harvey S. Firestone, Jr.; president, Holgar J. Johnson; secretary, Mrs. Francis T. Christy; exec. director, Edwin E. Bond. Headquarters: 237 East 52d St., New York 22, N.Y.

United States Junior Chamber of Commerce.—Providing men aged 21 through 35 with an opportunity for personal development and achievement through participation in local and national affairs and, through Junior Chamber International, in world affairs. Membership: 211,000. Publications: *Future Action* (monthlies). Annual convention: Las Vegas, Nev., June 18–21, 1962; Louisville, Ky., June 25–27, 1963. President, Doug Blankenship; exec. vice pres., Max D. Nalley. Headquarters: Boulder Park, Box 7, Tulsa 2, Okla.

Veterans of Foreign Wars of the United States.—Membership: 1,500,000 active. Publication: *V.F.W. Magazine.* National convention: Minneapolis, Minn., Aug. 12–17, 1962. Commander-in-Chief, Byron B. Gentry; adjutant general, Julian Dickenson. Headquarters: V.F.W. Bldg., Broadway at 34th St., Kansas City 11, Mo.

Woman's Christian Temperance Union, National.—See under *National.*

Women's Clubs, General Federation of.—See under *General.*

Young Men's Christian Associations, National Council of the.—See under *National.*

Young Women's Christian Association of the U.S.A.—In the U.S. there are more than 5,400 places where there is some phase of YWCA program; through the World YWCA the National Board is allied with YWCA work in 70 other countries and territories. Publications: *The YWCA Magazine; National YWCA Bulletin; The Bookshelf.* The 23d National Triennial Convention will be held in 1964 in Cleveland, Ohio. President, Mrs. Archie D. Marvel; gen. secretary, Edith M. Lerrigo. Headquarters: 600 Lexington Ave., New York 22, N.Y.

World Council of Churches.—Official instrument of 201 denominations representing all major branches of the Reformation, the Old Catholics, the Eastern Orthodox, and other ancient Eastern churches in some 80 countries. Member churches represent some 300,000,000 believers. Work is carried on through three main divisions: Study; Ecumenical Action; and Interchurch Aid and Service to Refugees. Assemblies are held every six years (New Delhi, India, Dec. 1961). In the interim, the Council is governed by a Central Committee of 100 members which meet yearly. Dr. Franklin Clark Fry (USA) is chairman. Publications: *Ecumenical Press Service* (weekly); *Ecumenical Review* (quarterly); *Ecumenical Courier* (bimonthly). Presiding officers of the Council are six presidents: Archbishop of Canterbury A. M. Ramsey (Great Britain); Archbishop Iakovos (Greek Orthodox); Dr. Martin Niemöller (Germany); Rev. Dr. David G. Moses (India); Sir Francis Ibiam (Nigeria); Charles C. Parlin (USA). General secretary, Dr. W. A. Visser 't Hooft. Headquarters: 17 Route de Malagnou, Geneva, Switzerland. Exec. secretary, New York Office, Dr. Roswell P. Barnes; assoc. exec. secretary, Rev. Raymond E. Maxwell. Address: 475 Riverside Drive, New York 27, N.Y.

Zionist Organization of America.—Membership: 250,000, including its affiliates, Young Judaea and B'nai Zion. Publications: *The American Zionist; The Organization Letter; ZINS; Z.O.A. Reporter.* Annual convention: Washington, D.C., June 28–July 1, 1962. President, Dr. Max Nussbaum; national secretary, Dr. Sidney Marks. Headquarters: 145 East 32d St., New York 16, N.Y.

Compiled by R. M. C.

SOCIOLOGY

In the year 1962, traditional studies of the city by sociologists were being supplemented by research dealing with the city as a changing unit within a larger area known as the "urban region." The need for this shift in emphasis was made clear by U.S. Census reports of population loss in the 1950–60 decade by several large cities, such as New York, Chicago, Philadelphia, Detroit, and San Francisco. In each case an emigration of people from within the city to contingent areas took place. As pointed out in *The Sociology of Urban Regions* (1962) by Alvin Boskoff, the human race has been undergoing an evolution in its community structure from rural village to town to city to urban region.

Juvenile Delinquency.—The sociology of deviant behavior of youth received specialized attention, as attested by a set of nine articles in the spring 1962 issue of *Sociological Inquiry.* The specializations were spelled out in the titles of some of the articles, for example: "Self Conceptions of Types of Delinquents"; "Prospects and Problems of Delinquent Typology"; "The Uncommitted Adolescent as a Candidate for Group Socialization"; and "Delinquency and Perceived Opportunity." Along the same line were papers presented at the 57th Annual Meeting of the American Sociological Association: *Scaling Juvenile Delinquency; The Prospects for Delinquency Reduction in Industrial Societies;* and *Role Models for Boy Assaulters and Thieves.*

Race Relations.—In one of a number of articles in *Social Forces* (March 1962) dealing with race relations, Ruth Searles and J. A. Williams, Jr., stated that a sample of students in Negro colleges in North Carolina viewed sit-in protests as less indicative "of social alienation among students than their identification with positive reference to the white middle class." Another article, by Norman Lustig, on the demographic characteristics and pro-integration vote of white precincts in a metropolitan Southern county, pointed out that "higher income and education were found to correlate positively at a very significant level" with

a pro-integration vote percentage. In an analysis of "cognitive simplicity and prejudice," Fredrick Koenig and Morton King concluded that intolerant students were less accurate than others in predicting behavior.

Theory.—A comparative analysis of the "social systems" of seven American sociologists was made in *Modern Social Theories: Selected American Writers* (1961) by C. P. and Z. K. Loomis. A frame of reference for reviewing and comparing these social systems was labeled a "Processually Articulated Model." In this setting, sociology appeared to be concerned with social actions, that is, with any event in which "one party tangibly influences the overt action or the state of mind of the other." The sociologists whose theories were under review were Howard Becker, Kingsley Davis, George Homans, Robert Merton, Talcott Parsons, Pitirim Sorokin, and Robin Williams, Jr. A social system was explained as being composed of "the patterned interaction of its members whose relations to each other are mutually oriented through the definition and mediation of a pattern of structured and shared symbols and expectations." The theorists, who were compared in part by their treatments of social change, responded by tape recordings to the respective analyses by the authors.

Research Outside the United States.—In a report on the distribution of the themes in sociology in 1,479 dissertations "dealing with societies other than the United States, by society or region, 1950–1960," given in the *American Sociological Review* for February 1962, by Robert Marsh, it was stated that 23% of these dissertations dealt with social situations in Europe; 13% with Central American-Caribbean situations; 10% with conditions in China-Japan-Korea; 8% with India-Pakistan-Ceylon; 7% with the Middle East; 6% with Southeast Asia; 5% with Australia-Philippines–New Guinea; and 4% with Africa. An increasing proportion of "cross-national doctoral dissertations" was also noted.

The Sociology Consultant.—Sociological literature pointed toward the rise of a new profession—the "sociology consultant," a trained sociologist called on for scientific assistance by an institution or organization which has found other methods unsatisfactory. In *Social Theory and Practice* (1962), Hans Zetterberg outlined a method for applying sociological laws and theorems to a major problem, in this case that of an art museum. In *The Organization from Within* (1962) Cyril Sofer described the activities of a sociology consultant in diagnosing the problems of an industrial organization, of a research unit of a mental hospital, and of an engineering unit of a technical college. According to Sofer, the work involved a reconceptualization of an organization's problems and a redefining of assumptions and expectations, followed by formulating and evaluating innovations.

Meetings.—About 90 American sociologists read papers or took part in the discussions of the Fifth World Congress of Sociology of the International Sociological Association, held for the first time in the United States, September 2–8 (Washington, D.C.). The general subjects were: "The Sociologists, the Policy Makers, and the Public"; "The Sociology of Development"; "The Nature and Problems of Sociological Theory," and "The Sociology of Knowledge." Special sessions were devoted to political sociology, industrial sociology, psychiatric sociology, social stratification and mobility, sociology of mass communications, and sociology of religions. The official languages of the Congress were English and French. Represented on the programs were 40 countries.

The general theme of the 57th Annual Meeting of the American Sociological Association, held in Washington, D.C., August 29–September 2, was "The Uses of Sociology," with Paul F. Lazarsfeld of Columbia University as president. Special subjects presented included: "The Role of the Sociologist as a Staff Member in Business and Industry, in Health and Medicine, and in Organized Religion"; "The Sociologist as a Consultant"; "The Uses of Sociology in the Study of the Consumer"; and "The Role of Sociology in Urban Planning." The 58th Annual Meeting will be held in Los Angeles in the latter part of August 1963, with Everett C. Hughes of Brandeis University giving the presidential address.

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SOFTBALL. See SPORTS, GAMES, AND SHOWS.
SOIL BANK. See Index entry.
SOIL CONSERVATION. See CONSERVATION OF NATURAL RESOURCES and the Index entry, *Soil.*
SOLAR STUDIES. See ASTRONOMY.
SOLOMON ISLANDS. See WESTERN PACIFIC ISLANDS, BRITISH.

SOMALIA

An equatorial country on the horn of east-central Africa, the Republic of Somalia comprises the former United Nations trust territory of Somaliland (administered by Italy) and the former Somaliland Protectorate (under Great Britain). The estimated area is 246,000 square miles, and the population (1961 est.) is 1,990,000, mainly nomadic and seminomadic Somalis, with small Arab and Italian minorities. Arabic and Italian are the official written languages; Somali is the principal spoken language. The chief cities are Mogadishu (Mogadiscio; 1958 est. pop., 86,643), the capital and chief port; Hargeisa (45,000), former seat of government of British Somaliland; Merca (61,400); Berbera (20,000); and Margherita (20,000).

Government.—The Somali Constitution, approved by the electorate on June 20, 1961, confirmed a republican form of government for Somalia. The president (Aden Abdullah Osman, elected July 1, 1960) is chosen by the 123-member National Assembly. He appoints the premier (Abdi Rashid Shermarke took office on July 22, 1960), who heads a 15-member cabinet.

Education and Religion.—Educational facilities are available mainly in the cities. In 1958 only 3% of the school-age population attended school. School enrollment, 1960: primary, 22,341; secondary, 2,248; technical, 847; teacher-training, 215; and higher, 79. Islam is the state religion; most of the population are Sunni Muslims of the Shafi'ite sect.

Finance.—Somalia's major financial problem is to obtain from its meager resources sufficient revenue formerly provided by Italy and Great Britain. In 1960 the budget was balanced at 160 million somolos (7.14 somolos equal U.S.$1). In 1962, West Germany advanced DM25 million ($6.25 million) in long-term credits to Somalia. Somalia also obtained a $55 million credit from the USSR to build a deep-water harbor at Berbera.

Transportation and Communications.—Somalia's lack of railways, inland waterways, and adequate all-weather roads has seriously hindered its economic development. In the former British protectorate there are about 2,500 miles of roads motorable in the dry season; in the former trust territory, there are about 5,490 miles of road, of which 390 miles are paved. Airlines serve Mogadishu, Hargeisa, and Berbera. Telephones in the former trust territory totaled 1,545 in 1959; passenger cars, 5,900.

Production.—About 70% of the population is engaged in animal husbandry, mainly of sheep, goats, cattle, and camels. Subsistence crops include durra, corn, and millet. The chief cash crops are sugarcane (107,971 metric tons in 1959) and bananas (85,000 metric tons). Light manufactures include sugar refining, hides and skins, and handicrafts.

Foreign Trade.—Total exports, 1960: 117,137,000 somolos; imports, 130,970,000. Principal exports (in thousand somolos) were fruit and vegetables, 74,778; meat and fish, 10,506; hides and skins, 7,047; wood and charcoal, 9,800. Trade is primarily with Italy, followed by Kenya, Iran, and Aden.

Events, 1962.—Somalia's border disputes with neighboring states remained unresolved in 1962. The Somali government continued to press for the formation of a Greater Somalia to include territories occupied by Somali tribesmen in northern Kenya, southeastern Ethiopia, and in French Somaliland. Premier Shermarke declared on January

24 that a self-determination plebiscite should be held in Kenya's Northern Frontier Province to determine whether it should join Somalia. Although Shermarke announced at that time that Somalia would buy armaments worth some £300,000 from Great Britain and Italy, he reiterated his government's intention to resolve border disputes "by means of negotiations alone." As a means of lessening tension, Somalia's first ambassador to Ethiopia took up his post in Addis Ababa on May 12.

On July 26–30, Jomo Kenyatta, Kenyan minister of state, visited Somalia to discuss the formation of an East African federation to include Kenya, Somalia, Tanganyika, and Uganda.

Premier Shermarke paid an official visit to the United States in November. During his talks with President Kennedy he reportedly asked for military aid and increased economic assistance to Somalia. The United States has granted $11 million in aid to Somalia.

As a result of devastating floods in the latter part of 1961, some 800,000 persons threatened by famine and disease were aided by emergency food supplies provided by the United Nations and individual countries.

J. L. L.

SOMALILAND. See SOMALIA.
SOMALILAND, French. See FRENCH SOMALILAND.
SORGHUMS. See Index entry.
SOUDAN. See MALI.

SOUTH AFRICA

A republic outside the Commonwealth of Nations since May 31, 1961, South Africa is the only independent country in Africa south of the Sahara that is controlled politically and economically by its white residents. Though a minority, these whites form a much higher proportion of the total population than in any other part of central and southern Africa, and direct by far the most mature economy.

Area and Population.—The total area of South Africa is 472,733 square miles, divided among four provinces as follows: Cape (including the 374 square miles of Walvis Bay, which is administered with South West Africa), 278,839; Transvaal, 110,450; Orange Free State, 49,866; and Natal, 33,578. In 1947, South Africa acquired Marion and Prince Edward islands, which lie 1,200 miles southeast of Cape Town. The South African government also administers South West Africa (q.v.).

The census of Sept. 6, 1960, revealed a total population of 15,841,128 (excluding 12,568 in Walvis Bay), of whom 3,067,638 were white (60% Afrikaner and 40% English) and 12,773,490 nonwhite. The latter included 10,807,809 Africans; 1,488,267 Coloreds, of mixed descent; and 477,414 Asians, mostly of Indian origin. The population is increasing at a rate of over 2% a year, and in mid-1961 was estimated at 16,236,000.

The population of the principal cities in 1960, with the number of whites in parentheses, was as follows: Johannesburg, mining and commercial center, 1,096,541 (389,690); Cape Town, the legislative capital, 731,484 (279,404); Durban, 655,370 (194,276); Pretoria, the administrative capital, 415,989 (198,295); Port Elizabeth, 270,815 (94,085); Germiston, 204,605 (84,419); and Bloemfontein, the judicial center, 140,924 (61,213).

Education.—White children between 7 and 16 years of age are required to attend school in Afrikaans- or English-medium institutions. The two parallel systems of state schools, which are administered by provincial departments of education, had a combined enrollment of 614,178 in primary and secondary grades in 1960. The private English-medium day and boarding schools (47,678 pupils in 1960) are subject to some government regulation, and their students generally sit for state examinations. The second language is taught in all schools, and more than 70% of South African whites are bilingual.

Education is not compulsory for nonwhites, and the latter have segregated institutions. African education has been state controlled since 1953 and under the Department of Bantu Education since 1958. In 1960 there were 6,124 primary and secondary Bantu schools with 1,335,655 children enrolled, many in the lowest grades. The government estimates that 80% of all Africans between the ages of 7 and 20 are literate, though in 1951 only 31% of the Africans were literate. In 1960 there were 381,190 Colored children in school.

There are four English-medium universities (Witwatersrand, Cape Town, Natal, and Rhodes), four Afrikaans-medium universities (Pretoria, Stellenbosch, Orange Free State, and Potchefstroom), and the University of South Africa, which provides correspondence and vocational courses for students of all races and acts also as an external examination body. Apart from a few nonwhite students who are permitted by the government to complete their courses of study at Witwatersrand or Cape Town universities, nonwhites are admitted only to the three tribally oriented colleges for Africans operated by the Department of Bantu Education or the similarly segregated and controlled institutions established for Coloreds and Asians. Among nonwhite institutions, only the Bantu Medical School in Durban has retained its independence of government administration. The students and teachers in the institutions for nonwhites are not permitted to criticize the government or apartheid policies. Total enrollment at South African universities in 1960 was as follows: whites, 29,775; Africans, 1,637; Coloreds, 607; and Asians, 1,218.

Government.—The South African Constitution is embodied in the South Africa Act, passed by the British Parliament in 1909. Apart from a guarantee of equality for the Afrikaans and English languages, any provision of the constitution may be changed by majority action of the South African Parliament. The four provinces of the republic, whose legislative union came into effect on May 31, 1910, exercise specific functions and have their own structure of government but possess no guaranteed powers, and each operates under a nationally appointed administrator.

Legislative power is exercised by the state president, Senate, and House of Assembly. Only whites are eligible for these offices. Charles R. Swart, the first president of the republic, was elected on May 10, 1961, for a 7-year term by a parliamentary vote of 139 to 71. The Senate, as reconstituted in 1960, consists of 54 members, of whom 43 are elected to represent the provinces in accordance with their population, and 11 are appointed by the president. Since the elections of Oct. 26, 1960, the National Party has had 39 members in the Senate, and the United Party 15.

The House of Assembly, the dominant chamber, consists of 160 members chosen at the general election of Oct. 18, 1961. In 1962 the Nationalists controlled 105 seats; the United Party, the official opposition, 50; and the Progressives, 1. The 4 members elected by the Colored voters generally align themselves with the United Party. Africans lost their right to elect representatives to Parliament in 1960.

Transportation and Communications.—As of 1960, South Africa had 12,101 miles of state-owned railways. Further to develop their facilities, the Railways and Harbours Administration received a loan of $11 million from the International Bank for Reconstruction and Development in December 1961. Of the 113,800 miles of national and provincial roads (1960), 10,897 miles have a bituminous surface. Scheduled air services are provided by the government-owned South African Airways and nine foreign airlines. Communications facilities include 996,000 licensed radio sets (1960) and 937,818 telephones (1961).

Finance.—Due chiefly to exchange and import controls but also to record production of gold and increased exports of manufactures, the South African Reserve Bank's foreign exchange and gold reserves reached $595 million on Aug. 31, 1962, in a striking change from the low point of $215 million on June 16, 1961, after the country had left the Commonwealth. This increase was aided by a loan on Dec. 5, 1961, of $10 million from the Deutsche Bank of West Germany. The Reserve Bank rate was cut during 1962 by 1%, to 3½%, and building societies reduced their mortgage rates to 6½%. Despite these lower interest rates, a good supply of investment capital, and a favorable balance

Crowd in Johannesburg, South Africa, demonstrates on May 26 against the proposed Sabotage Act, which many claimed would curtail civil rights. Parliament passed act June 15.

UPI

on the current account, private interests appeared reluctant to invest heavily in future economic development, and it seemed likely that the government would have to stimulate such activity.

The budget for the fiscal year ending March 31, 1963, estimated total expenditures at R795.1 million (1 rand equals U.S.$1.40), or approximately R70 million more than in 1961–62. The increase was caused mainly by larger expenditures for defense, the cost of which was to total R120 million, and for the development of the African areas, notably the Transkeian Territories, for which R25 million was earmarked. To balance the budget, taxes on liquor and diesel fuel were increased, customs duties were raised slightly on many items, and discounts were abolished on personal and corporate income tax payments.

The gross national product for the year ending June 30, 1962, was estimated at about $9 billion, or 5.3% higher than for 1960–61. Net national income rose from R4,040 million in 1959–60 to R4,271 million in 1960–61.

Mining.—In 1961, gold output rose by 7.3% to a record 22,946,294 ounces, valued at R574.9 million; output in the first 6 months of 1962 totaled 12,400,000 ounces. An additional R70 million in foreign exchange was earned through exports of uranium oxide, though uranium profits were slightly less than in 1960. Diamond mining also set new records, with a production of 3,787,862 metric carats, as compared with 3,139,764 carats in 1960. Output of other minerals included 39,564,000 metric tons of coal, 4,056,000 tons of iron ore, and 52,440 tons of copper.

Agriculture.—The corn crop in 1961–62, totaling 4,855,000 metric tons, was so large that it put a severe strain on the stabilization fund. Reduction in acreage may be indicated, though the government has not yet proposed it. Wool clippings rose to 304 million pounds (greasy basis), but prices were lower. Production of other major crops in 1961–62, in thousands of metric tons with 1960–61 figures in parentheses, was as follows: wheat, 833 (771); sugar, 997 (902); sorghum, 193 (310); peanuts, 197 (283); and citrus fruit (million boxes), 13.2 (9.4).

Industrial Production.—South Africa is expanding its industrial production with the objective of becoming relatively self-sufficient. The government plans to increase to 70% the share of locally produced textiles in the home market and envisages more textile factories in the border areas of the Bantu reserves to use their cheap labor. Other major development programs are being undertaken by the state-supported iron and steel industry, which produced 2,340,000 metric tons of pig iron and ferroalloys and 2,472,000 tons of steel in 1961; and by the Electricity Supply Corporation, which has embarked on a 10-year plan to meet the demands of mining and manufacturing industries. In 1961 the output of electricity totaled 24,552 million kw.-hr. Private industry has also scheduled $204 million for new and expanded facilities for aluminum, asbestos, fertilizers, electronics, locomotive, and air-conditioning plants and other fields.

The most striking development announced in 1962 was the $630 million Orange River Project, comprising water supply, irrigation, and hydroelectric aspects. Though planned as a 30-year program, its key features (two large dams, water tunnels, and irrigation schemes) were to be started at once. The objective was to provide water and power to northern and eastern Cape Province and southern and western Orange Free State in order to encourage industries in the cities and the reuse of parched agricultural land.

Foreign Trade.—Gold production amounting to R574.9 million more than covered the trade deficit of R54.8 million in 1961. Merchandise exports (including those of South West Africa) totaled R950.8 million (R884.0 million in 1960), and imports R1,005.6 million (R1,111.1 million). Though import controls were eased in December 1961 on farm equipment and machinery, they continued to restrict the inflow of other products to 50% of the items imported in the first 8 months of 1960. In the first half of 1962, exports totaled R486.3 million; imports, R497.8 million; and gold production, R308.2 million.

Despite South Africa's withdrawal from the Commonwealth in May 1961, Great Britain again permitted its exports to enjoy Commonwealth preference through the South Africa Act, which went into effect in May 1962. Though preferences on British goods in South Africa are of limited importance, British investments in that country are worth £900 million, and the republic remains Britain's fifth best customer. Thus far the overseas boycott of South African goods has had little effect, since Britain and the United States, the two largest importers, do not participate in it.

Events, 1962.—In the face of increasing isolation from other countries except Great Britain, and of mounting demands for United Nations action to force it to change its policies of racial discrimination, Prime Minister Hendrik F. Verwoerd's ruling Nationalist Party in 1962 furthered economic development to make South Africa relatively self-sufficient, enacted the so-called Sabotage Act, and introduced the first substantial program of positive apartheid or, as it is now called, separate development. This program to establish eight Bantustans, of which the first is to comprise the Transkeian Territories in Cape Province, is intended to divert African energies from nationalist activities within the country as a whole and to demonstrate the government's intention of building self-governing Bantu homelands.

When Dr. Verwoerd announced in the House of Assembly on January 23 that limited self-government was to be granted the Transkeian Territories under a constitution drafted by local Africans, he declared that only through this development could the Bantu retain their own identity and safeguard their national heritage. In fact, a form of local self-governing institutions, with limited financial and administrative functions, had been established in the Transkeian Territories by the British as early as 1894. Under government urging, this structure was replaced in 1956 by a Bantu territorial authority, which had original taxing powers and an African chairman but a membership strictly controlled by the Department of Bantu Administration and Development.

On Jan. 31–Feb. 1, 1962, a committee appointed by the territorial authority was convened in Umtata to draft a constitution for the Transkei scheduled to come into effect in mid-1963. Though this constitution was supposed to be drafted without government influence, requests were denied for genuine self-government and for an equal number of elected members and of chiefs in the Transkeian Legislative Assembly. The representation in the latter body is to be 45 elected members and 64 chiefs, whose holding of their tribal offices must be endorsed by the government. Powers of the assembly are not to extend to external affairs, defense, tariffs, and the Transkeian Constitution. Citizenship and voting rights are extended to all Xhosa-speaking Bantu within South Africa, but urban Africans are expected to boycott the elections because they denounced the Bantustan development as a means of dividing and controlling Africans and of bypassing the claim of the African majority for a share in the government of the country as a whole.

Within the Transkei itself the chiefs and, in particular, those of the Tembu royal house were divided over the constitution. Chief Kaizer D. Matanzima, a junior member of the royal house, was chairman of the Transkeian Territorial Author-

ity and is slated by the government to become the first prime minister of the Transkeian Bantustan. Paramount Chief Sabata Dalinyebo, the reigning head, and most of his tribe, opposed the institution of the Bantustan and the proposed constitution and allocation of powers. Nevertheless, the authority approved the constitution on May 4.

Repressive measures continued to grow in intensity and use throughout South Africa in 1962. On June 15, despite bitter opposition, Parliament adopted the General Law Amendment Act, commonly called the Sabotage Act, which instituted a wide range of harsh penalties, including the death sentence for acts ranging from trespass to murder if these were committed in order to change "the economic or social order." Under this act, 102 persons, including ex-Chief Albert J. Luthuli, winner of the 1960 Nobel Peace Prize, and Patrick Duncan, vigorous anti-Communist editor of the liberal periodical *Contact,* were placed on a list whose members cannot be quoted in writing under a penalty of five years' imprisonment. By November 14, 12 persons, including Mrs. Helen Joseph, formerly vice president of the Congress of Democrats, had been put under a form of highly restrictive house arrest called "civil death" by the leader of the opposition, Sir de Villiers Graaff.

On September 7, the government banned the white left-wing Congress of Democrats under the Suppression of Communism Act. (The two African nationalist movements, the African National Congress and the Pan-African Congress, had been banned since 1960.) On November 7, Nelson Mandela, former secretary general of the African National Congress, was sentenced to five years in jail. Because of demonstrations at his trial, all protest meetings were banned until April 30, 1963. Meanwhile, to meet government criticisms of the English language press and thereby escape censorship, the Newspaper Press Union drew up a code (announced March 13, 1962) to ensure no deviation from facts in material sent overseas for publication.

The strongest efforts yet made to exert pressure on South Africa through the United Nations came in the 17th session of the General Assembly, though none of them could be expected to have the effect desired by their African and Asian sponsors. On Nov. 6, 1962, by a vote of 67 to 16 with 23 abstentions, the assembly called on members of the United Nations to impose economic (and possibly diplomatic) sanctions against South Africa to force it to abandon its policies of racial discrimination and segregation. Great Britain, the United States, and other Western nations opposed this action, which they believed should be reserved for cases of flagrant aggression. Their open condemnation of apartheid left no doubt, however, that South Africa was out of step with the rest of the world in its racial policies.

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SOUTH AMERICA. See INTER-AMERICAN AFFAIRS; and articles on the South American countries.

SOUTH CAROLINA

A South Atlantic state of the United States, South Carolina ranks 40th among the states in area (land, 30,272 square miles; inland water, 783) and 27th in population (2,436,000 on July 1, 1962, a 2.3% increase from the 1960 census figure of 2,382,594). Urban places with populations above 15,000 in 1960:

Anderson	41,316	Greenwood	16,644
Charleston	65,925	Rock Hill	29,404
Columbia (*capital*)	97,433	Spartanburg	44,352
Florence	24,722	Sumter	23,062
Greenville	66,188		

Government.—Chief executive and judicial officers in 1962 included Ernest F. Hollings (Democrat), governor, serving a four-year term; Burnet R. Maybank, lieutenant governor; O. Frank Thornton, secretary of state; Jeff B. Bates, treasurer; J. M. Smith, auditor; Daniel R. McLeod, attorney general; Jesse T. Anderson, superintendent of education; and Claude A. Taylor, chief justice of the 5-member Supreme Court.

The South Carolina General Assembly, which convenes annually, comprised 46 Democrats in the Senate in 1962 and 123 Democrats and 1 Republican in the House of Representatives. (See also below, *Events, 1962.*)

Legislation, 1962.—The General Assembly approved expenditures of $257 million (exclusive of federal funds) for the fiscal year 1963, including $201 million from the general fund and $56 million from highway receipts.

A series of measures was adopted to prepare for continuity of government in the event of an emergency. These provided for an interim chief executive, succession of judges, a temporary state capital, and temporary seats of government for lesser political units. The lawmakers also established a nine-member Nuclear Energy and Space Commission.

An Advisory Commission on Higher Education was set up to assist the State Budget and Control Board in such areas as curricula, administration, finances, and policy planning. The commission, whose seven members are appointed by the governor, also was authorized to establish a council composed of presidents of state institutions of higher learning to conduct studies into various aspects of the state's higher education scene.

In other business, the legislature passed a supplemental appropriation of $475,000 to expand education television into all of the state's counties; enacted a law to provide for organization and control of business corporations; and referred a number of constitutional amendments to the voters (see below, *Events, 1962*).

Finance.—In the 1962 fiscal year, revenue of $456,417,512 included $277,814,018 from state taxes and $85,132,255 in federal funds. Chief tax yields were the 3% general sales tax ($73,995,406), licensing ($58,188,817), and taxes on motor fuels ($55,410,434) and individual incomes ($27,409,152). Spending of $459,096,465 included $129,987,557 for education, $29,454,005 for health, welfare, and safety, and $85,517,039 for highways.

Education.—In the fall of 1962, public elementary schools staffed by 12,465 teachers enrolled 384,809 pupils; secondary schools staffed by 9,286 teachers enrolled 226,411; and (fall of 1961) 821 teachers in private and parochial schools taught 15,615. College enrollment (fall of 1961) totaled 36,232 in 32 institutions of higher education.

Operating expenditures for public schools in the 1961–62 school year totaled $116,118,318 ($209 per pupil) and capital outlays amounted to $17,212,771. Revenue was drawn chiefly from state funds ($82,651,734) and local districts ($37,718,189). Spending for higher education (1961 fiscal year) comprised $20,308,191 for operations and $9,245,000 for construction and improvements.

Public Assistance.—In the 1962 fiscal year, public assistance payments to a monthly average of 66,418 persons totaled $28,063,632. This amount included $14,998,919 for the aged and $6,241,895 for dependent children.

Transportation and Communications.—With 1,182 miles of highway construction and reconstruction completed in 1961, *highways and roads* on Jan. 1, 1962, totaled 56,721 miles (31,618 surfaced). These served 883,764 *motor vehicles* (as registered on July 13, 1962), including 713,028 automobiles. Operating in the state were (1962) 20 *railroads* (using, 1961, 3,284 line miles of track); 5 regularly scheduled *airlines;* and 69 commercial and municipal *airports and airfields.*

Communications media included (1961) 76 AM and 12 FM *radio stations;* 8 *television stations;* 17 daily *newspapers* (circulation, 495,943); and (Jan. 1, 1962) 165,500 business and 446,200 residential *telephones.*

Labor Force.—The state's labor force in July 1962 included 190,500 agricultural workers. Nonagricultural employment totaled 590,600, compared with 580,400 a year earlier and an average of 587,200 for the 12 intervening months. Of nonfarm wage and salary employees in July 1962, 42.7% were in manufacturing, 17.2% in trade, and 16.3% in government services. Unemployment in mid-July 1962 stood at 42,600, compared with 51,600 a year earlier.

Manufacturing.—Manufacturing engaged an average of 202,159 workers in 1961, and provided a payroll of $647,316,365. Adjusted value added by manufacture (1960) amounted to $1,713,184,000.

LEADING SOUTH CAROLINA MANUFACTURES, 1961[1]

Industry group	Total employees	Total payroll (in thousands)	Value of product (in thousands)
Textiles	122,028	$412,077	$2,029,538
Clothing	29,102	65,657	215,663
Paper and pulp	6,607	32,994	207,519
Electricity	2,352	10,445	139,627
Foundry and machine shops	3,841	14,764	77,758
Furniture	4,923	12,902	60,848

[1] As of June 30, 1961. (Source: Division of Standards and Statistics, South Carolina Department of Labor.)

Mining.—In 1961, South Carolina ranked 43d among the states in the value of its mineral output, with 0.17% of the national total. It was second in output of kaolin, kyanite, and vermiculite, and third in crushed granite. Accounting for over half of the total value of $30,136,000 were stone ($9,827,000) and clays ($6,169,000).

Agriculture.—Cash farm income for the first nine months of 1962 (excluding government payments) totaled $265,198,000, compared with $262,805,000 for the corresponding period of 1961. For the full year 1961, income comprised $109,896,000 from livestock, $269,989,000 from crops, and $17,757,000 in government payments. Principal income sources in 1961 were tobacco, $99,601,000; cotton lint, $67,282,000; eggs, $28,440,000; and soybeans, $26,758,000.

The state's 78,000 farms in 1959 had an acreage of 9,149,000 (2,694,000 in harvested cropland). Livestock on farms on Jan. 1, 1962, included 553,000 cattle, 420,000 hogs, and 5,779,000 chickens, and (1961) 20,143,000 broilers. An average of 124,000 family and 66,000 hired workers engaged in farming during 1961.

SOUTH CAROLINA CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Corn for grain (1,000 bu.)	20,797	20,055	18,506
Cotton lint (1,000 bales)	528	412	450
Cottonseed (1,000 tons)	222	171	187
Cucumbers (1,000 cwt.)	286	470	392
Oats (1,000 bu.)	13,040	8,856	6,567
Peaches (1,000 bu.)	4,213	7,800	7,000
Pecans (1,000 lb.)	4,601	8,000	400
Soybeans (1,000 bu.)	4,039	12,382	12,160
Tobacco (1,000 lb.)	159,012	151,600	184,800
Tomatoes (1,000 cwt.)	295	603	372
Wheat (1,000 bu.)	3,207	3,710	1,344

(Source: U.S. Department of Agriculture.)

Events, 1962.—In the Democratic primary on June 12, incumbent Olin D. Johnston won the nomination for United States senator over Gov. Ernest F. Hollings. State Rep. Albert Watson was nominated for Congress in the 2d District, and Donald S. Russell was nominated for governor. The Republican convention on March 17 nominated newsman William D. Workman, Jr., to oppose Johnston, and state Rep. Floyd D. Spence, a former Democrat, to run against Watson. Workman and Spence were defeated in the general election in November, but made a remarkably good showing.

In a special election in February, Republican G. Fred Worsham became the second of his party to gain a seat in the state House of Representatives since the Reconstruction. Charles E. Boineau had set the precedent in August 1961.

Four statewide constitutional amendments were approved by the voters in the general election. These authorized dividing the state into forestry districts; reducing residence requirements for suffrage to one year (from two years) in statewide elections and to six months (from one year) on the county level; changing the composition and method of selecting members of the State Board of Education; and increasing the criminal jurisdiction of magistrates. These amendments must be approved by a majority vote of the next legislature before they can become effective.

In economic matters, corn and tobacco production showed the highest per-acre yield on record. The farm cash income from all farm commodities during the year was 2% higher than in 1961. All grain crops were below average, however, due to government restrictions on acreage.

For the fourth consecutive year, new and expanded industry in the state amounted to more than $200 million. The State Committee for Technical Education was operating "crash programs" to prepare workers for specific jobs in new industries. Seventeen of these programs have been completed and others are on the way. The $1 million Greenville Training Center for plants requiring highly skilled personnel was in full operation, as were several other such centers. Potential employees were being trained in metalworking, textiles, woodworking, power sewing, and other highly technical skills.

A trend toward development of a metalworking industry is developing. One out of every five plants built in the state in 1962 was a metalworking facility. More than 300 such companies are now operating successfully in South Carolina.

The integration pattern in South Carolina seems to be slowly changing. Some variety stores now serve Negroes at their lunch counters. At the end of 1962 there was still no integration in any of the public schools of the state, although suits seeking to compel admission of a Negro to Clemson College and of another to the University of South Carolina were pending in federal District Court. On Jan. 28, 1963, after a series of court decisions, Harvey B. Gantt was quietly enrolled at Clemson, thus becoming the first Negro to enter an all-white state school.

Dr. Thomas F. Jones became the 23d president of the University of South Carolina on July 1. He succeeded Robert L. Sumwalt.

"Events" by: GEORGE R. SHERRILL,
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SOUTH DAKOTA

A North Central state of the United States, South Dakota ranks 16th among the states in area (land, 76,378 square miles; inland water, 669) and 40th in population (721,000 on July 1, 1962, a 5.9% increase from the 1960 census figure of 680,514). Urban places with populations above 7,500 in 1960:

Aberdeen	23,073	Rapid City	42,399
Brookings	10,558	Sioux Falls	65,466
Huron	14,180	Watertown	14,077
Mitchell	12,555	Yankton	9,279
Pierre (*capital*)	10,088		

Government.—Chief executive and judicial officers in 1962 included Archie M. Gubbrud (Republican), governor, serving a two-year term; Joseph H. Bottum, lieutenant governor until July 9, succeeded by Nils A. Boe (see below, *Events, 1962*); Mrs. Essie Wiedenman, secretary of state; Al Hamre, treasurer; Mrs. Betty Lou Casey, auditor; A. C. Miller, attorney general; M. F. Coddington, superintendent of public instruction; and Alex Rentto, presiding judge of the 5-member Supreme Court.

The South Dakota Legislature, which convenes in odd-numbered years, comprised 25 Republicans and 10 Democrats in the Senate in 1962 and 57 Republicans and 18 Democrats in the House of Representatives.

Finance.—In the 1962 fiscal year, revenue of $150,243,111 included $64,287,622 from state taxes and $54,438,738 in federal funds. Chief tax yields were the 2% general sales tax ($17,303,256), motor fuel taxes ($21,555,338), and licensing ($12,925,242). Spending of $145,302,977 included $21,253,983 for education, $19,374,043 for health, welfare, safety, and social services, and $59,167,758 for highways.

Education.—In the fall of 1962, public elementary schools staffed by 5,370 teachers enrolled 109,359 pupils;

secondary schools with 2,859 teachers enrolled 50,551; and (fall 1961) parochial schools with 642 teachers enrolled 14,639. College enrollment (fall 1961) totaled 15,270 in 16 institutions, including 3 junior colleges and 13 senior colleges and universities.

Estimated public school spending in the 1961–62 school year totaled $59,195,000, including current expenditures of $53,800,000 ($380 per pupil) and capital outlays of $4,500,000. Revenue of $66.4 million was drawn chiefly from state funds ($7 million) and local districts ($47.5 million). Teachers' salaries averaged $3,850 (high school, $4,650; elementary, $3,550). Actual spending for higher education (1961 fiscal year) amounted to $18,998,000.

Public Assistance.—In the 1962 fiscal year, public assistance payments to a monthly average of 20,355 persons totaled $13,550,948. This amount included $7,509,943 for the aged and $3,651,712 for dependent children.

Transportation and Communications.—There were 706 miles of highway construction and reconstruction completed in the 1962 fiscal year. *Highways and roads* on Dec. 31, 1961, totaled 91,645 miles (50,748 surfaced). These served 356,100 *motor vehicles* (as registered Sept. 1, 1962), including 256,971 automobiles. Operating in the state were (Dec. 31, 1961) 7 *railroads* (using 3,909 line miles of track); (1961) 4 regularly scheduled *airlines;* and 71 commercial and municipal *airports and airfields.*

Communications media included (1962) 25 AM *radio stations;* 8 VHF *television stations;* 13 daily *newspapers* (est. circulation, 175,000) and 168 other newspapers (201,000); and (Jan. 1, 1962) 58,700 business and 181,700 residential *telephones.*

Labor Force.—The state's labor force in June 1962 included 95,600 agricultural workers. Covered nonagricultural employment totaled 86,153, compared with 83,642 a year earlier. Of covered nonfarm employees, 32.5% were in trade, 16.4% in service industries, 15.6% in manufacturing, and 15.2% in construction. Covered unemployment on July 14, 1962, stood at 866, compared with 831 a year earlier.

Manufacturing.—Manufacturing engaged 13,440 workers in 1960, including 9,968 in production, and provided a payroll of $63,533,000. Adjusted value added by manufacture totaled $124,564,000. The state's leading industry was food and kindred products, employing 8,447 persons who received $43,568,000 in wages and added $86,531,000 in adjusted value by manufacture.

Mining.—In 1961, South Dakota ranked 40th among the states in the value of its minerals, with 0.24% of the national total. The leading gold producer (Homestake Mine) supplied nearly half of the state's mineral value. The state was first in output of gold, second in beryllium, and third in sheet mica. Output of lignite was 10% less than in 1960.

SOUTH DAKOTA MINERAL PRODUCTION, 1961
(In short tons, except as noted)

Mineral	Quantity	Value
Beryllium concentrate	238	$ 130,000
Clay[1]	249,000	249,000
Feldspar (long tons)	29,354	186,000
Gold (fine ounces)	557,855	19,525,000
Mica, sheet (pounds)	18,086	37,000
Sand and gravel	11,324,000	7,336,000
Silver (fine ounces)	127,000	118,000
Stone	2,806,000	6,642,000
Uranium ore	43,588	495,000
Other minerals	...	9,292,000
Total	...	$42,980,000[2]

[1] Excludes certain clays, value of which is included in "Other minerals." [2] Total adjusted to eliminate duplication of value of clays and stone. (Source: U.S. Bureau of Mines.)

Agriculture.—Cash farm income for the first nine months of 1962 (excluding government payments) totaled $464,374,000, compared with $464,186,000 for the corresponding period of 1961. For the full year 1961, income comprised $484,480,000 from livestock, $178,714,000 from crops, and $44,208,000 in government payments. Principal income sources in 1961 were cattle, $277,472,000; hogs, $105,127,000; wheat, $75,750,000; and corn, $42,694,000.

The state's 56,000 farms in 1959 had an acreage of 44,851,000 (14,236,000 in harvested cropland). Livestock on farms on Jan. 1, 1962, included 3,460,000 cattle, 1,433,000 hogs, 1,711,000 sheep, and 8,584,000 chickens. An average of 78,000 family and 11,000 hired workers engaged in farming during 1961.

SOUTH DAKOTA CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Barley (1,000 bu.)	11,094	11,832	11,043
Corn for grain (1,000 bu.)	95,493	100,046	113,008
Flaxseed (1,000 bu.)	5,541	5,026	6,058
Oats (1,000 bu.)	94,244	85,510	106,190
Wheat (1,000 bu.)	35,373	32,545	29,824

(Source: U.S. Department of Agriculture.)

Events, 1962.—The death of Republican U.S. Sen. Francis H. Case on June 22 ended 25 years of service in the House and Senate. On July 9, the Republican State Central Committee selected Lt. Gov. Joseph H. Bottum, Jr., Rapid City, as the senatorial candidate, and Gov. Archie M. Gubbrud appointed him to complete Case's term. In the November 6 election, Democrat George S. McGovern, former national Food-for-Peace director, defeated Bottum by a narrow margin. A statewide recount that began on November 26 placed the final plurality at 597 votes.

Otherwise, the general election resulted in sweeping Republican victories for U.S. Representatives Ben Reifel and E. Y. Berry, Governor Gubbrud, and all other state executive officers. The Republicans also retained their control of the Legislature, by 26 to 9 in the Senate and 58 to 17 in the House. Approval was given to three proposed constitutional amendments providing for municipal home rule, annual (instead of biennial) sessions of the Legislature, and right of state entry on private property before the payment of compensation.

Above-average moisture, cattle production, gains in manufacturing, federal expenditures, and an expanding tourist industry created relative prosperity in the state in 1962. Interstate Highway 29 between Sioux Falls and Sioux City was dedicated on September 30, and the State Highway Department announced on November 1 that 220 miles of Interstate routes were open to traffic. The wheat growers of the state on August 30 voted to support (by a 5–1 margin) federal marketing quotas on the 1963 crop. The South Dakota Petroleum Council announced in October that the cumulative crude oil production for the state had reached 877,000 barrels and would pass 1,000,000 barrels before the end of the year. Governor Gubbrud made public on December 12 his proposed budget of $75.3 million (an increase of $8 million) to finance state government operations during the next biennium.

Of greatest interest in social relations during the year were charges of discrimination against Negro airmen stationed at Ellsworth Air Force Base by Rapid City cafes, bars, restaurants, and motels. The results of hearings of the state advisory committee to the U.S. Civil Rights Commission, held in Rapid City on December 11, had not been made public by the end of the year.

Heavy snow in the eastern part of the state during February and March brought immediate hardship, and later floods, but also much-needed moisture for the land. On April 4 a state of flood emergency in 14 southeastern counties was declared by the governor. In May, areas around Corsica, Bonesteel, Wall Lake, and Mitchell were struck by tornado, hail, torrential downpour, and gale-force wind. On July 13 the flooding of Rapid Creek resulted in the temporary evacuation of

some residents in Rapid City, as well as property losses.

In other events, President Kennedy dedicated the Oahe Dam, north of Pierre, on August 17 (see also DAMS). The first two of a projected 150 Minuteman missile-launchers were turned over to Ellsworth AFB on November 6. A feud between Mound City and Herreid, in Campbell County, over the location of Agricultural Stabilization and Conservation Service records remained under consideration by the federal court at year's end.

"Events" by: CEDRIC CUMMINS,
Professor of History,
State University of South Dakota.

SOUTH SEA ISLANDS. See FRENCH POLYNESIA; PACIFIC ISLANDS; WESTERN PACIFIC ISLANDS, BRITISH.

SOUTH WEST AFRICA

Administered by the Republic of South Africa, South West Africa is a former League of Nations mandated territory on the southwest coast of Africa. It has an area of 317,725 square miles, and a population (July 1, 1961 est.) of 534,000. Included in the territory is the Caprivi Zipfel (area, about 10,000 square miles; pop., about 14,000), controlled by the South African Ministry of Native Affairs. Walvis Bay (area, 434 square miles; pop. 1960, 12,568), constitutionally part of South Africa's Cape Province, is administered by South West Africa. Included in the territory's population (1960 census) are 427,980 Africans, 23,930 Coloreds, and 73,154 Caucasians. The capital is Windhoek (1960 pop., 35,890, including 19,021 whites). Afrikaans and English are the official languages; German is spoken by many whites.

Government.—The territory is governed by an administrator (Daniel T. du P. Viljoen, appointed September 1953), who is assisted by a 4-member executive and an 18-member Legislative Assembly, elected for a 5-year term by universal suffrage limited to whites. In the election of March 8, 1961, the Nationalist Party won 16 seats and the United National South West Party won 2 seats. South West Africa is represented in South Africa's Parliament by 6 elected members in the House of Assembly, and by 2 elected and 2 nominated members in the Senate. Local government is administered by magistrates in 17 districts, and by the native affairs administrator in Ovamboland, Kaokoveld, and the Okavango Native Territory.

Education.—There are separate school systems for African, Colored, and white children. Number of schools (with enrollments), 1961: African, 98 (13,277); Colored, 48 (5,044); and white, 57 (14,979). Education of African and Colored children is primarily conducted in schools run by religious missions.

Finance.—Government revenue, 1961–62 est.: £15,745,000 (£15,728,000 in 1960–61); expenditure, £17,098,000 (£21,058,040). A decimal currency based on the rand (which equals U.S.$1.40) was introduced by South Africa in the territory on Feb. 14, 1961.

Transportation and Communications.—Transport networks (miles, 1960): railroads, 1,463; main roads, 4,259; secondary roads, 34,000. The main airport at Windhoek is served by South African Airways and Sudweis Lugdiens. In 1961 there were about 20,000 vehicles and 14,829 telephones in the territory.

Economy.—Mining, stock raising, and fishing are the main economic activities. Production for export (tons, 1960): copper-lead-zinc concentrates, 212,974; manganese, 78,378; salt, 67,607; lead-vanadium concentrates, 6,127; lithium ores, 2,719; copper, 2,408; diamonds, 922,422 carats. Fishing is conducted mainly for pilchard (310,000 tons, 1960) and rock lobster.

Foreign Trade.—Total exports, 1960: £20,204,838; imports, £7,311,314. Principal exports, 1960: diamonds, cattle, karakul pelts. South Africa is the territory's chief trading partner.

Events, 1962.—Following the UN General Assembly's decision on Dec. 19, 1961, to establish a Special Committee for South West Africa, Victorio D. Carpio (Philippines), chairman, and Salvador Martinez de Alva (Mexico), vice chairman, were invited by South Africa to visit the territory. In a preliminary report issued on May 26, the two investigators absolved South Africa of accusations that its apartheid policies were a threat to international peace and to the nonwhite population of South West Africa. Following strong criticism by many United Nations delegates, Carpio denied that he had ever participated in the drafting of the statement. On August 31 the committee issued a report to the UN General Assembly stating that it was imperative that the organization take "firm and resolute" action to establish its presence in the territory in order to "prevent a political disaster" there. The UN General Assembly voted on December 14, by a vote of 98 in favor and none against, to send an observer to South West Africa.

J. L. L.

SOUTHEAST ASIA TREATY ORGANIZATION. See Index entry.

SOUTHERN RHODESIA. See RHODESIA AND NYASALAND, FEDERATION OF.

SOVIET LITERATURE

More than in previous years, Soviet literature offered in 1962 a picture of various and often competing tendencies which kept undermining the official theory and practice of socialist realism. The traditional novel of industrial construction and agricultural development was on the decline, being represented only by second-rate narratives, such as *The Siren,* by Vadim Ocheretin, or *Tatiana Tarkhanova,* a peasant chronicle by Mikhail Zhestev. In general, the de-Stalinization of literature was one of the most important trends in Soviet literature in 1962. It reached its peak in *One Day of Ivan Denisovich,* by Alexander Solzhenytsin, a frank description of life in concentration camps in the early 1950's, a work that provoked a furor in the whole USSR.

Thematically, tales about scientists and their achievements obtained more success with the readers. *March to the Limit,* by Sergei Snegov, depicts a research institute of physical chemistry, and its hero is a former victim of Stalinist purges —a common figure in Russian contemporary fiction. *Attacking the Thunderstorm,* by Daniil Granin, gives a vivid description of a meteorological station and centers the action around an outsider with the soul and manners of an adventurer and with daring ideas about man's imminent full control of weather. Next to novels about scientists came science-fiction.

One of most striking features of Soviet fiction in general is the steady increase in works on youth. They range from the gay *Too Young,* a novelette by Aleksandr Rekemchuk, depicting the love of a simple lad for a woman architect in the primitive surroundings of the extreme north, to *Earthly Gravitation,* by Yelena Rzhevskaya, whose heroes find themselves on the border of juvenile delinquency and are tormented by sex and unfulfilled desires. Such novels as Mikhail Demidenko's *You Will Be Named Yurka,* the story of an unmarried mother; Aleksandr Andreyev's *Judge Us, Folks,* a bitter tale about an unhappy love affair between a bricklayer and a general's daughter; and Yuri Bondarev's *Stillness,* an interesting account of demobilized soldiers who failed to fit into postwar civilian life under Stalin, all reveal the sufferings and aspirations of the new generation, born and educated in Soviet society.

Even in the light genre which used to be didactic and educational, the new spirit is evident, particularly in *Zhenia, the 20th Century Miracle,* by Tatyana Yesenina, a satire on the "prefabricated ideal hero" and on artificial literary patterns, and in *Face to Face with the Great Bear,* by Vlad-

imir Sanin, a hilarious story of two young couples and their boasting friend on a vacation trip. A number of short stories in periodicals, and *Young Leningrad*, a collection of prose and poetry by literary newcomers, confirm the impression that young persons in the USSR are bored with the propaganda clichés and the dullness of their environment and are looking for something excitingly new in all the arts.

In keeping with the new trend were the two most widely discussed works of the year: *The Notebooks of Tarussa*, edited by Konstantin Paustovski, and the poems of Andrei Voznesenski, a 29-year-old rival of Yevgeni Yevtushenko, one of the poetic leaders of Moscow youth. The Tarussa collection was published in Kaluga, a small provincial town, and sold 75,000 copies in a few days. It contains highly laudatory essays on the emigré Ivan Bunin, on Marina Tsvetayeva, an avant-garde poetess who committed suicide in 1941, and on Vsevolod Meyerhold, the stage director who fell victim to Stalin's purges in the late 1930's. The poems, stories, and illustrations in this remarkable collection, whose editor is an excellent novelist in his own right and a friend of the late Boris Pasternak, show a strong opposition to socialist realism. The notebooks were condemned by Communist critics as a manifestation of "revisionism."

"Bourgeois modernism" was also discovered in *Thirty Digressions from the Poem, a Triangular Pear*, by Voznesenski, who, among other things, depicts his impressions of New York and of his tour of the United States. The significance of his poetry lies in its challenging form and its main theme of search for identity. Although obviously deriving from Mayakovski and the futurists of the 1920's, Voznesenski uses surrealist metaphors, paradoxes, and symbols, and is attracted by innovations of rhythm and meter. His poetic vision of dream and anxiety is in sharp contrast with the flat versification of socialist realists.

Other poets, such as Leonid Martynov, Vsevolod, Rozhdestvenski, and Yevgeni Yevtushenko, despite their individual differences, all belong to the "new wave." Even the reporting on contemporary life and the widely popular sketches of men and places are changing in style and content. Instead of rosy pictures and official optimism, a group of young authors, such as Yefim Dorosh, Vladimir Soloukhin, and, lately, Yevgeni Gerasimov (*The Silk Town*) present sober and often merciless images of Soviet reality.

Translations.—The following is a selected list of books in Russian that have recently been published in English: Ehrenburg, Ilya, *A Change of Season*, tr. by Manya Harari and Humphrey Higgins; Nekrasov, Viktor, *Kira Georgievna*, tr. by Walter N. Vickery; Sholokhov, Mikhail, *Tales of the Don*, tr. by H. C. Stevens; Simonov, Konstantin, *The Living and the Dead*, tr. by R. Ainsztein; Sologub, Fyodor, *The Petty Demon* (Russian publication, 1907), tr. by Andrew Field; Yevtushenko, Yevgeni, *Selected Poems*, tr. by Robin Milner-Gulland and Peter Levi; and *Stories from Modern Russia: Winter's Tales 7*, ed. by C. P. Snow and Pamela Johnson.

Marc Slonim,
Director, Sarah Lawrence College Foreign Studies; Author, "Modern Russian Literature."

SOVIET UNION. See Union of Soviet Socialist Republics.

SOYBEANS. See Index entry.

SPACE FLIGHT

Advances in space technology, exploration, and medicine during 1962—the fifth year of the space age—are reviewed in the following article in three sections: (1) Astronautics—Space Science and Technology; (2) Space Exploration in 1962; and (3) Manned Space Flight.

For additional information, see Astronomy; Atmosphere Research; and the Index entry, *Space Flight*.

Astronautics—Space Science and Technology

During 1962 the United States moved closer to its goal of reaching the moon with a manned spacecraft before the end of this decade. After a review of the recommendations of a government committee of scientists, the National Aeronautics and Space Administration (NASA) concluded that the Lunar Orbit Rendezvous (LOR) approach would offer the earliest opportunity of a lunar landing and, contrary to the committee's findings, also would probably be a fairly economical scheme in comparison with direct flight and Earth Orbit Rendezvous (EOR) plans.

With the LOR approach, a three-man spacecraft would be launched from the earth directly to an orbit of the moon, send down a two-man Lunar Excursion Module (LEM), rendezvous with it in the lunar orbit, and return to the earth. By May 1962 the LOR decision was pending, and a thorough study of the entire LOR scheme by the Chance Vought Corporation was funded by NASA. After the results of the study were in, NASA let a contract on November 7 with the Grumman Aircraft Engineering Corporation for the building of the LEM.

The NASA budget rose to $3.7 billion for the fiscal year 1963 (ending June 30, 1963), with a prospect of increasing to over $4 billion and possibly over $5 billion for fiscal 1964. The tempo of meteorological and communication satellite research was increased. Environmental and engineering facilities at the various NASA centers were greatly expanded, and at Cape Canaveral construction was started on very large launch facilities, probably to cost $1 billion by 1970. During the next three or four years these facilities will handle the smaller NASA Saturn C-1 rocket, and later the Saturn C-5, the lunar rocket.

The United States continued its cooperation with foreign countries by furnishing them data on satellite construction and actual high-altitude sounding rockets, with a promise of the later availability of the four-stage Scout rocket developed by NASA and capable of orbital launches. In Paris on June 14, delegates from ten nations—France, Great Britain, West Germany, Italy, Spain, the Netherlands, Belgium, Switzerland, Austria, and Sweden—signed an agreement setting up the European Space Research Organization (ESRO). Denmark and Norway indicated they would join later. Pierre V. Augur of France was named director general of ESRO. With a budget exceeding $300 million for the next 8 years, ESRO plans to carry out some 500 space experiments, beginning with 10 sounding rockets in 1963, and including the first European satellites in 1967. The launching vehicles will be supplied by the European Council for the Construction of Spacial Vehicles, established in March 1962.

Space Science.—One of the most fruitful series of research satellites launched in the United States has been the Explorer group.[1] Launched on Feb. 16, 1961, Explorer IX provided new and refined information (since confirmed by other Explorer satellites) on the density of the upper atmosphere. At 420 miles altitude, the density determined by

[1] For additional information on satellites launched in 1962, see the following section, *Space Exploration in 1962*.

changes in the satellite's velocity was 17×3^{-10} molecules per cubic centimeter or one 40-million-millionths of that at sea level. Explorer IX density values were about 10 times lower than those computed from prior satellites. Most of this decrease is attributed to the decrease in solar activity since the peak of the solar cycle in 1958 and 1959. It was also shown that changes in the atmosphere's density at high altitudes were coupled to the 27-day rotational period of the sun and to the occasional violent solar flares that affect the earth's atmosphere.

Vanguard I was injected into orbit on March 17, 1958, with a rotational speed of four revolutions a second. These revolutions have since slowed to 1 in 23 seconds. It is now concluded that this decrease in the spin rate has resulted from the damping effect of the earth's magnetic field. The power of the tiny radio transmitter in Vanguard has also been reduced, it is believed because of a decrease in the output of the solar cells or batteries. These cells are made of very pure silicon. Apparently space radiation degenerates the quality of the silicon and thus decreases the electrical output of the cells. This long-term effect can be circumvented to some extent by coating the silicon cells with special transparent materials that will slow down or stop the space radiation. Many of the existing and future satellites launched in the United States will depend on power from the sun, and it is an important responsibility of space technology research at this time to determine what can be done to desensitize the solar cells to space radiation and, incidentally, make them less sensitive to micrometeoroid impact.

Much has been learned photographically during the last three years, especially about lunar mapping with special telescopes and photogrammetric equipment. The lunar surface is believed to be extremely dry and porous with perhaps a layer of dust accumulated by millions of years of meteoritic impact, which, incidentally, created many of the craters that are seen.

Data must be obtained directly from the lunar surface by unmanned spacecraft, however, before a manned landing is attempted. If the lunar surface should be extremely powdery or have a thin crust, landing a manned spacecraft weighing several tons may be a most difficult, if not impossible, undertaking. Many billions of dollars would have then been spent for lunar exploration without men having the ability to move about the lunar surface.

The Ranger program to obtain television pictures of the lunar surface before impact and to rough-land instruments on the moon has suffered from a variety of malfunctions. No lunar data were received from Rangers III, IV, and V, all launched in 1962. Plans call for at least three Ranger launchings in 1963.

Several small changes in the lunar topography were observed with telescopes during 1962. Soviet astronomers claim that they have viewed several gas and dust clouds coming from craters and have seen changes of the lunar surface between craters. If this is correct, then the moon is not the totally inactive and immutable place that has been suggested by many astronomers.

Launched on Aug. 27, 1962, into escape from the earth, the space probe Mariner II passed the planet Venus at a distance of 21,594 miles from its surface on December 14, when it successfully relayed data 36 million miles back to earth on Venus' atmosphere, surface temperature, and cloud system, the first observations ever made from the vicinity of another planet. Its instruments had previously reported several discoveries from interplanetary space. It recorded a fairly constant plasma or wind of charged particles streaming out from the sun at between 250 and 450 miles a second, occasionally intensified abruptly by solar flares. It also measured magnetic fields in space and recorded a density of interplanetary dust only one ten-thousandth of that found near the earth. As it continued in solar orbit, Mariner II kept transmitting data, all of which will require months to analyze.

Meteorology.—While over 50 percent of NASA's effort went into the Apollo lunar program, scientific space research and the application of satellites still were carried on with increasing intensity. Three more meteorological satellites, Tiros IV, V, and VI, were launched during 1962, each of them contributing substantially to the accumulated data on worldwide cloud and weather formation.

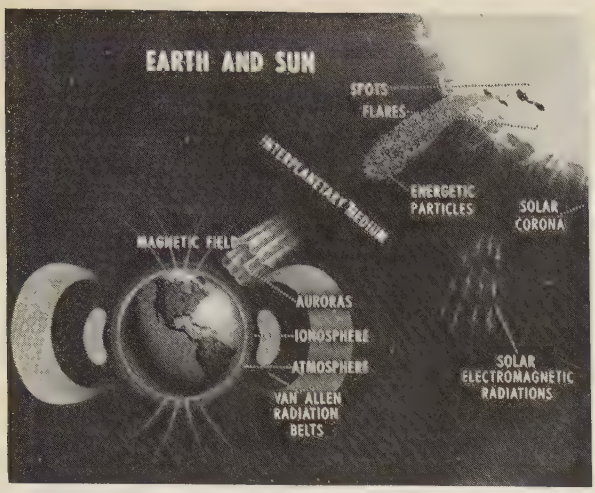
Data reduction is an important element in the weather satellite picture. It has become necessary to increase the effort in analyzing photographs and other data received from the satellites since so much has now accumulated. The U.S. Weather Bureau, the NASA Meteorological Satellite groups, the Goddard Space Flight Center Data Reduction personnel, and the NASA Theoretical Division at Columbia University are all making attempts to analyze cloud data obtained during 1962 by Tiros satellites. Attempts are being made also to analyze the data obtained by sensitive detectors in these satellites of the heat radiation emitted from the earth, which changes with the time of day, depending on sunlight and cloud cover.

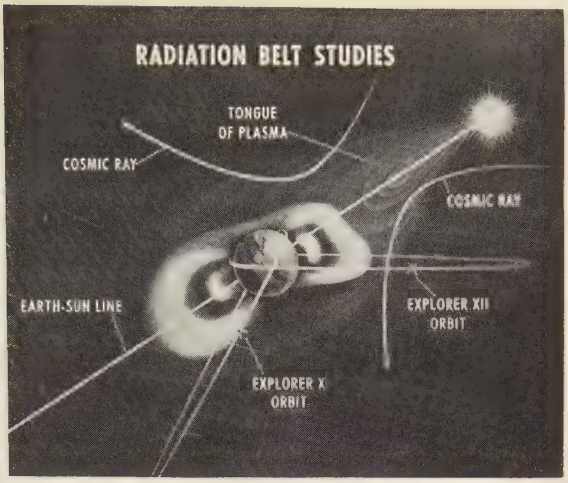
If a correlation can be found between the heat radiation from the earth and the occurrence of clouds, further light will be thrown on the mechanism of cloud formation. Some correlations have already been deduced. Elaborate computers and other data-analyzing equipment are necessary to evaluate whether any trends may exist.

Many scientists believe it would be desirable to have a weather satellite in synchronous orbit at a distance of 22,300 miles from the earth, so that the satellite would be fixed above the point of the earth underneath it. NASA is studying such a satellite, called Aeros. It could scan almost half of the earth at once and would obtain a much more comprehensive cloud picture than is possible with the low, 300-mile-orbit satellites. The difficulties of launching a satellite into such an orbit are great and would require rocket power not presently available for a spacecraft estimated to weigh about 1,000 pounds. At any rate, the present Tiros system and the later Nimbus satellites which will fly about 1964 will have improved instrumentation for measuring the infrared or heat radiation from the earth. Later Nimbus satellites may carry radar detectors to measure cloud distribution at night and distribution of various strata of cold or heated air. (See also METEOROLOGY AND CLIMATOLOGY.)

Communications.—During 1962, Telstar, a 300-mile-orbit satellite, successfully relayed signals from the United States to Europe and back until November 23, when the command circuit for the satellite's television transmitter and receiver failed, though it continued to report other experiments it carried. On Jan. 3, 1963, television tests were resumed successfully. It could transmit for only about a half-hour interval because of its low altitude and quick disappearance over the horizon for any given transmitting or receiving station. All radio signals to and from the satellite require line-of-sight paths. (See also RADIO AND TELEVISION; TELEPHONE.)

NASA's active-repeater communication satellite Relay, a step beyond Telstar, is designed to receive and retransmit television, telephone, and





NASA

(*Left*) **High-energy particles from the sun, signaled by spots and flares, cause variety of disturbances when they reach vicinity of the earth, including auroras, compression of magnetic field, communications blackouts, and changes in Van Allen belts. (*Right*) Drawing shows how strong magnetic field generated by solar plasma acts to deflect cosmic rays away from earth. Explorer satellites have provided much data on this phenomenon. (White areas near earth represent Van Allen belts.)**

other forms of wideband experimental signals between stations in the United States, Europe, and South America. Launched on Dec. 13, 1962, by a Thor-Delta rocket, the 172-pound, octagonal satellite went into a wide-ranging elliptical orbit which also allows it to monitor radiation intensity and effects in the inner Van Allen belt. Initially its batteries charged by solar cells were too weak to power communication experiments, but successful transatlantic tests were made on Jan. 6, 1963.

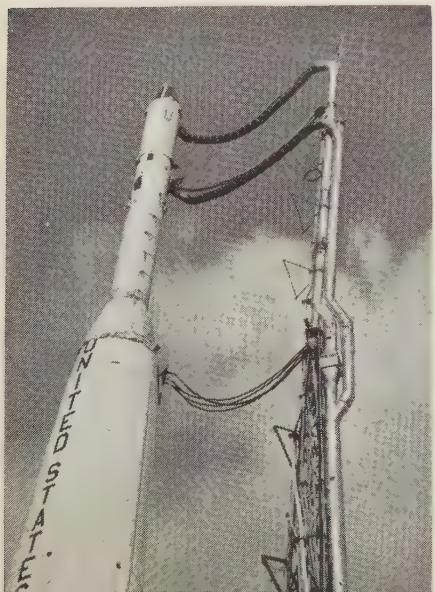
As with meteorological satellites, it would be preferable to have a "stationary" communication satellite at 22,300 miles in the sky. Again, rocket power is deficient at this time to carry out this project. The military have studied the possibilities of such a satellite under the project name Advent. NASA is also interested in such spacecraft and experimental models may be launched soon. It is likely that before the end of this decade, several such satellites with economical lifetimes of a year or more will have been established; communication and other satellites and their components with such necessary lifetimes are being developed.

On Dec. 5, 1962, the United States and the Soviet Union announced a formal agreement to cooperate in certain meteorological, magnetic, and communications satellite observations and experiments.

Launch Vehicles.—The year 1962 was a year of gain (and also some setbacks) for NASA in rocket-vehicle development. After one test launching in 1961, two Saturn S-1 rocket vehicles were launched successfully in 1962 from Cape Canaveral. These stages, each having a thrust of 1.2 million pounds with 8 rocket engines clustered together, will be used in the next five years for the testing in earth orbit of Apollo spacecraft, later to be used for lunar travel. The Saturn S-1 in each test carried two dummy upper stages.

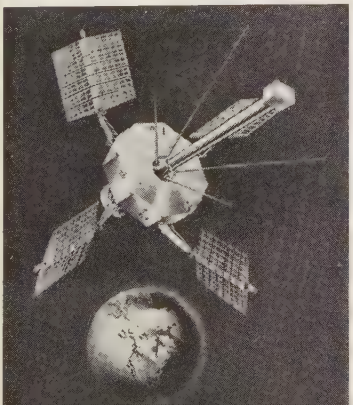
The second 1962 launch, on November 16, carried 95 tons of water in one of the dummy stages. At an altitude of 104 miles this stage was torn apart by explosive charges. The water vaporized in the vacuum of space and immediately condensed into a short-lived ice cloud. The Saturn S-1, which will later become the first stage of the Saturn C-1 vehicle, performed reliably because it used a guidance system, tanks, and engines which have been used in many rocket-vehicle experiments.

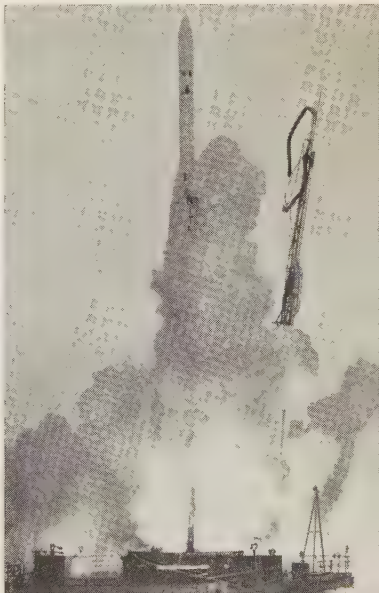
The Saturn C-1 is basically a two-stage vehicle consisting of the S-1 stage and a second stage which uses a cluster of 6 Pratt & Whitney liquid-hydrogen and liquid-oxygen rocket engines, each developing 15,000 pounds of thrust. As used in the C-1, the second stage is called the S-IV. Expected

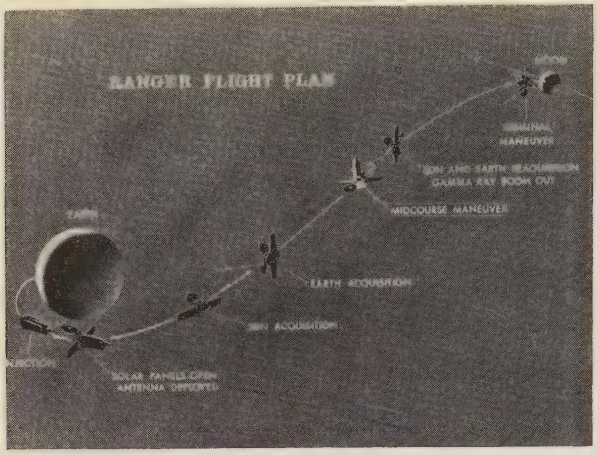


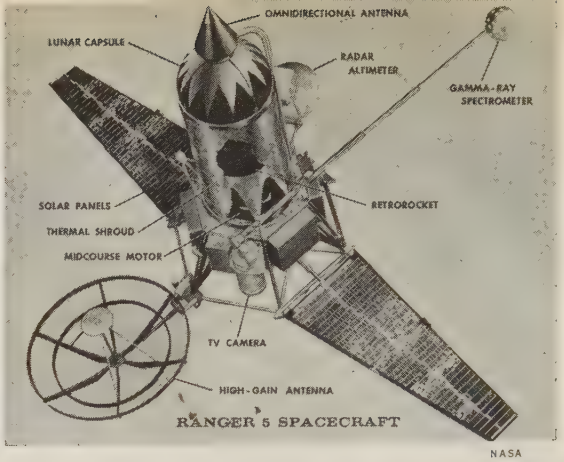
Two Explorers were sent aloft in October to study the kind of space "weather" depicted in drawings at top of page. These pictures show (*left*) the Delta launch vehicle; (*below*) a rendering of the satellite, with four solar-cell vanes extended; and (*right*) the moment of lift-off of Explorer XIV, from Cape Canaveral, Fla., October 2.

NASA









NASA

The Ranger program of lunar investigation involves sending a spacecraft to the moon to take close-up pictures and land an instrumented capsule on its surface. Flight plan and close-up of the vehicle are shown in these drawings. Three Ranger spacecraft were launched in 1962. None achieved its mission, but one (sent aloft on April 23) struck far side of the moon.

to be ready in early 1964, the C-1 should be able to orbit about 25,000 pounds of payload. The Douglas Aircraft Company is building the second stage, as well as a more powerful version called the S-IVb.

The S-IVb will not have a cluster of 6 small engines, but instead will be fitted with one big liquid hydrogen-liquid oxygen engine called the J-2, presently being developed by Rocketdyne Corporation in California. The J-2 engine develops a thrust of about 200,000 pounds. It will be widely used later for other stages with the Advanced Saturn, or Saturn C-5, to be developed by NASA for lunar missions.

The United States suffered a setback in the development of the Centaur rocket. This vehicle, using an Atlas lower stage and an upper stage fueled by liquid hydrogen and oxygen, is counted on to serve as a workhorse vehicle capable of placing up to 8,500 pounds in an earth orbit, 850 pounds in a synchronous orbit, and about 1,300 pounds in escape trajectory to the moon or near planets. The upper stage is powered by two of the Pratt & Whitney RL-10, 15,000-pound-thrust rocket engines.

During the first launching of the Centaur on April 21, 1962, the second stage was destroyed by the disintegration of the aerodynamic shield around the rocket. The effect of aerodynamic forces on this shield had not been foreseen, and the failure should not be attributed to a basic design error in the rocket. However, this moved the vehicle's operational readiness date from late 1963 to late 1964 or perhaps 1965.

Some of the burden that was to have been assumed by the Centaur rocket has been taken over by the Atlas-Agena booster, which has only about two thirds of the payload-carrying capability. Thus, the Surveyor spacecraft to be launched to the moon (to orbit it for pictures and to soft-land instruments) will have to be reduced by about 200 pounds to a weight of about 500 pounds to be ready for a launching by the Atlas-Agena by late 1963 or early 1964.

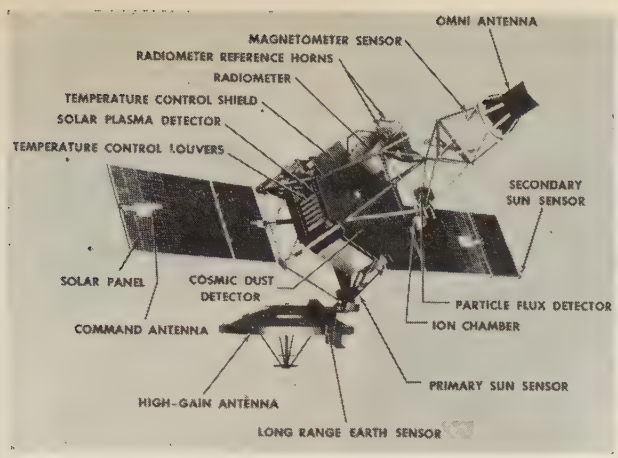
Another rocket vehicle, the two-stage Titan II, of the U.S. Air Force, also has been considered as an interim orbital launch vehicle. This rocket can inject a spacecraft weighing up to 7,000 pounds into a 300-mile orbit. Suitable for the NASA Gemini program, it also could have other uses for high-payload-orbiting requirements, and could launch even larger payloads with the addition of a third, high-energy stage burning liquid hydrogen with oxygen or fluorine with hydrazine. With a third stage, it could launch about 2,500 pounds to the surface of the moon and from 800 to 1,000 pounds toward the planet Mars, as opposed to the less than 500-pound Mariner II that was sent past Venus in December 1962 by the Atlas-Agena vehicle. (See also Missiles.)

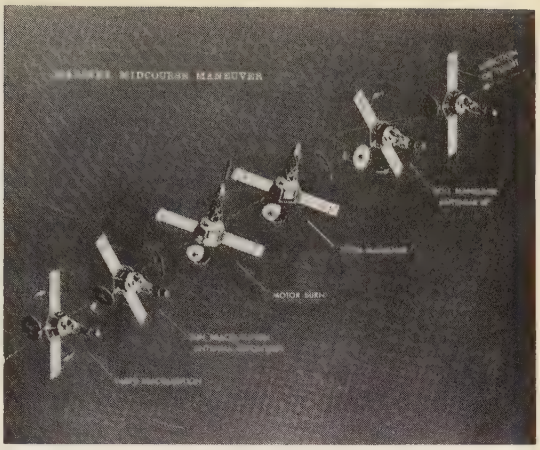
An interesting technological development has taken place in vehicle design. The Douglas Aircraft Corporation has been authorized to proceed with the Thorad, which will consist of a tried and proved Thor booster, about which will be clustered three or more solid rockets. The construction of a small prototype, Thorad, Jr., is under way. This vehicle will have three Scout second stages using solid propellants clustered around the Thor, substantially increasing its capability by permitting it to be loaded with relatively large upper stages. In this way considerably more payload can be carried into a ballistic or orbital trajectory.

The Thorads will be watched with more than casual interest by many scientists and engineers because they will precede development of the Titan III rocket, a Department of Defense vehicle to be used for the launching of the X-20 (previously called the Dyna-Soar) manned spacecraft. The Titan III combination of solid and liquid boosters uses a considerably strengthened Titan II in order to accommodate two very large solid-propellant rockets, each of 120-inch diameter and 60-foot length. These first-stage giant solids will lift the two-stage Titan II off the ground and then shut down after a minute's firing. The Titan II will then ignite and go on into space with the X-20.

An interesting problem parallel to rocket-vehicle design is that of transporting large rockets. Up to 1960, rockets such as the Atlas, Thor, Jupiter, Vanguard, or Sergeant could be carried by truck, railway, or large transport aircraft. With the coming of the Saturn rocket, which will be over 20 feet in diameter, these forms of transportation are inadequate. The diameter of this rocket, and the diameter and weight of large solid-propellant rockets, will be too great to be accommodated by any transporter but a barge or ship. During 1962 a Boeing Stratocruiser aircraft was modified with a very large bulge on top to accommodate second or third stages of the NASA Saturn C-1, and later the C-5 vehicles. However, this strange-looking aircraft called the Guppy is experimental only and thus far no specific steps have been taken to ship rocket stages in this manner.

Propulsion Systems.—The major technical advance in propulsion during the last three years has been the use of liquid hydrogen as a fuel in rocket systems. This is a most energetic fuel, reaching a flame temperature of over 4000°F. with its oxidizing propellant, liquid oxygen. Much





AUTHENTICATED NEWS INTERNATIONAL; NASA

The United States scored one of its greatest successes in space on December 14 when Mariner II passed within 22,000 miles of Venus. Diagram at left identifies components of the craft; delicate in-course maneuver is detailed in drawing at right.

research and development has gone into the problems of handling and pumping liquid hydrogen, about 100 degrees colder than liquid oxygen and proportionally more difficult to handle. It requires special insulation, double-jacketed tanks and pipes, and valves designed not to freeze. Two engines using this propellant combination are now under development—the Rocketdyne J-2 and the Pratt & Whitney RL-10, to be used for the Saturn S-IVb and S-IV stages and the Centaur upper stage, respectively. (See also CHEMISTRY.)

The Rocketdyne Corporation is also building the F-1, a 1.5 million-pound-thrust, kerosene and liquid oxygen rocket engine which is to be the mainstay for the large Saturn vehicles to be used for lunar and possibly planetary flights. Certain difficulties have had to be overcome during the early development of this engine, but it is expected to be available for flight testing by late 1963 or early 1964. A cluster of five of the F-1 engines will be used for the first stage of the NASA Saturn C-5. This vehicle will have a second stage consisting of a cluster of five of the J-2 engines, and a third stage using a single J-2 engine.

The Lunar Excursion Module (LEM) will burn the Titan II type of propellant, nitrogen tetroxide, with the animonia-like chemical, hydrazine, or a mixture of hydrazines. One reason for choosing this propellant mixture is its relatively high boiling point and therefore long-term storage capability in space without the boil-off which occurs with a liquified gas, such as oxygen or hydrogen. The nitrogen-tetroxide and hydrazine combination also is hypergolic, igniting on contact. This eases the problem of ignition (never easy in a rocket engine) for the astronaut in space if he must start or restart the engine.

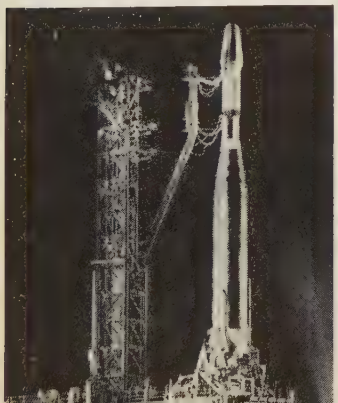
The LEM will descend to the lunar surface through the application of retro-rocket power from one or perhaps two rocket engines, probably developing about 20,000 pounds of thrust. The lunar surface return vehicle will be a second stage of the LEM system; the landing stage will be left on the moon. Rocket engines of very great reliability must be developed for this lunar excursion mission; there is no margin for error or failure.

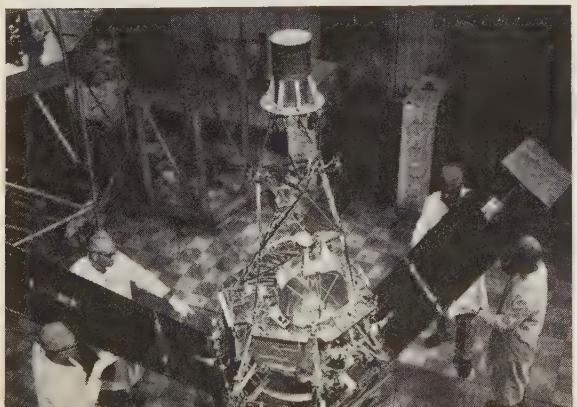
Some progress was made in 1962 in the development of nuclear rocket propulsion systems. They have the potential of becoming very powerful systems within the next decade or so, capable of transporting hundreds of tons of spacecraft to an escape trajectory to the planets or the moon. Several "hot" firings were accomplished with the Nerva nuclear rocket reactor. Much was learned about the transfer of heat to the propellant hydrogen gas as it flowed to the very hot reactor. But much is still to be learned about the resistance of materials to the hydrogen and the operation of nuclear-reactor controls to permit changing of thrust levels or the starting and stopping of the nuclear engine. (See also ATOMIC ENERGY.)

One of the most prodigious propulsion developments in the United States is the fabrication of very large solid rockets. During 1962, the Department of Defense and NASA discussed the building of giant solid rockets over 20 feet in diameter and 100 to 200 feet long. Weighing over 5 million pounds each, these rockets could be clustered in units of four to give a rocket vehicle with a capacity twice that of the Saturn C-5, which itself will project about 300,000 pounds into orbit and about 70,000 pounds to escape velocity. The United States has produced many successful solid rockets and new propellant grains twice as efficient as those available only 10 years ago. Great strides are being made also in development of methods of steering and of shipping solid rockets.

The scheme of so-called electric propulsion also has made considerable progress, but only in the building of the propulsion units themselves. These devices look and act like electron or ion guns, producing thrust by ejecting charged electrical particles instead of hot gas. They can eject ions or hot electrically charged gases called plasmas. The propulsion efficiency of these units is very high, from two to ten times that of the nuclear rocket. They are dependent on the availability of a lightweight, very efficient power source, however, and this condition can be met only by nuclear power sources, such as the SNAP-8 power supply, which will deliver about 30 kw. of electrical power, or 60 kw. in a cluster of two. Heat is generated by very hot nuclear reactors and transferred to liquid metals, which in turn drive turbines and electrical generators.

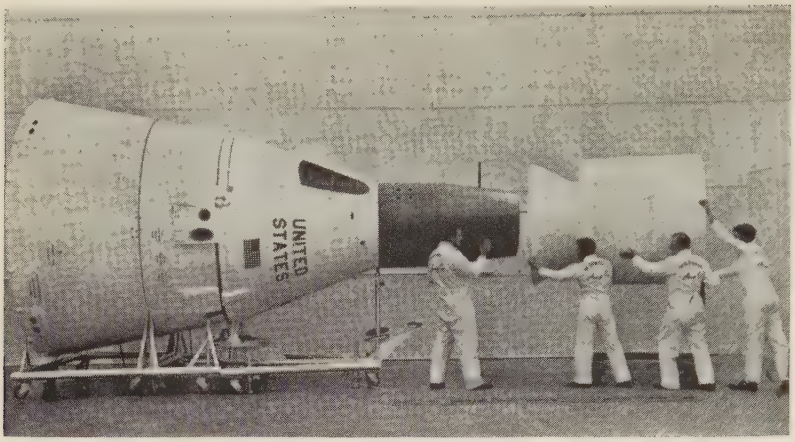
Many problems must be solved, such as the long lifetime and reliability required for these SNAP systems, before they can be applied to electric propulsors. It is estimated that through the use of an electric engine, certain space missions, such as flight to Mars, could be achieved with half the overall vehicle weight that would be necessary for a chemical rocket. But because the thrust of these electrical rockets is very low, the acceleration of the spacecraft would be low and the trip to Mars would be several times longer than with higher-thrust chemical rockets. If efficiency is desired, time has to be traded, and a mission becomes proportionally longer. This raises very great prob-





***(Left)* Mariner II (under shroud at top of Atlas-Agena B rocket) is poised at Cape Canaveral for launching toward Venus, August 27. *(Center)* Engineers check complex spacecraft. *(Right)* Robert J. Parks of the Jet Propulsion Laboratory, California, displays teletype sheet of information radioed back by Mariner II as it flies by Venus on December 14. Mass of data received from the craft was expected to shed light on several Venusian mysteries, including whether life may exist there.**

NASA; UPI



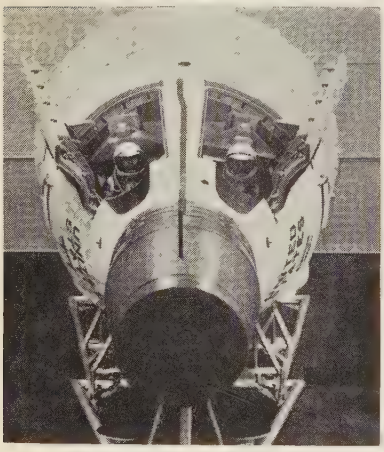
At McDonnell Aircraft plant, St. Louis, technicians demonstrate how Gemini spacecraft (mockup unit at left, with black tip) will rendezvous in orbit with Agena D rocket, represented by unit at right. The two-man Gemini will help prepare crews and perfect techniques for Apollo lunar flight.

WIDE WORLD

lems of the durability of nuclear-electromechanical systems operating in space for a year or two continuously.

It is possible to generate electrical power from nuclear sources directly through what is called a thermionic process. In this scheme, electrical power is generated without any moving parts through the use of small elements buried in the hot reactor which generate electricity in a manner analogous to that of a thermocouple.

KURT R. STEHLING,
Senior Staff Scientist,
Office of Plans and Program Evaluation,
National Aeronautics and Space Administration.



Two technicians occupy Gemini capsule to show how astronauts will ride during 14-day earth orbits. The open hatches will be closed during flight.

WIDE WORLD

SPACE EXPLORATION IN 1962—
EARTH SATELLITES AND SPACE PROBES

During 1962 the United States and the Soviet Union announced the successful launching of 36 satellites and space probes.[1] Great Britain and Canada, through cooperative programs with the United States, became the third and fourth nations, respectively, to successfully launch satellites. All of the nonsecret United States launchings described here, with the exception of Anna I-B, were accomplished under the direction of the National Aeronautics and Space Administration (NASA) in its role as civilian agency for the exploration of the upper atmosphere and outer space.

U.S. Launchings. *Tiros.*—Three spacecraft in the highly successful Tiros weather satellite program were orbited in 1962, these being the fourth, fifth, and sixth successful satellites orbited in six attempts. NASA was responsible for technical direction, tracking and data acquisition. The U.S. Weather Bureau was responsible for the operational use of the photographic data and for related research. The basic spacecraft used in 1962 was the same as the Tiros spacecraft of 1960 and 1961.

One camera in Tiros IV (launched February 8) carried a new-type medium-angle lens capable of photographing an area 450 miles on a side. The other camera was equipped with the usual lens, capable of covering an area approximately 750 miles on a side. Tiros IV was launched to continue earth cloud cover observations and to confirm Tiros capability as an ice-reconnaissance vehicle. As a result of a comparison of Tiros photographs with simultaneous photographs taken by aircraft of the same area, it was concluded that Tiros offered a better means of ice study over large areas than did conventional aircraft methods. Tiros IV transmitted 23,000 usable cloud cover photographs during the 121 days of its operational lifetime.

Tiros V was launched on June 19 for coverage of the 1962 hurricane season. Although its medium-angle camera malfunctioned on July 6, the satel-

[1] *Editor's Note:* At least 30 secret military earth satellite launchings were attempted by the United States during 1962. There was speculation that many of them were of the Discoverer series; some were thought to be of the Samos or Midas series. The Defense Department announced early in 1962 that no information would be given about these launchings before the firings, and only the launch vehicle used, and perigee, apogee, nodal period, and inclination if the satellite entered orbit would be announced afterward.

Boilerplate model of Apollo Command Module (left) arrives at the Manned Spacecraft Center, Houston, for land and water tests. Shown beside a Mercury capsule for comparison of sizes, the full-scale iron test vehicle weighs 8,500 pounds. Apollo is due to carry three astronauts to vicinity of the moon before 1970.

NASA FROM UPI

During visit to the George C. Marshall Space Flight Center, Huntsville, Ala., on September 11, President Kennedy and Vice President Johnson (right) talk to Dr. Wernher von Braun, director. In background is mockup of huge Saturn C-1 rocket, which figures importantly in United States plans to place astronaut on the moon.

UPI

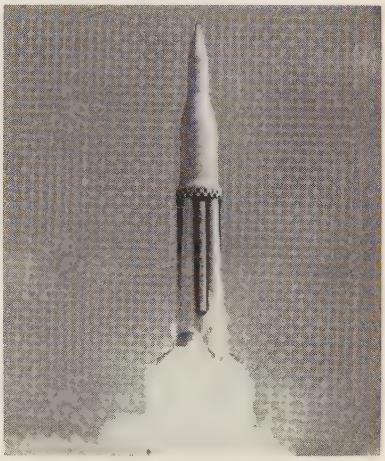
lite observed all tropical storms which occurred during the season. Tiros VI was launched on September 18 to permit maximum coverage of the hurricane season during the last half of the season. Daily international transmission of cloud maps based on photos taken by Tiros IV was started on April 15. The Tiros satellites also contributed materially to the weather studies and predictions made for the United States manned flight events in 1962. (See also METEOROLOGY AND CLIMATOLOGY.)

Telstar.—The Telstar communications satellite, launched on July 10, was a joint government-industry venture, designed and built by the Bell Telephone Laboratories. NASA provided the launch rocket, launching facilities, and initial tracking for Telstar, and was reimbursed $3 million by the American Telephone and Telegraph Company, the system sponsor. Telstar, a communications satellite of the active or repeater type, contained radio receivers and equipment for amplifying and retransmitting received signals.

A live television program prepared by three United States television networks was relayed to Europe via the satellite in the late afternoon of July 23. Several hours later a live television program prepared through the facilities of Eurovision was relayed westward to be shown to millions of Americans over regular television stations. (A short program had been broadcast from the United States to Europe on July 10, and one program each from France and England had been relayed to the United States on the same day.)

The microwave signal equipment of the satellite was capable of handling television, voice, data, facsimile, or any other service commonly handled by ground circuits. The United States ground stations for the Telstar project consisted of transmission and reception facilities at Andover, Me., and reception equipment at Holmdel, N.J. A British station, designed and built by British engineers, was located at Goonhilly Down, England. The French station was at Pleumeur-Bodou. The largest horn antenna ever built was installed at Andover; it had a mouth of 3,600 square feet, weighed about 380 tons, and was 177 feet long. The antenna was covered with a special 15-story-high inflated plastic and fabric radome to protect it from the weather and the wind.

The satellite was powered by 3,600 solar cells that charged nickel-cadmium storage cells. The long, narrow tube carried in the satellite was a special broad-band traveling-wave tube providing a radio-frequency power output of 2¼ watts. Also used were 1,464 diodes and 1,064 transistors. On August 25, Telstar was used to synchronize the master clock in the U.S. Naval Observatory in Washington, D.C., with the master clock of the British Royal Greenwich Observatory to within 10 microseconds, about 100 times the accuracy previously possible. The satellite was highly successful in demonstrating that large volumes of information

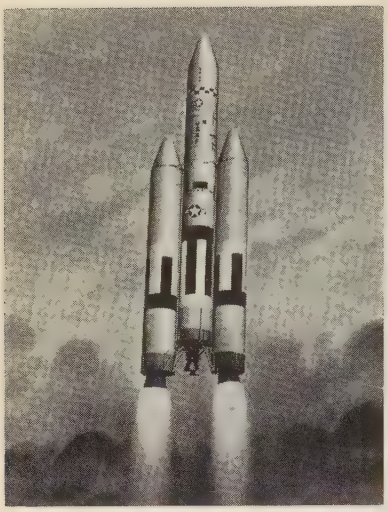


Powerful Saturn S-1 rocket rises slowly from launch pad at Cape Canaveral, Fla., April 25, in first of two successful tests in 1962. The rocket, tall as a 20-story building, was intentionally detonated 65 miles up.

NASA

Saturn S-IV rocket, protected by shipping cover, leaves manufacturing facility at Santa Monica, Calif., at start of 3,500-mile journey (via Panama Canal) to Huntsville, Ala. Because of its size, rocket had to be transported by ship and barge. The S-IV will make up second stage of the Saturn C-1 launching vehicle, which will place Apollo spacecraft in earth orbits preparatory to manned lunar flight.

DOUGLAS AIRCRAFT COMPANY, INC.



Artist's conception of the Titan III rocket, to be used in launching the X-20 manned spacecraft, shows two solid-propellant motors strapped to a modified Titan II missile. Each of the side boosters will develop over 1 million pounds of thrust before the core rocket ignites.

MARTIN COMPANY

could be handled rapidly and compatibly with other communication systems.

The orbit of Telstar was such that during November and December the satellite was in the shadow of the earth a large portion of the time and the output of the solar cells was insufficient for transatlantic tests. In addition, the command circuit stopped operating on November 23, possibly because of radiation damage to transistors by the artificial electron belt resulting from the nuclear tests conducted in preceding months. By the end of 1962, the satellite was again developing usable amounts of electrical power and engineers had found a command control sequence capable of overcoming the malfunction. On Jan. 3, 1963, test patterns were successfully received and relayed, and shortly thereafter transatlantic transmission tests were resumed. (See also RADIO AND TELEVISION; TELEPHONE.)

Relay I.—Relay I was also an active communications satellite. Shortly after being placed in orbit the spacecraft indicated an abnormal drain on its power supply and the automatic radio relay equipment became inoperative. As a result of ground studies and tests of the satellite, engineers were hopeful near the end of the year that the difficulty could be overcome or minimized by special command control sequences from the ground. Relay made two successful transatlantic test transmissions on Jan. 6, 1963, one of which lasted more than an hour.

OSO I.—The Orbiting Solar Observatory (OSO), launched on March 7, was designed to perform the first comprehensive study of the sun from a satellite, and to obtain thereby the first observations free of the absorption and distortion effects of the earth's atmosphere. The spacecraft was composed of two principal sections. The base was a nine-sided wheel 44 inches in diameter, designed to spin at a rate of 30 revolutions per minute for stabilization. A fan-shaped structure separately mounted about the spin axis and on top of the wheel always pointed toward the sun. Five major experiments to study the X-ray, gamma-ray, and ultraviolet radiations of the sun and their time variations were carried in the pointed section. Eight other experiments concerned chiefly with measurement of micrometeorites, neutrons, and Van Allen belt radiation were carried on the wheel.

A magnetic tape recording system was used to store all data obtained during each 90-minute orbit. The satellite would then transmit the data over a 5-minute period when within range of a ground command system. On May 22, after 11 weeks of excellent operation, a malfunction of the spin controls occurred and the wheel section began spinning at 50 revolutions per minute, so fast that the pointing section could not track the sun. Power was automatically switched off and the satellite could no longer transmit useful information. On June 24, the satellite again began operating properly. Presumably either bearing friction or the earth's magnetic field had slowed the spin rate to the point that the pointing controls were again operative. OSO experienced some solar cell damage after the high-altitude nuclear test of July 9 and it also had some electrical difficulties during the summer, but it continued to furnish useful data on an intermittent basis until November 1962.

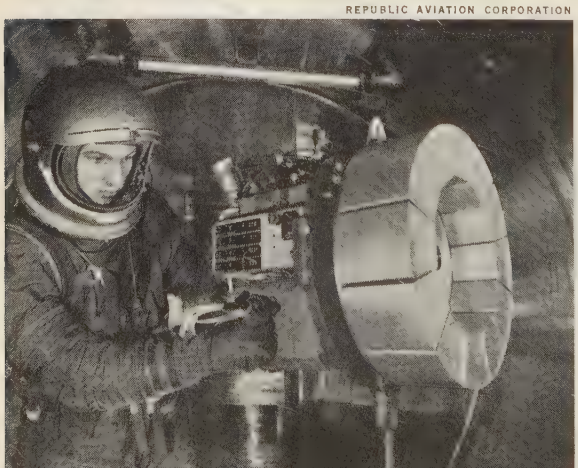
Explorer Series.—Explorer XIV (launched October 2), a continuation of the series of satellites launched for the scientific investigation of the earth's upper atmosphere and space, was similar to the highly successful Explorer XII orbited in 1961. A highly elliptical orbit was selected to permit the satellite to study the natural radiation belt of trapped particles, the earth's magnetic field, solar and galactic cosmic rays, the solar wind, and transient magnetic field fluctuations and interactions. The octagon-walled, platform-like spacecraft carried four spring-loaded solar cell panels that snapped into erected position after the satellite was ejected from the launch vehicle.

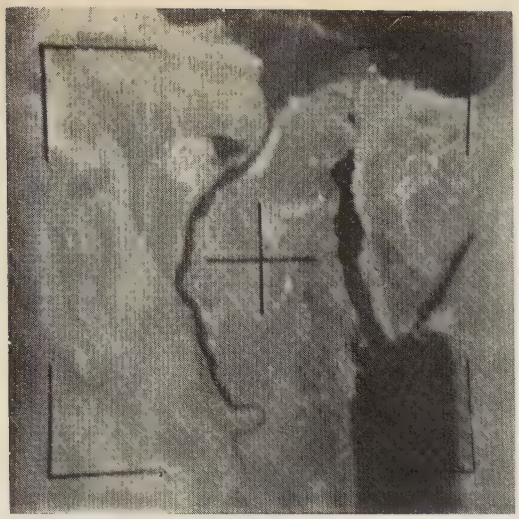
Valuable scientific results obtained by Explorer XII concerning trapped radiation and magnetic field phenomena near the earth were published in 1962. This information indicated that the Van Allen radiation region was one large area of trapped particles distributed according to their energies and characteristics, rather than a region with two distinct belts. The magnetometer experiment failed to show evidence of the ring current previously reported by Pioneer V and Explorer VI at about 25,000 miles from the earth. The magnetometer findings did agree, however, with results of measurements made by earth stations, and disclosed a transition region about 100 kilometers thick between the earth's magnetic field and that of interplanetary space.

The Explorer XV satellite, orbited on October 27, was similar to Explorers XII and XIV, but both orbit and payload were selected specifically to investigate the artificial radiation belt that resulted from the United States high-altitude nuclear explosion tests during the summer. Failure of a despin mechanism left the orbiting satellite spinning at 60 revolutions per minute, about 10 times the desired rate. The scientific instruments were able to function, however, and it was not immediately apparent whether the scientific objectives were im-

Technician adjusts plasma engine in environmental space chamber before a test run. Such devices produce thrust by discharging electrical particles, but use in space will require nuclear power sources that have yet to be perfected.

REPUBLIC AVIATION CORPORATION





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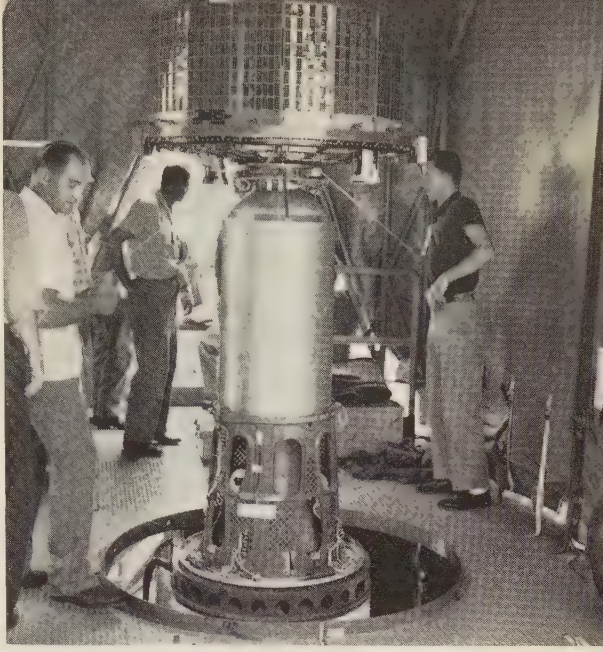


Three more Tiros meteorological satellites were orbited in 1962. (*Above*) Photo from Tiros V, launched June 19, shows Red Sea, Nile River and Delta, Suez Canal, and portion of the Mediterranean. (*Right*) High atop gantry at Cape Canaveral, technicians mate Tiros VI to Delta launch vehicle.

paired. The Explorer XVI satellite, launched on December 16, was very similar to the Explorer XIII micrometeoroid satellite launched on Aug. 25, 1961.

Anna.—Anna I-B was the first successful satellite of a series of geodetic satellites planned by the United States to help provide more accurate information about the size and shape of the earth. It was orbited on October 31. (Anna is an acronym for Army, Navy, NASA, and the Air Force, the agencies involved in the program.) The satellite carried four high-intensity xenon gas lights designed to be photographed against the star background as they flashed on and off at designated times. A nickel-cadmium battery solar cell power system was used. Additional electronic tracking and navigational instrumentation was also carried to improve the accuracy with which the orbit could be determined. By photographing the light flashes against a background of known stars from a number of angles, scientists could map distances between ground stations which had simultaneously obtained pictures.

Transit.—Transit V-A was an improved, lighter-weight version continuing the series of navigational aid satellites launched in 1960 and 1961. Launched on Dec. 18, 1962, failure in the power supply or the command equipment prevented the satellite from accomplishing its objectives.

Injun.—Injun III was a successful continuation of the Injun satellite series, built by the State University of Iowa. It was similar to but larger than the 1961 version.

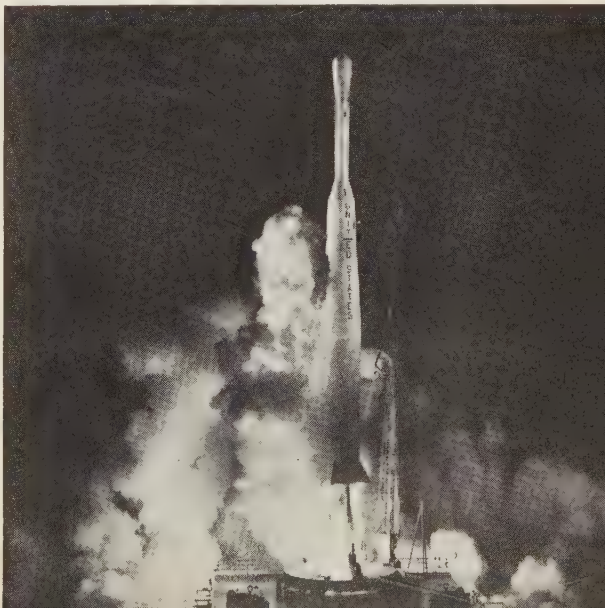
Ranger.—Three attempts to land a spacecraft on the moon as part of the Ranger program failed in 1962. The Ranger spacecraft was designed to perform a number of complicated maneuvers during flight, including orientation maneuvers necessary for taking television pictures during its approach to the moon. The maneuvers were to culminate in the firing of a retrorocket just before impact, and the release of a capsule containing a seismograph for studies of the vibrations of the moon. The 730-pound spacecraft weight included 332 pounds for the retrorocket and capsule system (the capsule system weighed 89 pounds). In the cruise arrangement, with solar panels and the high-gain directional antenna extended, the structure was 17 feet in span and 10.25 feet in height.

Ranger III (launched on January 26) carried television cameras, a separable capsule containing the seismograph, and a gamma-ray experiment. All of these experiments were to obtain information about the structure and composition of the moon. During the early phases of the launch, guidance failed and the spacecraft was placed in its trajectory with sufficient excess speed to cause the probe to miss the moon by about 22,862 miles. In addition, the spacecraft failed to orient itself properly during the last stages of its journey; thus no television pictures were obtained and the capsule was not ejected.

Rangers IV and V also carried the experiments that were on Ranger III. Ranger IV (April 23) suffered an apparent electronics failure that prevented the telemetry from operating properly and prevented the spacecraft from executing its complicated orientation maneuvers. The trajectory was sufficiently accurate, however, for the spacecraft to impact on the back side of the moon about 64 hours after launch. This was the first time that a United States spacecraft had made contact with

Telstar communications satellite, borne aloft from Cape Canaveral by Thor-Delta launch vehicle, July 10, achieved first "live" television transmission across the Atlantic. (See also diagrams of Telstar in the article *Telephone*.)

BELL TELEPHONE LABORATORIES



SUCCESSFUL EARTH SATELLITES, MANNED ORBITAL FLIGHTS, AND SPACE PROBE LAUNCHINGS, 1962

(Launching dates shown are in local time; N.A. indicates data not available)

Name	Launch site and date[1]	Launch vehicle[2]	Spacecraft weight in orbit (pounds)	Perigee & apogee (miles)	Initial period (minutes)	Inclination of orbit (degrees)	Dimensions	Remarks
Ranger III	C-Jan. 26	A-Ag	727	...[3]	...[3]	...[3]	5′ diam.; 123″ long	Missed moon by 22,862 mi.
Tiros IV	C-Feb. 8	T-D	285	441–525	100.4	48.3	42″ diam.; 19″ long	Weather observation
Friendship 7 (MA-6)	C-Feb. 20	A	2,987[4]	100–162	88.29	32.54	74″ diam.; 114″ long	Manned orbital, recovered 3 orbits; 4 hrs., 56 min.
Orbiting Solar Observatory	C-Mar. 7	T-D	458	344–370	96.2	32.85	44″ diam.; 37″ long	Solar studies
Cosmos I	U-Mar. 16	U	N.A.	135–609	96	49	N.A.	Scientific studies
Cosmos II	U-Apr. 6	U	N.A.	133–975	102.5	49	N.A.	Scientific studies
Ranger IV	C-Apr. 23	A-Ag	730	...	...	...	5′ diam.; 123″ long	Crash landed on moon, Apr. 26
Cosmos III	U-Apr. 24	U	N.A.	142–447	93.8	48.98	N.A.	Scientific studies
Ariel	C-Apr. 26	T-D	132	242–754	100.8	53.80	23″ diam.; 34″ long	Ionosphere studies
Cosmos IV	U-Apr. 26	U	N.A.	186–206	90.6	65	N.A.	Unmanned; successful re-entry and recovery, Apr. 26
Aurora 7 (MA-7)	C-May 24	A	2,975[5]	100–167	88.3	32.5	74″ diam.; 114″ long	Manned orbital, recovered 3 orbits; 4 hrs. 56 min.
Cosmos V	U-May 28	U	N.A.	126–994	102.8	49.07	N.A.	Scientific studies
Tiros V	C-June 19	T-D	285	367–604	100.5	58.1	42″ diam.; 22″ long	Weather observations
Cosmos VI	U-June 30	U	N.A.	170–224	90.6	49	N.A.	Scientific studies
Telstar I	C-July 10	T-D	170	593–3,502	157.6	44.8	34½″ diam.	Active communications satellite
Cosmos VII	U-July 28	U	N.A.	126–219	90.1	65	N.A.	Scientific studies
Vostok III	B-Aug. 11	U	5 tons (estimated)	112–148	88.3	65	N.A.	Manned orbital, recovered, 64 orbits, 94 hours
Vostok IV	B-Aug. 12	U	5 tons (estimated)	112–158	88.3	65	N.A.	Manned orbital, recovered 48 orbits, 71 hours
Cosmos VIII	U-Aug. 18	U	N.A.	159–374	92.9	49	N.A.	Scientific studies
Mariner II	C-Aug. 27	A-Ag	447	...	...	...	5′ diam.; 143″ long	Venus fly-by, arrived near Venus, Dec. 14
Tiros VI	C-Sept. 18	T-D	281	425–442	98.7	58.3	42″ diam.; 22″ long	Weather observations
Cosmos IX	U-Sept. 27	U	N.A.	188–221	90	65	N.A.	Scientific studies
Alouette	P-Sept. 28	T-A	320	617–641	105.4	80.5	42″ diam.; 34″ long	Ionosphere Topside Sounder
Explorer XIV	C-Oct. 2	T-D	89	175–61,225	2,185	33	26″ diam.; 51″ long	Radiation belt and cosmic ray measurements
Sigma 7 (MA-8)	C-Oct. 3	A	3,000	100–176	88.9	32.5	74″ diam.; 114″ long	Manned orbital, recovered, 6 orbits, 9 hrs. 14 min.
Cosmos X	U-Oct. 17	U	N.A.	130–235	90.2	65	N.A.	Scientific studies
Ranger V	C-Oct. 18	A-Ag	755	...	...	...	5′ diam.; 123″ long	Missed moon, TV camera inoperative
Cosmos XI	U-Oct. 20	U	N.A.	152–572	96.1	49	N.A.	Scientific studies
Explorer XV	C-Oct. 27	T-D	99.6	194–10,960	316	18	26″ diam.; 51″ long	Artificial radiation belt studies
Anna I-B	C-Oct. 31	T-S	355	670–727	107.8	50	36″ diam.	Geodetic satellite
Mars I	U-Nov. 1	U	1,965	...	...	...	N.A.	Mars probe to arrive about June 1963
Injun III	U-Dec. 13	U	105	154–1,727	116.3	70.34	24″ diam.; 27.5″ long	Scientific studies of aurora, magnetic field, and very low frequency radio waves. Launch details classified.
Relay I	C-Dec. 13	T-D	172	820–4,612	185.1	47.48	33″ long; 29″ wide	Active communications satellite
Explorer XVI	W-Dec. 16	S	222	466–733	104.4	52.01	24″ diam; 76″ long	Micrometeoroid studies
Transit V-A	P-Dec. 18	S	135	403–488	99.2	89.98	N.A.	Navigational aid
Cosmos XII	U-Dec. 22	U	N.A.	131–251	90.5	65	N.A.	Scientific studies

[1] Code for launch sites: C—Cape Canaveral, Fla.; P—Point Arguello, Calif.; W—Wallops Island, Va.; B—Baikonur Cosmodrome, Kazakhstan, USSR; U—Unknown, USSR. [2] Code for launch vehicles: A—Atlas; A-Ag—Atlas-Agena; S—Scout; T-Ag—Thor-Agena; T-D—Thor-Delta; T-S—Thor Able Star; U—Unknown. [3] Perihelion, 91,503,314 mi.; aphelion, 108,133,854 mi.; inclination to ecliptic, 0.3988 degree; period, 406.4 days. [4] Weight at launch, 4,265 lbs.; at insertion into orbit, 2,987 lbs.; recovery weight, 2,422 lbs. [5] Weight at launch, 4,244 lbs.; at insertion into orbit, 2,975 lbs.; 2,480 lbs. on landing.

the moon. No scientific data were obtained, however. The Ranger V (October 18) mission also failed when the spacecraft developed electrical troubles shortly after being launched. The spacecraft apparently failed to receive power from its solar panels, and the battery went dead.

Mariner II.—Mariner II was launched on August 27 toward the planet Venus. A close approach trajectory was selected to afford more time for data collection than would be possible on an impact mission, and to avoid the possibility of introducing terrestrial organisms on Venus. The spacecraft was placed in a parking orbit by an Atlas-Agena booster, and then propelled toward Venus. The Mariner design was a modification of the hexagonal concept used in the Ranger series. The base of the hexagon contained a liquid-fuel rocket motor for midcourse trajectory correction, plus the electronics, power supply, and the command and control systems. A superstructure attached to the base contained the scientific experiments, an omnidirectional antenna, a parabolic high-gain antenna,

and hinged solar panels which contained 9,800 solar cells in 27 square feet of area and were capable of furnishing up to 200 watts of electrical power. The solar cell power system operated in conjunction with a 33.3-pound silver-zinc 1,000-watt-hour rechargeable battery.

Mariner II carried six scientific experiments, including a microwave radiometer and an infrared radiometer to determine the temperatures of the planetary surface and various levels in the atmosphere. A magnetometer was carried to study the interplanetary and planetary magnetic fields. A cosmic-ray experiment, a low-energy solar plasma detector, and a micrometeorite or cosmic dust detector completed the scientific payload. Total weight of the experiments was approximately 40.7 pounds. On September 4, eight days after launch, a planned midcourse correction maneuver involving the firing of the midcourse correction rocket on ground command was executed successfully and altered the flight path to bring Mariner II close to Venus on December 14.

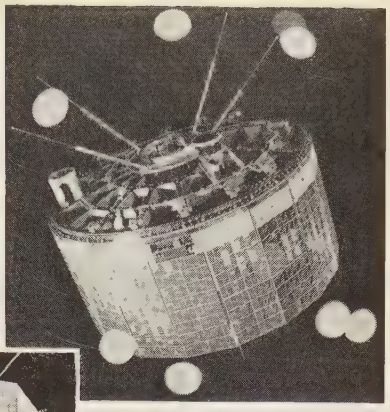
Mariner II passed by Venus at a distance of about 21,594 miles on December 14. Scientific observations were obtained for 42 minutes. Preliminary results from these observations and from those made during the trip through interplanetary space included findings that micrometeorites were about 10,000 times more dense around the earth than in interplanetary space; that the solar wind (a flow of hot ionized gases apparently coming from the inner corona of the sun) was present at all times, although subject to changes in intensity; and finally, since no magnetic field around Venus was detected, that the magnetic field, if any, was probably less than about 10 percent of the earth's field.

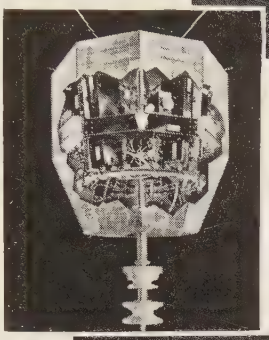
An earlier attempt (July 22) to launch Mariner I toward Venus failed when erroneous computer information indicated the Atlas-Agena launch vehicle was straying off course and it had to be destroyed.

(For details of manned orbital flights conducted as part of Project Mercury, see the following section on *Manned Space Flight.*)

International Satellites. *Ariel.*—Ariel (launched April 26, 1962) was the first international satellite. Under a cooperative agreement, British scientists designed, built, and tested the experiments carried in the satellite, and NASA built the spacecraft and was responsible for the power supply and the launch operation. The satellite carried three experiments devised to gather new data on the ionosphere, including measurements of electron temperatures and densities, and ion temperatures and masses. Two more experiments were designed to study solar radiation in the X-ray and ultraviolet spectral regions. A sixth experiment was devised to detect and measure cosmic rays. The payload operated well until after the nuclear tests in July. Ariel experienced severe damage to its solar cells and was no longer furnishing useful data by the end of the summer.

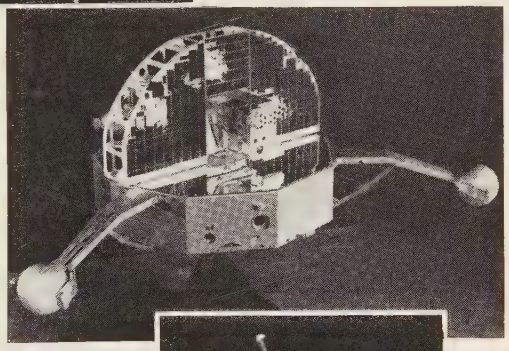
Alouette.—Alouette, a Canadian-designed and -built satellite, was the first spacecraft to be wholly designed and built by a nation other than the United States or the Soviet Union. Launched from Point Arguello, Calif., on September 28, it was also the first orbital shot by NASA from the west coast of the United States. The Canadian Defence Research Telecommunications Establishment built the spacecraft and supplied three of the experiments. The primary experiment studied the ionosphere from above, using a specially developed flight version of a swept-frequency sounder similar in operation to the ground-based sounding experiments that had observed the ionosphere from be-

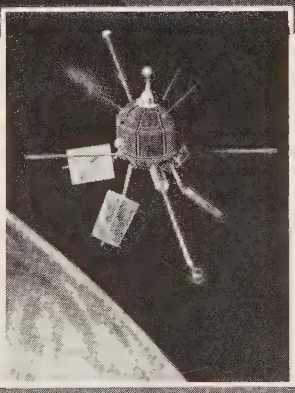




(*Above*) Tiros VI, launched September 18, took photos of Atlantic and Pacific during hurricane season. (*Left*) Cutaway view of Relay I, launched December 13, an active communications satellite. (*Below*) OSO I (Orbiting Solar Observatory) was fired into orbit March 7 to measure radiation from the sun.

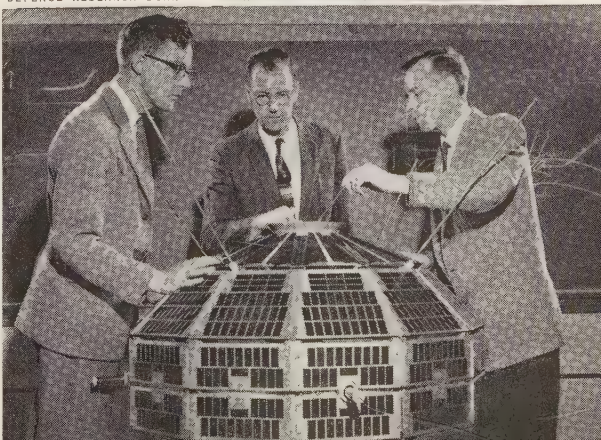
NASA RCA NASA

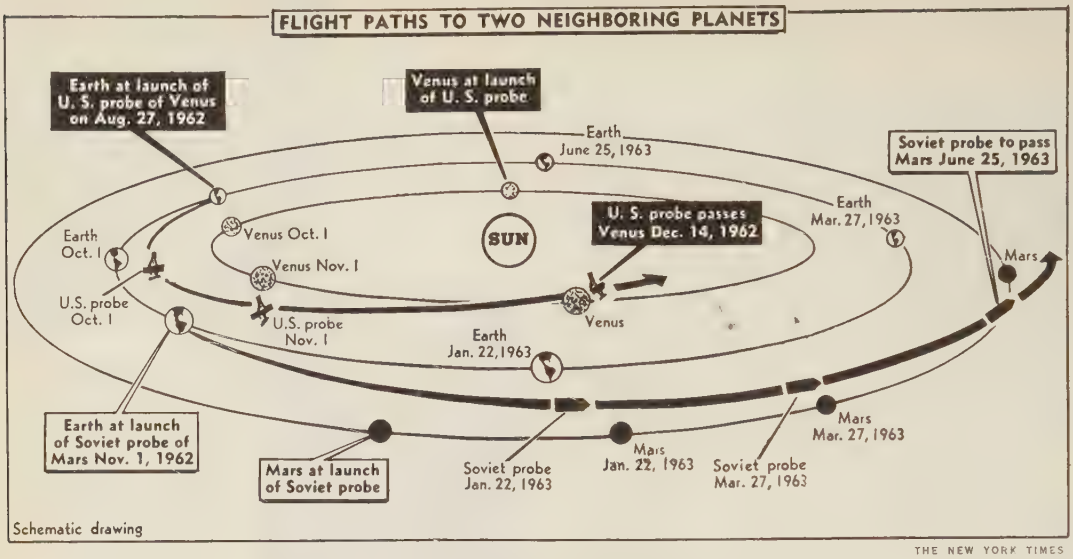




(*Right*) Artist's view of Ariel, the first international satellite in orbit (launched April 26). The United States-British project made studies of the ionosphere and measured cosmic rays and solar radiation. (*Below*) Members of Canada's Defence Research Board team which designed and built Alouette, an ionospheric topside sounding satellite sent up on September 28.

NASA; DEFENCE RESEARCH BOARD




FLIGHT PATHS TO TWO NEIGHBORING PLANETS
Earth at launch of U. S. probe of Venus on Aug. 27, 1962
Venus at launch of U. S. probe
Earth June 25, 1963
Soviet probe to pass Mars June 25, 1963
Earth Mar. 27, 1963
U. S. probe passes Venus Dec. 14, 1962
Earth Oct. 1
Venus Oct. 1
SUN
Venus Nov. 1
Mars
U.S. probe Oct. 1
U.S. probe Nov. 1
Venus
Earth Jan. 22, 1963
Earth at launch of Soviet probe of Mars Nov. 1, 1962
Mars Mar. 27, 1963
Mars at launch of Soviet probe
Soviet probe Jan. 22, 1963
Mars Jan. 22, 1963
Soviet probe Mar. 27, 1963
Schematic drawing
THE NEW YORK TIMES

The American and Russian interplanetary probes launched in 1962.

low for many years. Two other experiments measured the radio noise produced within the ionosphere and the galactic or radio noise that appears to originate in outer space. The National Research Council of Canada furnished a cosmic-ray experiment capable of detecting electrons, protons, and alpha particles.

The spacecraft carried two antennas, erected after the spacecraft was placed in orbit. One of these, a 150-foot radio antenna, was believed to be the longest ever used on a space vehicle.

Alouette was highly successful in attaining its scientific objectives, and it proved the value of this technique for scientific investigation of the upper regions of the ionosphere. This satellite also suffered some damage to its solar cells from the summer nuclear tests, but the reduced electrical power available was compensated for by a reduction in duty cycle, and the satellite was still in operation at the end of the year.

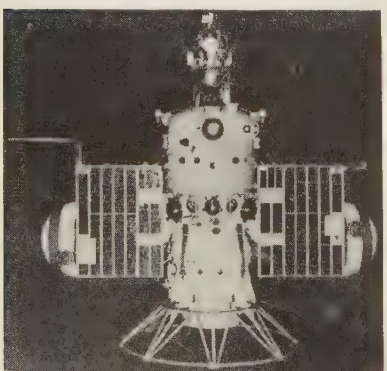
USSR Launchings. *Cosmos.*—The Soviet Union's Cosmos series of satellites was begun on March 16, 1962, with the successful launch of Cosmos I after a seven-month period of inactivity. Succeeding launches followed at an average rate of about one every three weeks. Twelve were launched during the year. No information was released about the shape, dimensions, or weight of the spacecraft, although there were indications that they were larger than the early Sputniks. The Cosmos series was described in the Soviet press as scientific satellites aimed at collecting physical data in space near the earth in preparation for more manned flights near earth and to the moon and planets. One satellite, Cosmos IV, launched on April 26, was reportedly brought down on command on April 29, after more than 72 hours in orbit, making it the first Soviet recovery since that of Maj. Gherman Titov's *Vostok II* spacecraft in August 1961.

Mars I.—The Mars I spacecraft was successfully launched by the USSR on November 1 on a trajectory toward the planet Mars. Information released by the Tass news agency indicated that the one-ton spacecraft was launched from an orbiting Sputnik in a manner similar to that used for the Soviet Venus probe launched on Feb. 12, 1961.[2] Original estimates indicated that the flight to Mars would take a little over seven months. The spacecraft reportedly carried a camera and transmitters for sending back photographs of Mars.

(For an account of the USSR's manned orbital flights, see the following section on *Manned Space Flight.*)

Other Space Activities.—A high-altitude test of a nuclear device of about 1.4 megaton yield was conducted by the United States on July 9, 1962, about 250 miles above Johnston Island in the Pacific Ocean. This resulted in the creation of an artificial radiation belt at a somewhat lower altitude than the natural Van Allen inner belt, and an enhancement of the radiation in the natural belt. Preliminary indications were that the effects would be noticeable for several years and that the intensity of radiation was sufficient to cause rapid deterioration of unprotected solar cells on spacecraft spending appreciable amounts of time in the region. (See also ATMOSPHERE RESEARCH.)

The Transit IV-B and TRAAC satellites launched in 1961 were silenced by the new belt, and the Ariel satellite was severely damaged, al-



Launched on November 1, this Soviet spacecraft (the Mars I) is due to reach the vicinity of the red planet in June 1963 after a journey of more than seven months, according to Soviet announcement.

AFP FROM PICTORIAL

[2] This Soviet Venus probe was successfully launched from a parking orbit into the proper trajectory for an approach to Venus. After the spacecraft had been on course for several days, however, its radios stopped transmitting, and no scientific information about Venus was obtained. NASA announced on Sept. 5, 1962, that the USSR had tried to send a probe to Venus on Feb. 4, 1961; the spacecraft was placed in a parking orbit, but attempts to eject the probe toward Venus failed, and the Soviet Union renamed the craft Sputnik VII and classified it as an earth satellite with a payload weight of 14,292 pounds, the heaviest object placed in an earth orbit. NASA also revealed on Sept. 5, 1962, that four other Soviet attempts at sending up space probes had failed. Two shots at Mars (Oct. 10 and 14, 1960) did not achieve parking orbit, and two attempts to reach Venus (Aug. 25 and Sept. 1, 1962) were placed in earth orbit but were not ejected.

though it continued to operate on an intermittent basis. The Telstar satellite indicated that some deterioration of its solar cells had occurred. This damage was small, however, as the cells were of a new design affording considerable protection against the radiation. Alouette also was slightly damaged.

Sounding-rocket launchings and research were continued by many countries in 1962, including Australia, Canada, France, Italy, and Japan. Pakistan, Norway, and Sweden started or continued research programs of sounding-rocket launchings in their countries through cooperative arrangements with the United States.

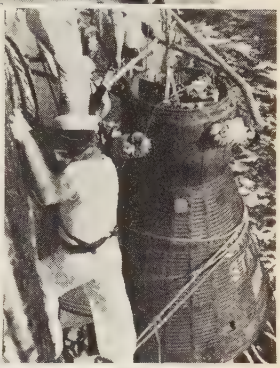
ROBERT F. FELLOWS,
Chief, Chemistry Programs,
Office of Space Sciences, NASA.

MANNED SPACE FLIGHT

The two suborbital flights into the space environment in 1961 by American astronauts Alan B. Shepard, Jr., and Virgil I. Grissom, and the two orbital flights of the Soviet cosmonauts Yuri A. Gagarin and Gherman S. Titov, were followed in 1962 by the orbital flights of Americans John H. Glenn, Jr., Malcolm S. Carpenter, and Walter M. Schirra, Jr., and those of Russians Andrian G. Nikolayev and Pavel R. Popovich. (See table in the foregoing section, *Space Exploration in 1962.*) The 1962 flights, along with related developments in space medicine, are discussed below.

Mercury Flights.—Marine Lt. Col. John H. Glenn, Jr., made the first American orbital flight on Feb. 20, 1962, in the Mercury spacecraft *Friendship 7*. Lift-off was at Cape Canaveral, Fla., at 9:47 A.M., EST. After three orbits, touchdown was made at 2:43 P.M., EST, in the Atlantic Ocean southeast of Cape Canaveral, near Grand Turk Island east of the Bahamas. Glenn and the capsule were retrieved within only a few miles of the target spot by the U.S.S. *Noa*, and Glenn was brought to Grand Turk Island for medical examination and debriefing.

It was an impressive psychophysiological



Scenes from historic flight of February 20 as Lt. Col. John H. Glenn, Jr., became first American to orbit the earth. (*Top left*) Start of three-orbit flight as Atlas roars aloft from Cape Canaveral. (*Top right*) Movie camera aboard Mercury capsule recorded astronaut's reactions in orbit. (*Right*) Destroyer *Noa* lifts capsule (*Friendship 7*) with Glenn aboard from Atlantic after completion of mission. (*Below*) Helicopter hoists Glenn from *Noa* for trip to Grand Turk Island and debriefing.

WIDE WORLD

(*Right*) In ceremony at Cape Canaveral, President Kennedy pins NASA Distinguished Service Medal on the astronaut. (*Bottom left*) Glenn and his wife, Anna, respond to acclaim of crowd as motorcade approaches Capitol on February 26. With them are their daughter, Carolyn Ann, and Vice President Johnson. (*Bottom right*) Later that day Glenn describes mission to a joint session of the Congress.

WIDE WORLD; UPI

WIDE WORLD

John H. Glenn, Jr.

UPI

M. Scott Carpenter

UPI

Walter M. Schirra, Jr.

WIDE WORLD

Andrian G. Nikolayev

WIDE WORLD

Pavel R. Popovich

AMERICAN AND RUSSIAN ASTRONAUTS WHO ORBITED THE EARTH IN 1962

John Herschel Glenn, Jr., the first American astronaut to orbit the earth, was born July 18, 1921, in Cambridge, Ohio. He grew up in nearby New Concord and attended Muskingum College there for three years before entering the naval air cadet program. He flew 59 Marine fighter missions in the Marshall Islands campaign in World War II and 90 missions in the Korean War, winning five Distinguished Flying Crosses and 19 Air Medals. In 1954 he became a fighter test pilot for the Navy and set a transcontinental west-to-east jet flight record in 1957. With the other American astronauts, Marine Lt. Col. Glenn was selected for the Mercury space flight program on April 9, 1959. He was married in 1943 to Anna Castor of New Concord; they have two children.

Malcolm Scott Carpenter was born May 1, 1925, in Boulder, Colo., the son of a chemist. Carpenter entered the Navy's air cadet program at Colorado College in 1943 but had not completed it at the end of World War II. He then studied aeronautical engineering at the University of Colorado and in 1949 rejoined the Navy, completing flight training at Pensacola, Fla., and Corpus Christi, Texas. In the Korean War he served as a pilot with a patrol squadron based on Hawaii, flying missions in the Yellow Sea, South China Sea, and Taiwan Strait. In 1954 he trained as a naval test pilot and undertook many jet flight-test projects. Navy Lt. Comdr. Carpenter was married to Rene Price in 1948; they have four children.

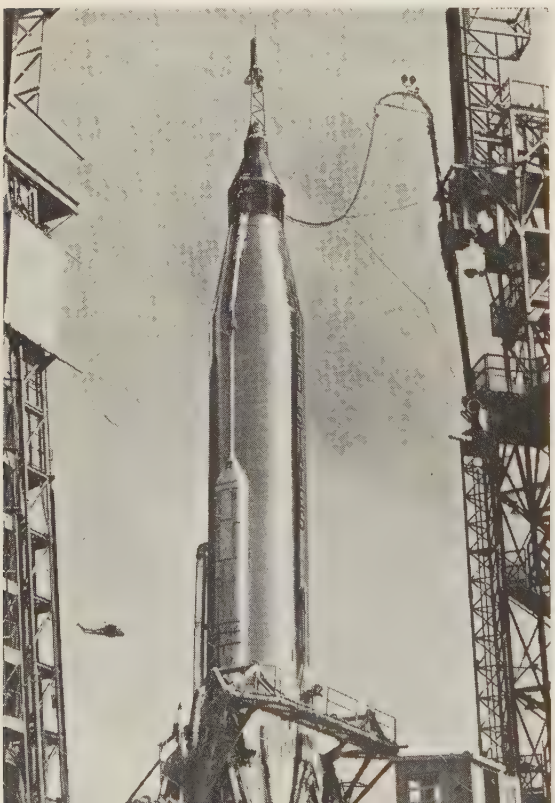
Andrian Grigoryevich Nikolayev was born Sept. 5, 1929, in the village of Shorshely on the middle Volga River in the Chuvash Autonomous SSR. Son of a collective farmer who died in 1944, he studied at a forestry school and was a lumber foreman in Karelia until he went into the Soviet Army in 1950. Trained in the Air Force, he graduated as a pilot in 1954 and was assigned to the Moscow Regional Antiaircraft Defense. An Air Force major, in March 1960 he was transferred to cosmonaut training and in 1961 was decorated with the Order of the Red Star. Major Nikolayev is unmarried.

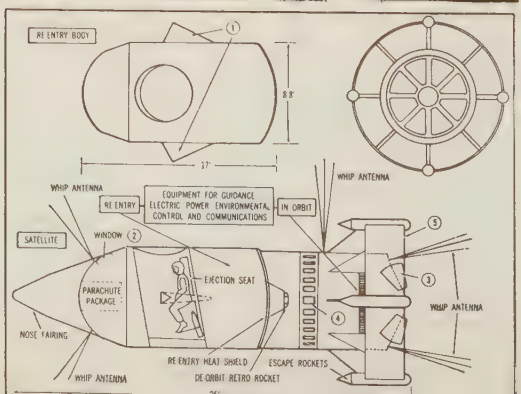
Pavel Romanovich Popovich, son of a sugar refinery worker, was born Oct. 5, 1930, in the town of Uzin on the Dnieper River in the Ukrainian SSR. He was graduated from an industrial-technical school in the city of Magnitogorsk in the Urals in 1951, volunteered for the Army, and was transferred to aviation school. As a fighter pilot in the Air Force, he was first assigned to the Soviet Arctic. Lt. Col. Popovich is said to have been the first to join the cosmonaut training unit, and has received the Order of the Red Star. His wife, Natasha, a former civilian stunt flyer and flying instructor, works as a design engineer; they have a daughter.

Walter Marty Schirra, Jr., was born in Hackensack, N.J., March 12, 1923, the son of a World War I Army pilot, who became a civil engineer. Schirra studied at Newark College of Engineering (1941) and was graduated from the U.S. Naval Academy in 1945. He served on the cruiser *Alaska*, on the staff of the Seventh Fleet, and won his Navy wings at Pensacola, Fla. As an exchange pilot with the Air Force he flew 90 combat missions in the Korean War and won the Distinguished Flying Cross and two Air Medals. He helped develop the Sidewinder missile, became a test pilot at the Patuxent River (Md.) Naval Air Test Center, and has been promoted to commander in the Navy. He was married to Josephine C. Fraser in 1946; they have two children.

(*Left*) John Glenn's *Friendship 7* spacecraft and Atlas booster are framed by gantry equipment prior to launch on February 20. (*Right*) Artist's conception of Vostok gives general picture of craft that carried Soviet cosmonauts Andrian Nikolayev and Pavel Popovich on dual flights in August. Diagram at bottom is drawn from estimates based on the external configuration.

(LEFT) NASA; (RIGHT) "MISSILES AND ROCKETS" MAGAZINE





achievement that Glenn, in this first manned orbital test flight of the Mercury spacecraft, was able to perform a number of tests while in orbit, in addition to the successful accomplishment of the flight. He was able to control the attitude of the spacecraft, using the earth's horizon for orientation. He described the beauty of the horizon and observed a tan-to-buff-colored luminous layer above the colorful red-blue atmospheric horizon.[1] Glenn made numerous photographs of the horizon and of the earth from its day and night sides. He reported that he could recognize such cities as New Orleans and Savannah, and also the city of Perth, Australia, at night, illuminated by its citizens to greet him.

Glenn's report that on each orbit he saw luminous particles resembling fireflies near the spacecraft when it came out of darkness into sunlight aroused considerable curiosity as to their origin. One explanation was that they were water, paint, or other particles coming from the spacecraft and reflecting the sunlight.

Glenn's flight was also a great success in its contributions to space medical knowledge. Many biosensor recordings were made of his blood pressure, respiration, body temperature, and the temperature inside his space suit. Glenn found the state of weightlessness pleasant; it even facilitated such tasks as using his camera, which he could leave hanging in midair while he performed other activities. He was in voice communication with numerous tracking stations, and the events of the entire flight were reported to the whole world.

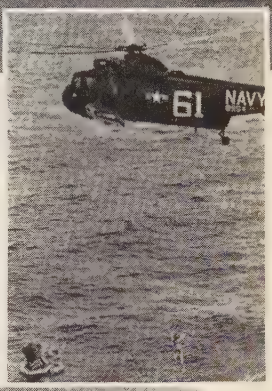
Only three months later, on May 24, 1962, Navy Lt. Comdr. Malcolm Scott Carpenter entered the Mercury spacecraft *Aurora 7* for the second American orbital flight. The countdown reached zero at Cape Canaveral at 7:45 A.M., EST. After three orbits Carpenter landed at 12:41 P.M. in the Atlantic Ocean. Due to his intensive occupation with scientific observations, he overshot the target area for landing by approximately 250 miles. Listeners around the world were on tenterhooks until he and the capsule were sighted by a pilot about an hour after landing. Some two hours later, Carpenter was taken aboard the U.S.S. *Intrepid*. Subsequently he was flown to Grand Turk Island for debriefing and physical examination.

Carpenter's flight was characterized by extensive exploration of the space environment. Like Glenn, he observed a layer of buff-colored light above the red-blue band of the horizon. Measuring the wavelength of this faint light led to its identification as airglow, the light emitted by atomic nitrogen and oxygen brought into excited states in the upper atmosphere by solar ultraviolet radiation. Airglow gives the night sky a slight luminosity, but is missing in the space sky, accounting for its total blackness. One or more dust layers may also exist in the upper atmosphere.

Both before and after sunrise, Carpenter observed the same mysterious luminous particles, reported earlier by Glenn. By knocking on the side of the spacecraft Carpenter was able to cause more particles to appear, which confirmed the theory that these "fireflies" or snowflakes were actually a condensation of moisture emitted from the cooling system of the spacecraft, or particles of dust or insulation from it, and not space phenomena.

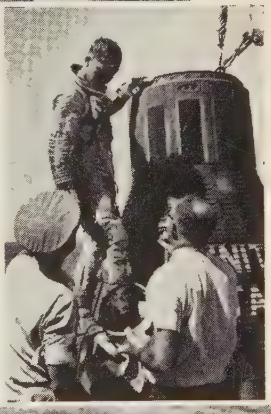
Navy Commander Walter M. Schirra, Jr., made the third American orbital flight on Oct. 3, 1962,

[1] In his analysis of Glenn's report, John A. O'Keefe, assistant chief of NASA's Theoretical Division, Goddard Space Flight Center, attributed this upper luminous layer to airglow, to some auroral phenomenon, or to multiple reflections in the spacecraft's window system.



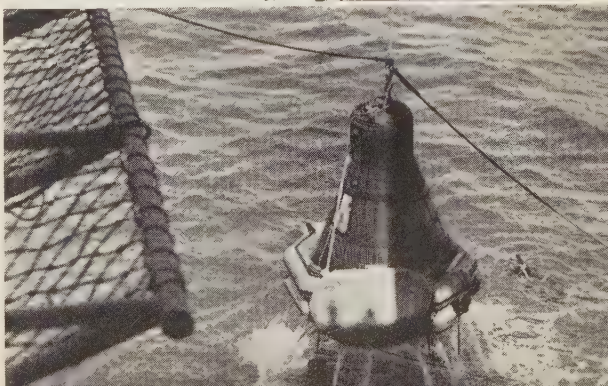
Scott Carpenter became the second American astronaut to orbit the earth, May 24. (*Above*) In photo made from a color negative taken by the astronaut, Atlas booster falls away from the spacecraft, *Aurora 7*. (*Right*) Helicopter hauls Carpenter from sea at conclusion of three-orbit flight. Recovery was delayed when capsule overshot target area. (*Below*) Safely aboard the carrier *Intrepid*, Carpenter receives congratulatory message from President Kennedy.

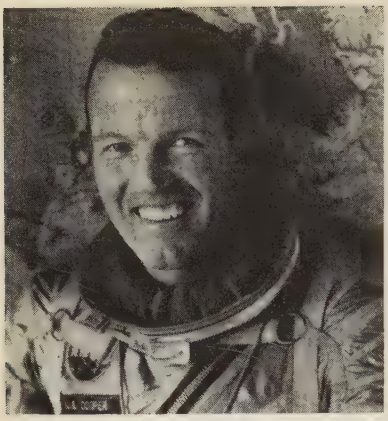
WIDE WORLD



Walter Schirra, the third American to fly an orbital mission in 1962, circled the earth six times on October 3 in the most successful flight to date. (*Right*) Schirra alights from his spacecraft, the *Sigma 7*, on the deck of the carrier *Kearsarge*. The astronaut made a bull's-eye landing within four miles of the vessel in the Pacific recovery zone after a 9 hour 14 minute flight that was remarkably trouble free. (*Below*) Dripping *Sigma 7*, with Schirra inside, is lifted out of the sea by a boom aboard the *Kearsarge*. Frogman may be seen floating in water.

U.P.I.





Astronaut L. Gordon Cooper, Jr., an Air Force major, was chosen in December to make the first full-day flight in the United States space program. Mission was set for early 1963.

NASA FROM UPI

Leroy Gordon Cooper, Jr., was born in Shawnee, Okla., on March 6, 1927, the son of a career air officer. He graduated from high school in 1945 and served in the Marine Corps until 1946. After three years' study at the University of Hawaii he won a commission in the Army and subsequently transferred to the Air Force. He completed flight training in 1949 and flew in a fighter-bomber group in Germany. Cooper was graduated in 1956 from the Air Force Institute of Technology in Dayton, Ohio, with a degree in aeronautical engineering, and the following year from the Air Force Experimental Flight Test School at Edwards Air Force Base, Calif. Major Cooper was engaged in performance test work at Edwards AFB before his selection as an astronaut. He and his wife, the former Trudy Olson of Seattle, Wash., have two daughters.

in the Mercury capsule *Sigma 7*. Lift-off was at Cape Canaveral at 8:15 A.M., EDT. After six orbits, successful recovery was made by the U.S.S. *Kearsarge*, 275 miles northeast of Midway Island in the central Pacific Ocean at 5:29 P.M., EDT. The flight was completely successful in all aspects. Schirra was able to utilize drifting flight for the conservation of attitude-jet fuel, and showed no ill effects from weightlessness even when the capsule was yawing freely for considerable periods of time.

***Vostok* Flights.**—In the Soviet Union, on Aug. 11, 1962, at 11:30 A.M., Moscow time (4:30 A.M., EDT), *Vostok III*, carrying Maj. Andrian G. Nikolayev, rocketed into orbit, presumably from the Baikonur cosmodrome in the Kazakh SSR; then at 11:02 A.M., Moscow time (4:02 A.M., EDT) on August 12, Lt. Col. Pavel R. Popovich was launched into nearly the same orbit aboard *Vostok IV*. The cosmonauts later reported they were within four miles of each other at one point. On August 15 at 9:55 A.M., Moscow time (2:55 A.M., EDT), *Vostok III* landed in the Kazakhstan desert south of the city of Karaganda after completing 64 orbits of the earth and covering a distance of 1,615,600 miles. Six minutes later, *Vostok IV* landed, after orbiting the earth 48 times for a distance of 1,243,000 miles. The cosmonauts were ejected from their capsules and landed by parachute.

Much of what has been learned from these flights was reported by the Russian doctors of cosmic medicine at the International Symposium on Basic Environmental Problems of Man in Space, held from October 29 to November 2 in Paris. The scope of the medical biological measurements was considerably enlarged over those of the earlier *Vostoks*. The experiments included writing tests and mathematical calculations, and no essential difference was observed between flight and preflight capabilities in these. Generally, "the cosmonauts led quite an 'earth-like' way of life; they ate, drank, slept, maintained communication with the earth and each other, and conducted scientific research and observations. Their recovery also was normal. No negative aftereffect was noted either after this or the precedent flights."

The two cosmonauts did not experience the nauseous discomfort in the weightless state reported by Titov. It is interesting to note that they kept, essentially, the same cycle of work, rest, and sleep as on earth, and that they slept when it was night over the USSR. In addition to the medical studies made, bacteria, insects, and various types of plants were placed on board the ships so that the biological effects of radiation on them might be studied.

Space Medicine.—The orbital flights made in 1962 have considerably advanced the art of manned space flight. It was proved that space vehicles could be effectively controlled by the astronaut; deviations in the life-supporting systems could be corrected; sensorimotor performance of the astronauts under conditions of weightlessness was not impaired; weightlessness of nearly four days could be tolerated and had no adverse effect on vegetative functions such as circulation, digestion, and sleep; and no harmful radiation effects were noted during these flight durations in the altitude range up to 175 miles.

The manned orbital flights have proved that man will play a vital role in the scientific exploration of the physics of space. A manned vehicle is superior to an unmanned research probe in certain respects, when, for instance, the visual capabilities of the human retina can be used.

All in all, the medical data recorded and telemetered in 1962, as well as the astronauts' navigational performance, justify an optimistic view concerning more extensive space operations in the future, although by no means have all medical problems been solved. Selection and training will attain even greater importance in order to cope with the problems of longer flights. Special attention is being given to a possible individual disposition of the astronauts to nausea in the weightless state, as experienced by Titov in 1961.

The NASA Manned Spacecraft Center in Houston, Texas, under its director, Robert R. Gilruth, named nine new astronaut candidates on Sept. 17, 1962.[1] They have been assigned to a comprehensive training program designed to prepare them for prolonged orbital flights in the two-man Gemini spacecraft, and for the planned flight to the moon. The U.S. Air Force also has begun to train a number of astronautical candidates to pilot such winged spacecraft as the X-15 and the X-20 (Dyna-Soar).

Intensive space medical work is being done in aerospace medical institutions of the Air Force, Navy, Army, and NASA, and at universities and appropriate industrial organizations. For instance, space cabin simulator experiments were made in 1962 for periods up to 30 days, to study psychophysiological reactions in a confined compartment, and to test the best type of atmosphere, the best level of air pressure, nutrition, sanitary equipment, fire hazards, and possible hazards from such particle rays as those found in the Van Allen radiation belts. In this connection, numerous American satellites of the Discoverer type and Russian satellites of the Sputnik and Cosmos types have telem-

[1] The civilan candidates selected were Elliot M. See, Jr., and Neil A. Armstrong; Air Force officers were Maj. Frank Borman, Capt. James A. McDivitt, Capt. Thomas P. Stafford, and Capt. Edward H. White, II; Navy officers were Lt. Charles Conrad, Jr., Lt. Comdr. James A. Lovell, Jr., and Lt. Comdr. John W. Young.

Soviet Premier Khrushchev leads applause for cosmonauts Andrian Nikolayev (left) and Pavel Popovich in Moscow's Red Square, August 18, following their orbital flights extending over periods of 4 days and 3 days, respectively.

WIDE WORLD

etered important information back to earth for medical evaluation, and microbiological specimens exposed to the space environment have been brought back for study in the laboratory. Hazards from meteoritic material thus far have not been experienced. In fact, the Russian twin orbital flights were under way on August 12, the time of the annual maximum intensity of the Perseid meteor shower.

Planetary Environments.—Closely related to space medicine and astrobiology (the science concerned with native life on other celestial bodies) were the two launchings of planetary probes in 1962, the American Mariner II toward Venus and the Russian Mars I toward Mars. The close-up recordings of planetary environmental data, such as those received on December 14 from Mariner II's flight past Venus, may solve some open biomedical questions concerning the hazards to be encountered by visiting astronauts, and also the possibility of life on these planets. With regard to the latter, a biotelescanner was developed in 1962 by W. G. Glenn of the U.S. Air Force School of Aerospace Medicine at Brooks Air Force Base, Texas, which can gather samples of lunar or Martian surface material and transmit coded information about their possible biotic character back to earth. In view of the possibility of exolife, sterilization of lunar and planetary probes has become a major problem in biomedical space research, in order to avoid contamination of the neighboring celestial bodies before we can determine whether there is any form of life outside our earth.

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SPACE RESEARCH. See ATMOSPHERE RESEARCH; SPACE FLIGHT; and the Index entry, *Space Flight*.

SPAIN

Situated in the Iberian Peninsula of southwestern Europe, Spain is strategically located at the western entrance to the Mediterranean Sea. Metropolitan Spain has a total area of 194,232 square miles and a population of 30,817,000 (mid-1962 est.), including the Balearic Islands (1,936 sq. mi.; pop., 444,269) and the Canary Islands (2,808 sq. mi.; pop., 457,075). Principal cities and populations (1961): Madrid, the capital, 2,295,548; Barcelona, an important industrial center, 1,572,853; Valencia, center of the rich Levantine agricultural area, 504,747; Seville, 445,763; Saragossa, 329,692; Málaga, 304,275; Bilbao, 301,795; and Murcia, 251,360. Spanish is the principal language, but Catalan is spoken in the northeast and Basque in the north.

Government.—Spain is a nominal monarchy, but the actual head of state is the caudillo, Generalissimo Francisco Franco Bahamonde, who serves as chief of the army, prime minister, and leader of the only political party, the Falange. He is assisted by ministers with administrative and advisory functions. The Cortes (441-member Parliament) is the legislative body, but its powers are restricted to the approval of official decrees. Generalissimo Franco was granted life tenure as chief of state by the Law of Succession of March 31, 1947. This fundamental law also provided for a regency council to select Franco's successor with the approval of the Cortes.

Education and Religion.—School enrollment, 1959–60: 4,971,666. Number of schools (with enrollments): 96,734 primary (3,751,489); 2,161 secondary (672,422); 12 universities (26,948, not including 2,050 postgraduate); technical (17,439); seminaries (25,245). Principal religion: Roman Catholic (99.9% of the population).

Finance.—Government revenue, 1961: 81,067 million pesetas (72,651 million in 1960); expenditures, 73,898 million (67,032 million). The peseta is valued at U.S.$0.016. National debt: 135,705.2 million pesetas at the end of 1961 (124,579 million at the end of 1960). Gross international reserves: $859 million (up $269 million during 1961).

Transportation and Communications.—Transport networks (miles, 1961): railways, 11,198 (8,354 broad guage; 1,765 electrified); main roads, 81,548. Merchant marine (1961): 1,825 craft totaling 1,780,713 tons. National airline: Iberia, providing regular service with Europe, Africa, and the Americas. Principal international airport: Barajas (Madrid), receiving 30% of arriving travelers in 1961. Motor vehicles (1961): passenger cars, 50,254; omnibuses, 1,048; trucks, 15,657; motor cycles, 78,650. Telephones: 1,930,297 (1961); radio stations, 195 (1959); television stations, 8 (1961); radios, 2,464,000 (1959); television sets, 400,000 (1962).

Economic Indicators.—Gross national product: 497,658 million pesetas in 1962 (469,118 in 1961). Index of industrial production (1929–31 = 100): 368 in 1961 (338 in 1960). Index of agricultural production (1953–55 = 100): 118.4 (est.) in 1961 (115.4 in 1960). Cost-of-living index (1958 = 100): 111 in 1961. Number of unemployed persons: 250,000 in 1961 (2% of labor force).

Manufactures and Minerals.—Chief industrial products (metric tons, 1960): woolens, 12,133; cotton cloth, 94,900; silk yarn, 44.6; rayon, 1,644; paper, 345,324; cork, 69,700; copper ore, 88,062; iron ore, 4,899,763; cement, 5,212,296; anthracite, 2,510,170; coal, 11,262,966; lignite, 1,763,625; iron pyrites, 1,766,643; lead ore, 68,111; manganese ore, 22,530; potash, 1,655,002; sulfur, 537,944; zinc, 151,806; silvinite, 1,729,501; titanium, 28,087; quartz, 135,977; electric power, 19,838 million kw.-hr. in 1961 (4,602 thermal).

Agriculture.—Chief crops (thousands of quintals, 1961): wheat, 34,311 (35,203 in 1960); rye, 3,512 (3,853); rice, 3,947 (3,614); barley, 17,437 (15,622); oats, 4,949 (4,312); maize, 10,668 (10,116); potatoes, 49,000 (46,198); tomatoes, 12,000 (11,848); sugar beets, 37,000 (35,716); cotton, 3,200 (2,170); wines, 21,256,500 hectoliters; oranges, 13,896,500; lemons, 877,300; almonds, 1,551,000; olives, 23,666,900 (table olives, 683,700).

Tourism.—Number of tourists: 7,455,262 in 1961 (6,113,255 in 1960), spending $450 million.

Foreign Trade.—Total exports, 1961: 44,312.5 million pesetas or $709 million ($725 million in 1960); imports, 68,250 million pesetas or $1,092 million ($721 million). Principal exports (in million pesetas): raw materials (7,921); manufactures (12,453); foodstuffs (23,093). Principal imports (in million pesetas): raw materials (18,422); manufactures (19,828); foodstuffs (4,989). Chief customers (with value of goods received in million pesetas): United Kingdom (7,223); West Germany (6,283); United States (4,225); Italy (3,759); France (3,385). Principal suppliers (with value of imports provided in million pesetas): United States (16,493); West Germany (7,115); France (5,730); United Kingdom (4,917); Saudi Arabia (3,901).

Events, 1962.—Twenty-three years after the conclusion of the Civil War, Spain appeared to be undergoing a profound transformation in all aspects of its life. The marriage of Prince Juan Carlos to Princess Sophia of the Hellenes was celebrated in Athens on May 13, but the prospect of

their accession to the Spanish throne remained uncertain. A meeting between Generalissimo Franco and Don Juan de Bourbon, pretender to the throne and father of Prince Carlos, was predicted, primarily to settle the question of succession. It was believed that the prince would not accept the throne if he had to bypass his father.

Prospects for a meeting appeared especially good following a major reorganization of the Spanish cabinet on July 11. The principal change was the appointment of Capt. Gen. Agustín Muñoz Grandes to the newly created post of vice president of the cabinet, making him Franco's automatic successor as premier. The selection of Muñoz Grandes, a monarchist who commanded strong army support, appeared to pave the way for either Don Juan or Prince Carlos to become chief of state in the event of Franco's death.

The cabinet reorganization was also seen by some observers as an opening toward a more liberal period for Spain. A monarchist intellectual, Manuel de Fraga Iribarne, became minister of information and tourism in place of Gabriel Arias Salgado, an antimonarchist notorious for his policy of strict censorship. A wide relaxation of press censorship became evident in succeeding weeks.

There was widespread agitation in Spain during the year, both in labor and student circles. Student demonstrations at the University of Barcelona in February featured anti-Franco signs. Four students were later given 4-to-7-year prison terms for subversive activities. On May 10, about 1,500 students gathered on the campus of the University of Madrid and demanded the right to hold a general assembly, as well as the release of the students who had been arrested.

In April, when negotiations between mine owners and the national syndicates lagged, strikes—illegal in Spain—broke out among miners and industrial workers in Vizcaya, Guipúzcoa, and Asturias. On May 4 the government was forced to declare a state of emergency in the three northern provinces in an effort to end the strikes. Government spokesmen charged that outside agitators and Communist broadcasts from Prague were responsible for the labor unrest, but the Roman Catholic hierarchy intervened to charge the Franco regime with laxity and inefficiency in dealing with the strike. The bishops championed the right of the workers to strike in an editorial in the May 12 issue of *Ecclesia*, the Catholic Action weekly, which is the only publication in Spain not subjected to official censorship. Franco, in turn, accused "lay organizations of the church" of encouraging the strikers. Although José Ruíz Solis, head of the Falange and the syndical labor organization, agreed to a rise in coal prices to enable the employers to increase wages in Asturias, and urged termination of the strike, it was not until May 28 that the strikers began to return to work.

Early in June, a meeting took place in Munich of more than 100 leaders of the opposition to the Franco regime. There were reports of an apparent reconciliation between two bitter political enemies, José María Gil Robles, prominent rightest leader, and Rodolfo Llopis, exiled leader of the exiled Spanish Socialist Party. The Socialists were reported to have dropped their traditional opposition to a restoration of the monarchy in order to assist in the formation of a common front against the Franco regime. On their return from Munich on June 9, Robles and several other prominent rightists were arrested and sentenced to exile or forced residence in the Canary Islands. As a result of his arrest and exile, Robles resigned on June 17 from Don Juan's advisory privy council, lest he cause embarrassment to the monarchist cause.

On August 11, as an answer to the labor troubles, the Spanish government announced a plan to organize meetings between labor and management to arrange collective bargaining. However, another outbreak of strikes occurred among Asturian coal miners late in the month. The government charged that they were stimulated by Communists, Socialists, and anarchists and represented political agitation rather than genuine economic and social unrest. In the face of the renewed agitation, the government in September adopted new procedures in dealing with labor conflicts. Strikes remained illegal but labor disputes were now recognized as normal occurrences which required legal means of settlement. Ten days later, Franco promised the coal miners that his regime would seek "a just distribution" of the national income and provide equality of opportunity and sacrifice for all. At the end of the year, in his New Year's message, Franco announced that the daily minimum wage would be raised from 36 pesetas (about U.S.$0.58) to 60 pesetas (about U.S.$0.90).

A development with far-reaching economic and political consequences was the application of Spain on February 9 for association with the European Economic Community, or Common Market, with the eventual objective of full membership. Common Market countries provided 29% of Spain's imports and took 40% of its exports in 1961. In March the government lifted curbs on the transfer of funds by foreign investors, removing another barrier to foreign investment in Spain.

In the summer, United States economic aid was ended when Spanish reserves had increased to $1,100,000. On July 9, ten leading Spanish and Portuguese banks announced formation of a consortium to promote economic expansion in the two countries. Later it was revealed that the consortium would also include United States, British, and French bankers. On November 25, free elections, the first since the Civil War, were held for representatives in the official chambers of commerce.

On May 10, U.S. Ambassador Robert F. Woodward presented his credentials to Generalissimo Franco. He succeeded the late Anthony J. Drexel Biddle.

On September 26, flash floods, following a nine-hour rainstorm, swept through industrial centers near Barcelona, killing 381 persons, injuring an additional 1,000, sweeping away 1,500 homes, and damaging property worth an estimated $30 million. It was the worst natural disaster in the modern history of Spain.

Rhea Marsh Smith,
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SPANISH AMERICAN LITERATURE. See Latin American Literature.

SPANISH LITERATURE

The overwhelming fact of 1962 was the 400th anniversary of the birth of the most productive, dynamic, and contradictory of the geniuses of the Spanish stage, Lope de Vega. Lope's plays were performed throughout the Spanish-speaking world, and his works were reissued in a steady stream.

Publishing in Spain is still restricted almost entirely to Barcelona and Madrid, and a considerable proportion of the total consists of Spanish imitations and translations of pulp fiction. These shortcomings are complicated by the omnipresent and capricious censorship, which still requires that all manuscripts receive approval prior to publication, and which has even resulted in such oddities as a novel that was approved only to be withdrawn after it had won an important prize.

Fiction.—Outstanding among the new novels was Gonzalo Torrente Ballester's *La pascua triste* (third volume of the trilogy *Los gozos y las sombras*), an image of life in a Galician village of 30 years ago. It has been called one of the most important books of the last 30 years. This interest in the problems of rural existence was also evident in Miguel Delibes' *Las ratas*, a portrait of the gray and ordinary life of Castilian villagers.

The much-heralded *Tormenta de verano* (Eng. tr., *Summer Storm*), by the young Juan García Hortelano, was sharply criticized for its pessimism. A portrayal of the completely shallow and hedonistic existence of the wealthy, it is interesting for certain technical novelties and for the lifelike creation of a leading character who attempts to break free from the cynical privilege of his world. Another novelist influenced by modern techniques is the young Luis Martín-Santos, whose *Tiempo de sueño* was very successful. The Nadal Prize, which has been awarded to a number of unknowns who later became very successful, went to a 22-year-old student, J. A. Payno, whose *El curso* is an autobiographical treatment of an academic year seen from a variety of perspectives.

The 1961 National Novel Prize went to Bartolomé Soler, a prolific veteran, for his *Los muertos no se cuentan*. Francisco Ayala, who has emerged as a distinguished novelist during his exile, published a second edition of *La cabeza del cordero*, a collection of short stories which has become a classic since its original publication in 1949. Another collection of interest was Ignacio Aldecoa's *Arqueología*.

Poetry.—In 1962 a number of editions of collected works were published, such as José Hierro's *Poesías completas*, Gabriel Celaya's *Poesía* and Dionisio Ridruejo's *Hasta la fecha*. The National Poetry Prize went to Luis López Anglada, a mature and prolific poet who has won a number of awards, and the Premio March, another of the most important prizes, was conferred upon the veteran Gerardo Diego. Jorge Guillén, a writer of classic stature, received the Belgian International Literature Prize; another of Spain's remarkable galaxy of elder poets, Emilio Prados (d. 1962), published *Signos del ser*.

Theater.—Commercial theater continued to be dominated by a few names, chief among them Alfonso Paso, whose facile comedies attract audiences consistently. Before the end of 1962, his *Cena de matrimonio* had reached more than 1,000 performances. Miguel Mihura also has a formula, but his comedy is subtler, more human, and frequently leavened with fantasy. His latest, *La entretenida*, followed this pattern. A younger dramatist, Lauro Olmo, aroused considerable interest with his neorealistic and crudely powerful *La camisa*, a forthright picture of life in the slums, with a strong admixture of satirical humor.

Nonfiction.—Several interesting critical works appeared in 1962, among them the final volume of Eugenio de Nora's vast *La novela española contemporánea*, and *Baroja y su mundo*, a two-volume biography, iconography, and series of monographs by leading critics, under the editorship of Fernando Baeza. This concentration on the generation of 1898 continued with Gonzalo Fernández de la Mora's *Ortega y el 98*, awarded the National Essay Prize. Julián Marías published *Los españoles*, a thoughtful study of the dichotomy between liberal progressiveness and reactionary fanaticism which has plagued Spain throughout her history. José Bergamín's *Al volver* is the reflection of a distinguished essayist on his return to Spain after an absence of 20 years. Finally, the venerable chronicler of Madrid, Ramón Gómez de la Serna, was honored with the March Essay Prize in recognition of one of the most abundant and stimulating of present-day literary productions.

Translations.—Among the works that appeared in English translation in 1962 were: Anon., *The Life of Lazarillo de Tormes*, tr. by W. S. Merwin, with an introduction by Leonardo de Morelos; Blasco Ibáñez, Vicente, *Blood and Sand*, tr. by Frances Partridge; Ferrater Mora, José, *Unamuno: a Philosophy of Tragedy*, tr. by Philip Silver; García Hortelano, Juan, *Summer Storm*, tr. by Ilsa Barea; García Lorca, Federico, *Selected Poems*, with bilingual text, ed. by the poet's brother, Francisco García Lorca, and Donald M. Allen; Goytisolo, Juan, *Island of Women*, tr. by José Yglesias; Lera, Angel María de, *The Wedding*, tr. by Stephen Kaye; Ortega y Gasset, José, *Man and Crisis*, tr. by Mildred Adams; Quevado y Villegas, Francisco Gómez de, *The Scavenger*, tr. by Hugh A. Harter; Salazar Chapela, Esteban, *Naked in Piccadilly*, tr. by Patricia Crampton; Salvador, Tomás, *Men and Walls*, tr. by James Curtis; Sánchez Ferlosio, Rafael, *The One Day of the Week*, tr. by J. M. Cohen; and Unamuno y Jugo, Miguel de, *The Tragic Sense of Life*, tr. by J. E. Crawford Flitch.

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SPANISH MOROCCO. See MOROCCO.

SPANISH SAHARA. See SPANISH TERRITORIES.

SPANISH TERRITORIES

Spain's overseas territories, consisting of enclaves and islands along the northern and western coasts of Africa, have an area of 114,194 square miles and a total population of 472,439 (1960). They are constituted as provinces (or parts of provinces) of Spain, with the residents enjoying the same rights as the citizens of metropolitan Spain.

Throughout 1962, Spanish garrison towns on the Mediterranean coast of Africa continued to serve as a target for Moroccan nationalists. The Moroccans declared that they had to take defensive measures to protect their economy from the competition offered by the Spanish free ports of Ceuta and Melilla. A Moroccan decree prohibited Spaniards or Moroccans who worked in Morocco from residing in Melilla, and Moroccans planned an accelerated housing program at Nador to discourage residence in Melilla. Whiskey smuggling soared when Morocco levied a 150% tax on imported alcoholic beverages early in the year. The smugglers purchased tax-free whiskey and other goods in Ceuta or Melilla and landed them along the 375-mile Moroccan coast between Tangiers and Melilla. The Moroccans also discouraged travel to the Spanish ports by keeping transients waiting for police and customs formalities.

Spain built up military defenses in the garrison towns, following large-scale arms shipments into Morocco, and was reported to have more troops in them than were in the 35,000-man Moroccan Royal Army. Spain also maintained forces on constant alert to meet trouble in any African territory.

A meeting between Spanish and Moroccan officials was held in November to discuss areas of friction between the two countries. These included disputed fishing rights off the Moroccan coast and insistent Moroccan claims to the Spanish enclaves in Morocco and to the Spanish Sahara. (See also MOROCCO.)

Spanish North Africa.—Spanish possessions along the Mediterranean coast of Morocco have a total area of 82 square miles and a population of 152,768 (1960). The most important are the ports of Ceuta and Melilla on the northern coast. Ceuta (area: 7 sq. mi.; 1960 pop., 73,182), located at the eastern entrance of the Strait of Gibraltar, is governed as part of the Spanish province of Cádiz and contains a military base. Melilla (area: 5 sq. mi.; 1960 pop., 79,056) is governed as part of the Spanish province of Málaga and is important economically for trade, fishing, and boatbuilding.

Spanish West Africa.—The territory was divided in July 1958 into the provinces of Ifni and Spanish Sahara, both under the jurisdiction of the commander of the Canary Islands naval base.

Ifni.—Formerly a Spanish enclave on the southwest coast of Morocco, Ifni has an area of 579 square miles and a population of 49,889 (1960). The indigenous population consists principally of Berber tribes. The capital and principal town is Sidi Ifni (1960 pop., 12,751, including 8,201 Europeans and many transients).

Spanish Sahara.—Except for the coastal region, the Spanish Sahara (area: 102,702 sq. mi.; 1960 pop., 23,793, including 5,304 Europeans) is largely desert inhabited by nomads. Formerly divided into two zones, Río de Oro (area: 71,042 sq. mi.) and Saguia el Hamra (area: 31,660 sq. mi.), it is now organized into a northern district around Aiun (1960 pop., 5,251), a middle district around Villa Cisneros (1,961), and a southern district around La Guera. Major economic activities are coastal fishing (the 1961 catch was valued at 35.2 million pesetas) and ranching. Value of exports, 1961: 85,000 pesetas; imports, 106,800.

Equatorial Region.—The region consists of the provinces of Río Muni and Fernando Póo, under the jurisdiction of a governor general. Number of schools (with enrollments), 1960: 118 primary (19,680); 3 secondary (268). Exports, 1960: 2,000 million pesetas; imports, 920 million.

Río Muni.—Formerly part of Spanish Guinea, Río Muni was constituted a separate province in 1960. Situated on the Gulf of Guinea, it has an area of 10,045 sq. mi. and a 1960 pop. of 183,377. Bata (1960 pop., 27,024, including 1,534 Europeans) is the capital and principal city. It is also a port, has the only airport, and is the radial center of the limited highway network of 85 miles of paved roads. Principal cash crops: coffee (3,894.7 metric tons in 1960–61); cocoa (3,250.1 tons); bananas; palm oil and kernels; and hardwoods.

Fernando Póo.—The province (area, 786 sq. mi.; 1960 pop., 62,612) was established in 1960. It comprises the islands of Fernando Póo (1960 pop., 61,197) and Annobón (1,415) in the Gulf of Guinea. The capital and principal city is Santa Isabel (1960 pop., 37,237, including 3,358 Europeans). The principal occupations are farming, fishing, and cattle raising. Leading cash crops, 1960–61: cocoa (21,982 metric tons); coffee (1,610.7 tons). Fernando Póo has a good system of hard-surfaced roads and an airport at Santa Isabel.

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SPECIAL LIBRARIES ASSOCIATION. See SOCIETIES AND ORGANIZATIONS.

SPEED RECORDS. See FLIGHT RECORDS; SPORTS, GAMES, AND SHOWS.

SPICES

Spice consumption in the United States topped the 200 million-pound mark in 1961 for the first time. Imports, plus domestic production, minus reexports, totaled 205,009,000 pounds, compared with 185,245,000 pounds in 1960.

Gains in 15 of 22 major imports accounted for most of the increase in 1961. Mustard seed imports were up nearly 14 million pounds; sesame seed gained 5.5 million pounds; capsicums (red-podded peppers) increased 2 million pounds; and paprika and cinnamon were each up 1.5 million pounds. Partially offsetting the gains was a 5-million-pound decline in pepper imports. Cloves, cumin seed, and poppy seed also decreased by about 1 million pounds each.

Mustard seed made a sizable gain on the domestic as well as the import scene. United States production rose to 23,834,000 pounds in 1961 from 18,920,000 pounds the year before. Capsicum production declined, however, from 11,340,000 pounds in 1960 to 10,140,000 pounds in 1961.

U.S. IMPORTS OF MAJOR SPICES, 1961

Spice	Pounds	Value
Pepper	34,262,000	$14,947,605
Mustard seed	43,297,000	3,808,292
Sesame seed	22,895,000	2,974,984
Cinnamon	13,249,000	2,980,286
Paprika	9,632,000	2,631,096
Capsicums	7,661,000	1,903,408
Caraway seed	6,979,000	1,105,443
Poppy seed	6,645,000	796,570
Nutmegs	3,930,000	3,094,846
Ginger	3,666,000	654,566

U.S. Department of Commerce import figures for leading spices in 1961 are shown in the accompanying table.

ALBERT E. KEOGLER,
President, American Spice Trade Association.

SPINACH. See VEGETABLES.

SPITSBERGEN. See NORWAY.

SPORTS, GAMES, AND SHOWS

International controversies and internal disputes in the United States were added ingredients in 1962 to the already stimulating and varied world of sports. World championships in skiing, hockey, weightlifting, and basketball were hampered by the injection of world politics, and the formation of federations in three sports in the United States challenged the authority of the Amateur Athletic Union over Americans in international meets.

Despite these off-the-field distractions, there was plenty of arresting competition during the year. The National League pennant race produced another thrilling play-off between those arch rivals, the Giants and Dodgers, but, as has become customary, the New York Yankees again emerged as the world champions in baseball.

Three teams from Ohio dominated college basketball, and a Philadelphia star, Wilt Chamberlain, did likewise in professional basketball. Professional boxing, already under fire because of the infiltration of racketeers, was the object of nationwide criticism because of the merciless and fatal beating suffered by Benny (Kid) Paret of Cuba in the unsuccessful defense of his welterweight title against Emile Griffith in New York on March 24. Boxing also labored under the burden of having an ex-convict, Sonny Liston, rise to the pinnacle of the sport by becoming the world heavyweight champion.

Turf fans continued to be fascinated by the vagaries of horse racing and were vicariously delighted when Kelso became the fifth millionaire thoroughbred in history by capturing the $54,000 Governor's Plate at Garden State Park on December 1.

Harness racing continued its international expansion, and Su Mac Lad, who finished second in the major international trots at Yonkers and Roosevelt raceways, gained "harness horse of the year" honors because he was otherwise a consistent winner, taking 7 of his 13 starts during 1962. Ronnie Ferraro, 19, an apprentice for most of the year, was the top jockey of 1962, and Bob Farrington was again the leading sulky driver.

The Montreal Canadiens gained the National Hockey League regular-season title for the fifth straight year, and the Toronto Maple Leafs captured the Stanley Cup for the first time since 1951. The world amateur hockey championship, played in Colorado, was won by Sweden, but five teams originally entered did not compete. The withdrawals mainly represented protests over the fact that a team from East Germany was not allowed to enter the United States to participate.

The international dispute over East Germany and the Berlin wall also involved the world Alpine skiing and world weightlifting championships. The skiing, held in Chamonix, France, lost its championship designation because East Germans could not get their travel permits, and the weightlifting tournament, scheduled for Hershey, Pa., was transferred to Budapest, Hungary, for the same reason. The world basketball tournament, held in Manila

in December, lost its championship designation because the Filipinos would not allow the Yugoslav team to compete.

Australia, perennial champion in tennis and a power in swimming, tried its luck at yachting, mounting an expensive challenge for the America's Cup in a series against the defender from the United States. But in September the United States won the series off Newport, R.I., 4 races to 1, to remain undefeated in the 111-year-old competition.

In motorboating, *Miss Century 21,* owned by Willard Rhodes and driven by Bill Muncey, won the five major trophies—the Diamond Cup, Gold Cup, Governor's Trophy, President's Cup, and the Spirit of Detroit.

An unexpected power arose from the west coast in college football. The University of Southern California, picked to finish among the second best 10 teams in the country in the preseason polls, was named the top team in the final balloting in both major news service surveys.

In professional football, the Green Bay Packers maintained their mastery over the National Football League. The Packers lost only one game in the regular season (to Detroit) and then scored a repeat victory (16–7) over the New York Giants in the championship game for their second straight title. In the American Football League, the Dallas Texans ended the Houston Oilers' two-year reign with a 20–17 decision in a play-off game that required two overtime periods.

Jack Nicklaus made a bundle of money in his first year as a professional golfer and won the United States Open championship as well. In a television "spectacular," Nicklaus defeated the two other top pro golfers of the year—Arnold Palmer and Gary Player.

In tennis, an Australian, Rodney (Rocket) Laver, became the first man to win the four major world titles in one year since Don Budge of the United States achieved the grand slam in 1938. Laver climaxed his great year by leading the Aussies to a 5–0 victory over Mexico in the Davis Cup challenge round (making it four in a row for Australia), and then joined the professional circuit.

A New Zealander, Peter Snell, lowered the world record for the mile to 3:54.4, and an American, Jim Beatty, became the first man to break the 4-minute barrier indoors. Beatty was clocked in 3:58.9 in Los Angeles on February 10. Another United States athlete, John Uelses, became the first man to pole vault 16 feet, scaling 16 feet ¼ inch in the Millrose Games at Madison Square Garden, New York.

The United States defeated the Soviet Union, 128–107, in another of their annual two-day dual track meets. It was the fourth victory for the Americans over the Russians in as many meetings. The USSR women outscored the American women, 66–41, for the fourth straight time. A two-day attendance of 153,500 was recorded at the meet in Palo Alto, Calif.

These notable achievements by Americans in track and field were somewhat clouded by the running dispute between the Amateur Athletic Union and coaches in the National Collegiate Athletic Association. The coaches, seeking a greater voice in the selection of American athletes for international meets, formed a federation to challenge the authority of the AAU in this field. (The NCAA coaches also organized federations in basketball and gymnastics in opposition to the AAU.) Finally, President Kennedy stepped into the picture with the announcement that he had appointed Gen. Douglas MacArthur to arbitrate the dispute. (After meeting with the two sides on January 18–19, 1963, MacArthur announced that a general agreement on cooperation had been reached.)

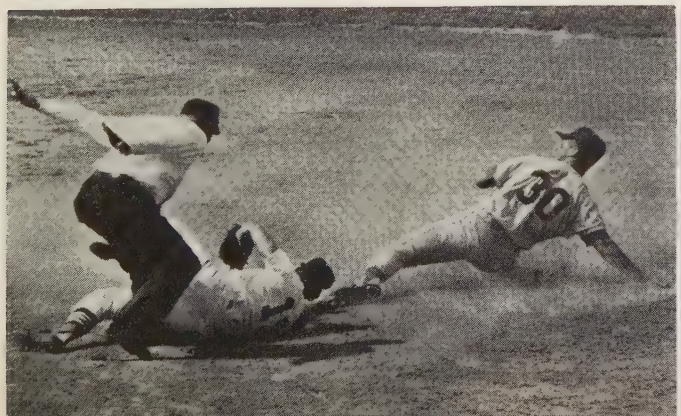
The Ohio teams which dominated college basketball were Ohio State University, rated tops in the final news service polls; Cincinnati, which beat Ohio State in the NCAA tournament final; and Dayton, which won the National Invitation Tournament in New York's Madison Square Garden. In addition, a professional team from Cleveland, the Pipers, defeated the Kansas City Steers in a best-three-of-five play-off series to win the title in the new American Basketball League, which, however, ended operations in December 1962. The highlight of the National Basketball Association season was the 100 points scored in one game by the champion record-breaker, Wilt Chamberlain of the Warriors, against the New York Knickerbockers on March 2.

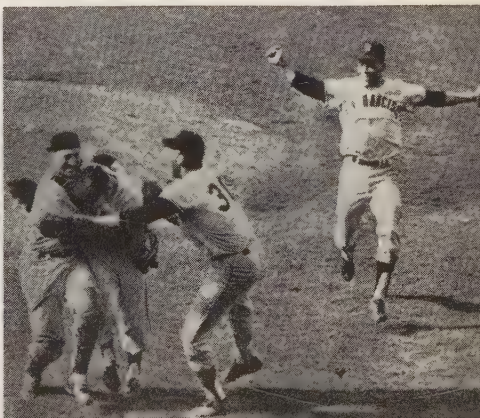
And the baseball season, with both 10-team major leagues scheduling 162 games, had the distinction of producing the longest game in point of time in big league history. The Yankees and Tigers played for 7 hours in Detroit on June 24, with New York winning, 9 to 7, in 22 innings. (The previous record had been 5 hours 19 minutes for a 20-inning game on July 5, 1940, when the Brooklyn Dodgers defeated the Boston Braves, 6–2.)

Following are summaries of some of the developments in major sports activities in 1962, together with listings of champions and of many outstanding performances. Team or residential affiliations are provided for each winner, where possible, but are indicated only once for a multiple winner—the first time his name is listed.

(*Left*) Maury Wills of the Los Angeles Dodgers, shown stealing second in game at Houston in June, went on to register 104 stolen bases during the 1962 season to surpass Ty Cobb's record of 96. (*Right*) San Francisco Giant players whoop it up after defeating Dodgers in final game of National League play-off, October 3. Here, teammates greet relief hurler Billy Pierce.

WIDE WORLD





ARCHERY

National Archery Association Championships
(Oak Brook, Ill., August 7–10)

Amateur

Men—Charles Sandlin, Flagstaff, Ariz. (3,568 pts.)
Women—Nancy Vonderheide, Cincinnati (3,577)

Professional

Men—Bob Pender, Downers Grove, Ill. (3,583)
Women—Margaret Tillberry, Springfield, Ohio (3,722)

National Field Archery Championships
(Hot Springs, Ark., August 3–4)

Free Style—*Non-Amateur Men,* Don Cavallero, Los Angeles, 2,627 pts.; *Non-Amateur Women,* Lucille Shine, Glendale, Calif., 2,118; *Amateur Men,* Bob Sevey, Minneapolis, 2,581; *Amateur Women,* Jean Bollum, Redwood Falls, Minn., 2,077

Instinctive—*Non-Amateur Men,* Jim Bell, Cambridge, Ohio, 2,368; *Non-Amateur Women,* Marie Stotts, Westminster, Calif., 1,911; *Amateur Men,* John A. Heilman, Bethlehem, Pa., 1,895; *Amateur Women,* Patti Bailey, Meadville, Pa., 1,895

AUTO RACING

World Championship Grand Prix Races

Dutch (Zandvoort, Netherlands, May 20)—Graham Hill, England (driving a V-8 BRM; distance, 208 miles; time, 2:11:2.1; speed, 95.38 mph.)
Monaco (Monte Carlo, June 3)—Bruce McLaren, New Zealand (V-8 Cooper Climax; 195 miles; 2:46:29.7; 70.41 mph.)
Belgian (Francorchamps, Belgium, June 17)—Jim Clark, Scotland (Lotus; 280 miles; 2:07:32.3; 131.895 mph.)
French (Rouen, France, July 8)—Dan Gurney, Riverside, Calif. (Porsche; 219.5 miles; 2:07:35; 102.8 mph.)
British (Aintree, England, July 21)—Jim Clark (Lotus; 225 miles; 2:02:20.8; 92.25 mph.)
German (Nuerburgring, Germany, Aug. 5)—Graham Hill (BRM; 212 miles; 2:38:45.3; 80.23 mph.)
Italian (Monza, Italy, Sept. 16)—Graham Hill (BRM; 307 miles; 2:29:08.04; 122.84 mph.)
U.S. (Watkins Glen, N.Y., Oct. 7)—Jim Clark (Lotus; 230 miles; 2:07:13; 108.61 mph.)
South African (East London, South Africa, Dec. 29)—Graham Hill (BRM; 200 miles; 2:08:33; 93.57 mph.)

Other Races

Indianapolis Speedway (May 30)—Rodger Ward, Indianapolis (Leader Card; 500 miles, 3:33:50.38; 140.292 mph.; purse, $124,515)
Daytona Beach (Feb. 18)—Glenn Roberts, Daytona Beach, Fla. (Pontiac; 500 miles; 3:10:41; 152.529 mph.)
24-Hour Endurance (Le Mans, France, June 24)—Phil Hill, Santa Monica, Calif., and Olivier Gendebien, Belgium (2,766.454 miles; 115.268 mph.)
12-Hour Endurance (Sebring, Fla., March 24)—Joakim Bonnier, Sweden, and Lucien Bianchi, Belgium (Ferrari; 1,030 miles; 89.142 mph.)
Southern (Darlington, S.C.)—Larry Frank, Greenville, S.C. (Ford; 500 miles, 117.965 mph.)

Individual Champions

World—Graham Hill, England
U.S. Auto Club Big Car—Paul Goldsmith, St. Clair Shores, Mich.

Sports Car Club of America

A Production—Dick Thompson, Washington (Corvette; 70 pts.)
B Production—Don Yanko, Pittsburgh (Corvette; 70)
C Modified—Harry Heuer, Milwaukee (Chaparral; 40)
C Production—Dave Clark, New York (Lotus 7 Super; 70)
D Modified—Roger Penske, Gladwyne, Pa. (Cooper Monaco; 40)
D Production—Bert Everett, Philadelphia (Porsche; 48)
E Modified—Bob Holbert, Warrington, Pa. (Porsche RS61; 58)
E Production—Bob Tullius, Alexandria, Va. (Triumph 4; 66)
F Modified—Joe Buzzetta, New York (Porsche RSK; 38)
F Production—Howard Hanna, Newtown Square, Pa. (DB; 62)
G Modified—M. R. J. Wyllie, Pittsburgh (Lola; 56)
G Production—Lynn Blanchard, Milwaukee (Alfa Giulietta; 58)
H Modified—Glenn Baldwin, Detroit (Lotus 17; 62)
H Production—Ed Astri, Washington (Fiat-Abarth; 60)
Formula Junior—Tim Mayer, Dalton, Pa. (Cooper; 68)
Formula III—John Field, Boston (Cooper; 44)

BADMINTON

All-England (unofficial world) Championships (London, England, finals March 24)—*Singles:* Erland Kops, Denmark; *women's singles:* Judith Devlin Hashman, England; *doubles:* Finn Kobbero and Hammergaard Hansen, Denmark; *women's doubles:* Judith Devlin Hashman and Mrs. Toni Holst-Christensen, Denmark
U.S. Championships (Lebanon, Pa., April 4–7)—*Singles:* Ferry Sonneville, Indonesia; *women's singles:* Judith Devlin Hashman, England; *doubles:* Joe Alston, Pasadena, Calif., and Wynn Rogers, Arcadia, Calif.; *women's doubles:* Judith Devlin Hashman and Pat Stephens, Baltimore; *mixed doubles:* Wynn Rogers and Judith Devlin Hashman

BASEBALL

The Los Angeles Dodgers suffered a monumental collapse late in the 1962 baseball season in a duplication of the 1951 season. Again the San Francisco Giants (in New York in 1951) tied them at the top of the standings on the last day of the regular season, and again the Giants beat the Dodgers in a three-game play-off for the National League pennant. While the 1951 World Series was an anticlimax to the regular season, the 1962 Series had still more thrills in store.

The New York Yankees finished first in the American League for their 27th pennant. They were favored to beat the Giants, weary from the additional strain and pressure of the play-off. With both leagues up to 10 teams (the American League had expanded in 1961), the teams played 162-game schedules during the regular season. So the big leaguers, who had already come through their longest season, were about to enter what was to be one of the longest World Series—a Series that produced brilliant pitching and frayed nerves that resulted from four postponements.

The quality of the pitching was reflected in the scores. The Yankees, who took their 20th World Series, 4 games to 3, scored a total of 20 runs in the seven games, and the Giants, 21 runs. The traditionally powerful Yankees had a team batting average of only .199, and the Giants batted .226. Ralph Houk's Yankees had little trouble wrapping up the first game, 6–2, clinching it with a homer by Cletis Boyer in the seventh. But Jack Sanford blanked the Yankees on three hits to win the second game, 2–0. The Bombers bounced back to take the third game, 3–2, with three runs in the seventh inning of a pitchers' duel between Billy Pierce of the Giants and Bill Stafford of the Yankees. Four of the runs in the fourth game, won by the Giants, 7–3, were produced by a seventh-inning home run by Chuck Hiller.

The fifth game was postponed one day because of rain in New York. Tom Tresh clinched it for the Yanks, 5–3, with a three-run homer in the eighth inning. Play was then stopped for three days by a storm in San Francisco. The sixth game was played on October 15, and this time it was Pierce's turn to beat the Yankees with a three-hit game, 5–2. But the Yankees had the final word as Ralph Terry shut out Al Dark's Giants, 1–0, with a four-hitter.

Maury Wills of the Dodgers won a major share of the glory during the National League season by stealing 104 bases in 165 games. The big-league record of 96 had been set by Ty Cobb in 1915 in a 154-game season (although Cobb actually played 156 games). Wills had 95 steals in 154 games, and 97 in 156 games. The Dodger star was named the most valuable player in the National League.

Whereas the 1961 season had been enlivened by a discussion of whether the home-run hitters were profiting from a lively ball, in 1962 the sluggers had difficulty meeting the ball. Four pitchers in the American League and one in the National succeeded in hurling no-hitters: Bo Belinsky of the Los Angeles Angels against the Baltimore Orioles, 2–0, May 5 (night game); Earl Wilson, Boston Red Sox, against the Angels, 2–0, June 26 (night game); Sandy Koufax, Dodgers, against the New York Mets, 5–0, June 30 (night game); Bill Monbouquette, Red Sox, against the Chicago White Sox, 1–0, August 1 (night game); and Jack Kralick, Minnesota Twins, against the Kansas City Athletics, 1–0, August 26 (day game).

New York, which had lost the Giants to San Francisco and the Brooklyn Dodgers to Los Angeles in 1958, again had an entry in the National League—the Mets, a collection of aging and immature ball players. The club set an undisclosed number of records for ineptness and futility, and finished in last place. The fans loved them, however, and 922,530 of them kept the turnstiles at the Polo Grounds spinning. This was 268,607 more than had seen the Giants in 1957.

PROFESSIONAL—MAJOR LEAGUES

American League (Final Standing, 1962)

Club	Won	Lost	Pct.
New York	96	66	.593
Minnesota	91	71	.562
Los Angeles	86	76	.531
Detroit	85	76	.528
Chicago	85	77	.525
Cleveland	80	82	.494
Baltimore	77	85	.475
Boston	76	84	.475
Kansas City	72	90	.444
Washington	60	101	.373

National League (Final Standing, 1962)

Club	Won	Lost	Pct.
San Francisco	103	62	.624
Los Angeles	102	63	.618
Cincinnati	98	64	.605
Pittsburgh	93	68	.578
Milwaukee	86	76	.531
St. Louis	84	78	.519
Philadelphia	81	80	.503
Houston	64	96	.400
Chicago	59	103	.364
New York	40	120	.250

World Series—Won by New York Yankees; attendance 7 games, 376,864; net receipts, $2,878,891.22; commissioner's share, $431,833.66; players' share (first 4 games only), $863,281.71, including full shares of $9,882 for each Yankee and $7,291 for each Giant; clubs' share, $791,887.90; leagues' share, $395,943.93.

Standings: New York (AL) won 4, lost 3, pct. .571; San Francisco (NL) won 3, lost 4, pct. .429

First Game (Candlestick Park, Oct. 4): New York 6, San Francisco 2; *Second Game* (Candlestick Park, Oct. 5): San Francisco 2, New York 0; *Third Game* (Yankee Stadium, Oct. 7): New York 3, San Francisco 2; *Fourth Game* (Yankee Stadium, Oct. 8): San Francisco 7, New York 3; *Fifth Game* (Yankee Stadium, Oct. 10): New York 5, San Francisco 3; *Sixth Game* (Candlestick Park, Oct. 15): San Francisco 5, New York 2; *Seventh Game* (Candlestick Park, Oct. 16): New York 1, San Francisco 0.

All-Star Games—*First Game* (Washington, July 10): National 3, American 1; *Second Game* (Chicago, July 30): American 9, National 4.

Most Valuable Players—*National:* Maury Wills, Los Angeles shortstop; *American:* Mickey Mantle, New York center fielder.

Cy Young Memorial Award (outstanding pitcher)—Don Drysdale, Los Angeles (25–9).

Rookies of the Year—*American:* Tom Tresh, New York shortstop and left fielder; *National:* Ken Hubbs, Chicago second baseman.

Leading Batters (Percentage)—*American:* Pete Runnels, Boston, .326; *National:* Tommy Davis, Los Angeles, .346; (Home Runs)—*American:* Harmon Killebrew, Minnesota, 48; *National:* Willie Mays, San Francisco, 49; (Runs Batted In)—*American:* Killebrew, 126; *National:* Davis, 153.

Leading Pitchers (Best Percentage, 10 or more victories)—*American:* Dave Wickersham, Kansas City (11–4), .733; *National:* Bob Purkey, Cincinnati (23–5), .821; (Most Victories)—*American:* Ralph Terry, New York, 23; *National:* Don Drysdale, Los Angeles, 25; (Earned-Run Average)—*American:* Hank Aguirre, Detroit, 2.21; *National:* Sandy Koufax, Los Angeles, 2.54.

Professional—Minor Leagues

(When two teams are named, the first won the regular-season championship and the second won the play-off; otherwise the team named won both. Letters in parentheses indicate league class.)

Alabama-Florida (D)—Pensacola; Selma
American Association (AAA)—Indianapolis; Louisville
Appalachian (D)—Bluefield
California—San Jose (first half and play-off); Reno (second half)
Carolina (B)—Durham; Kinston
Eastern (A)—Williamsport; Elmira
Florida State (D)—Sarasota (first half); Ft. Lauderdale (second half and play-off)
Georgia-Florida (D)—Thomasville (no play-off)
International (AAA)—Jacksonville; Atlanta
Mexican Center (C)—Fresnillo (no play-off)
Mexican (AA)—Monterrey (no play-off)
Midwest (D)—Dubuque Packers (first half and play-off); Waterloo (second half)
New York–Pennsylvania (D)—Jamestown; Auburn
Northern (C)—Grand Forks; Eau Claire
Northwest (B)—Wenatchee (first half and play-off); Kennewick (second half)
Pacific Coast (AAA)—San Diego
Pioneer (C)—Billings, Boise, and Great Falls (tied for first in first half); Billings (second half and play-off)
South Atlantic (A)—Savannah; Macon
Texas (AA)—El Paso; Tulsa
Western Carolina (D)—Statesville (no play-off)
Junior World Series—Atlanta (International League) defeated Louisville (American Association), 4 games to 3

Other Champions

Little League World Series—San Jose, Calif.
National Amateur Federation Junior Championship—Detroit
American Legion Junior—Anheuser-Busch Post, St. Louis
Babe Ruth League—Trenton, N.J.
Connie Mack League—Fort Worth, Texas
National Baseball Congress—Wichita (Kans.) Rapid Transit Dreamliners
American Amateur Baseball Congress—Portland, Oreg.

Intercollegiate and College Conference Champions—NCAA: Michigan; *NAIA:* Georgia Southern; *Eastern:* Navy; *Middle Atlantic:* University division—Gettysburg; college division, north—Moravian; college division, south—Ursinus; *Mason-Dixon:* Randolph-Macon; *Southern:* West Virginia; *Atlantic Coast:* Wake Forest; *Yankee:* Vermont; *Southeastern:* Florida; *Southwest:* Texas; *Midwest:* Ripon; *Mid-American:* Western Michigan; *Big Ten:* Illinois; *Big Eight:* Missouri; *National Junior College:* Phoenix, Ariz.

BASKETBALL

In college basketball, Cincinnati for the second year beat Ohio State (this time by 71–59) in the final of the NCAA tournament held in Louisville, Ky., on March 24, 1962. However, Ohio State was not to play second best in the news service polls. The team, led by All-American Jerry Lucas, again was rated first in the balloting by the coaches and sportswriters. Lucas was named the outstanding college basektball player in the nation for the second straight year by the National Association of Basketball Coaches and the Associated Press.

Billy McGill of Utah paced the collegiate scorers with 1,009 points for a 38.8 average. He led the finest array of scoring talent to play in any one college basketball season, as each of the top five scorers averaged more than 30 points per game. The other four were Jack Foley of Holy Cross (33.3), Nick Werkman of Seton Hall (33), Jerry Dischinger of Purdue (30.3), and Len Chappell of Wake Forest (30.1).

The National Invitation Tournament at Madison Square Garden was won by the Dayton Flyers, who beat St. John's of Brooklyn, 73–67, in the final. Bill Chmielewski paced the Flyers in his first varsity season.

The United States won the seven-nation Philippines Invitational International tournament in Manila by defeating the Philippine team, 94–58, for its sixth straight victory. Canada placed second in the competition, winning five of its six games.

In professional basketball, the division leaders, the Boston Celtics in the East and the Los Angeles Lakers in the West, went on to gain the final play-offs of the National Basketball Association, with the Celtics winning the series, 4 games to 3. This was the fourth league title in a row for Boston, which had won its division title for the sixth straight year. The Celtics' Bill Russell was named the league's most valuable player for the second successive year.

Wilt Chamberlain continued to amaze basketball fans. The Philadelphia Warriors' star became the first player to score 100 points in a single game (on 36 field goals and 28 foul shots), against the New York Knickerbockers on March 2. Despite Wilt's gate appeal, however, the Warriors felt an economic pinch in Philadelphia and after the season moved their franchise to San Francisco.

The Cleveland Pipers defeated the Kansas City Steers in the play-offs to win the first American Basketball League championship (1961–62). However, the new professional league went out of business on Dec. 31, 1962.

Amateur

Major Tournaments

NCAA—Cincinnati (defeated Ohio State in final, 71–59)
NCAA Small College—Mount St. Mary's of Emmitsburg, Md. (defeated Sacramento State in final, 58–57, in overtime)
National (New York) Invitation—Dayton (defeated St. John's of Brooklyn in final, 73–67)
National Intercollegiate (NAIA)—Prairie View A. & M. of Texas (defeated Westminster, Pa., 62–53)
Men's AAU—Phillips Oilers of Bartlesville, Okla. (defeated Denver Truckers in final, 70–59)
Women's AAU—Nashville Business College (defeated Wayland College in final, 63–38)
World—United States (defeated the Philippines in final, 94–58)

College Conference Champions

(Figures in parentheses represent wins and losses in conference games only.)

Ivy League—Yale (13–1)
Yankee—Massachusetts (8–2)
Tri-State—Fairfield (9–0)
Middle Atlantic—*University Division:* St. Joseph's (9–1); *Northern College Division:* Hofstra (10–2); *Southern College Division:* Penn Military (15–3)
Southern—*Regular season:* West Virginia (12–1); *Post-season conference tournament:* West Virginia
Atlantic Coast—*Regular season:* Wake Forest (12–2); *Post-season conference tournament:* Wake Forest
Southeastern—Mississippi State and Kentucky (tie, 13–1)
Southwest—Texas Tech and Southern Methodist (tie, 11–3)
Border—Arizona State (8–0)
Ohio Valley—Western Kentucky (11–1)
Missouri Valley—Cincinnati (11–2)
Midwestern—Grinnell (16–2)
Mid-American—Bowling Green (11–1)
Western (Big Ten)—Ohio State (13–1)
Big Eight—Colorado (13–1)
Skyline—Utah (13–1)
West Coast—Pepperdine (11–1)
Big Five—UCLA (10–2)

Professional

NATIONAL BASKETBALL ASSOCIATION (FINAL STANDINGS, 1962)

Eastern Division	Won	Lost	Pct.	Western Division	Won	Lost	Pct.
Boston	60	20	.750	Los Angeles	54	26	.675
Philadelphia	49	31	.612	Cincinnati	43	37	.537
Syracuse	41	39	.512	Detroit	37	43	.462
New York	29	51	.362	St. Louis	29	51	.362
				Chicago	18	62	.225

Eastern Division Play-offs—Boston defeated Philadelphia, 4 games to 3. *Western Division Play-offs*—Los Angeles defeated Detroit, 4 games to 2. *NBA Finals*—Boston defeated Los Angeles, 4 games to 3.

BILLIARDS

U.S. Amateur 3-Cushion—Eddie Lee, New York A.C.
National Intercollegiate—*3-Cushion:* Douglas Saunders, University of California; *men's pocket:* Bob Burke, Uni-

versity of Oregon; *women's pocket:* San Merrick, Bowling Green (Ohio) State
World Amateur 3-Cushion—Bob Marshall, Australia

BOBSLEDDING

World Championships (mile course, Garmisch-Partenkirchen, Germany, Jan. 20–30)—*2-man:* Rinaldo Ruatti (pilot) and Enrico DeLorenzo (brake), Italy (5:03.73 for 4 runs); *4-man:* Franz Schelle (pilot), Sepp Sterff, Ludwig Siebert, Otto Goebl (brake), Germany (2:33.66 for 2 runs; last 2 runs canceled)
AAU Championships (mile course, Lake Placid, N.Y., Feb. 10–11)—*2-man:* Larry McKillip (pilot) and James Lamy (brake), Saranac Lake, N.Y. (time, 4:50.86); *4-man:* Larry McKillip (pilot), Floyd Baumgartner, Neil Rogers, James Lamy (brake), Saranac Lake, N.Y. (4:41.46)

BOWLING

American Bowling Congress Tournament (Des Moines, Iowa, Feb. 17–April 26)—Regular Division: *Singles,* Andy Renaldy, Youngstown, Ohio; (720 pins); *doubles,* John Gribin and Gary Madison, Riverside, Calif. (1,376); *all-events,* Billy Young, Tulsa, Okla. (2,015); *team,* Strike 'n Spare, Chicago, Ill. (3,128). Classic Division: *singles,* Bob Poole, Pueblo, Colo. (759); *doubles,* Glenn Allison and Dick Hoover, St. Louis, Mo. (1,431); *all-events,* Jack Winters, Philadelphia, Pa. (2,147); *team,* Don Carter Gloves, St. Louis, Mo. (6,248). Booster Division: *team,* Carroll Lanes, Mount Carroll, Ill. (2,861)
Women's International Bowling Congress Tournament (Phoenix, Ariz.)—*Singles:* Martha Hoffman, Madison, Wis. (693); *doubles:* Sandy Hooper and Jean Cowger, Oklahoma City, Okla. (1,238); *all-events:* Flossie Argent, St. Louis, Mo. (1,808); *team, first division:* Linbrook Bowl, Los Angeles, Calif. (3,061)
Bowling Proprietors Association of America Champions—*Singles:* Dick Weber, St. Louis, Mo. (299.34 Petersen pts.); *women's singles:* Shirley Garms, Chicago, Ill. (138.44); *doubles:* Joe Joseph, Lansing, Mich., and Billy Golembiewski, Detroit, Mich.; *women's doubles:* Joy Abel and Betty Kuczynski, Chicago, Ill.
National Duck Pin Bowling Congress Tournament (Greensboro, N.C., March 17–May 6)—*Singles:* Frank Chiodi, Bridgeport, Conn. (450 pins); *doubles:* Raymond Rhue and Oneil Wynne, Norfolk, Va. (871); *all-events:* James Jenkins, Washington, D.C. (1,280); *team:* William Stalcup Furniture Co., Washington, D.C. (1,933); *women's singles:* Alva Brown, Baltimore, Md. (434); *women's doubles:* Frances Perkins and Beryl Moyer, Washington, D.C. (793); *women's all-events:* Cecelia Rohlfing, Baltimore, Md. (1,215); *women's team:* Guilford Lanes, Baltimore, Md. (1,826); *mixed doubles:* Gloria Darchik and Dan Riccio, Bridgeport, Conn. (824)
Professional Bowlers Association Champion of Champions Tournament (Indianapolis, Ind., May 19–20)—Joe Joseph
World Invitation Championship (Chicago, Ill., Nov. 25)—*Men:* Don Carter, St. Louis, Mo.; *women:* Marion Ladewig, Grand Rapids, Mich.

BOXING

Floyd Patterson, indifferent to the advice of his manager, Cus D'Amato, accepted the challenge of Charles (Sonny) Liston for a world heavyweight title fight in 1962. Patterson should have listened to D'Amato, for Liston knocked out the champion in 2 minutes 6 seconds of the first round. Fans at ringside in Chicago on September 25, who had paid up to $100 for their seats, were understandably disappointed, as were the hundreds of thousands who saw the flurry of action on closed-circuit television at 263 locations in the United States and Canada. This, the richest heavyweight fight in history, with total revenue reaching $5 million, also was one of the shortest.

Fans across the country were shocked on March 24 when Emile Griffith punched Benny (Kid) Paret into insensibility in their televised world welterweight title bout in Madison Square Garden. Paret, the defending champion, never regained consciousness and died 10 days later. In a defense of the title, Griffith outpointed Ralph Dupas at Las Vegas on July 13.

A jinx continued to pursue Griffith, however, for in his third title fight of the year, against Jorge Fernandez of Argentina, Griffith threw a punch that landed below his opponent's belt. A national television audience saw Fernandez crumple to the canvas and writhe in pain. Since Griffith was ahead on points at the time, he was declared the winner by a technical knockout. The bout, held in Las Vegas, Nev., on December 8, ended in the ninth round.

In a heavyweight fight of some interest, Cassius Clay, 20-year-old aspirant for Liston's crown, scored his 16th victory and 13th knockout by finishing Archie Moore in the fourth round at Los Angeles, on November 15. The bout may have ended the long career of Moore, who is close to 50 years of age.

Harold Johnson extended his light heavyweight championship to the whole world outside of California by beating Doug Jones at Philadelphia on May 12. Johnson outpointed Gustav Scholz in Berlin on June 23 in a defense of the title.

In a rough fight in San Francisco on October 23, Dick Tiger of Nigeria won the World Boxing Association middleweight crown from Gene Fullmer. In December, Tiger was named winner of the Edward J. Neil Memorial Trophy as "fighter of the year." Terry Downes, the champion in Massachusetts, New York, and Europe, had lost his share of the title to Paul Pender at Boston on April 7.

The world lightweight title also changed hands. Joe Brown surrendered his claim to the crown to Carlos Ortiz after their fight at Las Vegas on April 21. In his first defense, Ortiz stopped Teruo Kosaka of Japan in the fifth round in Tokyo on December 3.

Davey Moore had a cakewalk against Olli Maeki in defending the world featherweight crown in Helsinki on August 17. Moore stopped the Finn in the second round.

In the bantamweight class, Johnny Caldwell of Ireland was halted in the 10th round at São Paulo, Brazil, on January 18 by Eder Jofre of Brazil, who broadened his fractional title to cover the whole world.

A new champion emerged in the flyweight division when Masahika (Fighting) Harada of Japan outpointed Pone Kingpetch of Thailand in Tokyo on October 10. Kyo Noguchi of Japan had made an unsuccessful challenge against Kingpetch in Tokyo on May 30.

World Professional Champions
(December 31, 1962)

Heavyweight—Charles (Sonny) Liston, Philadelphia
Light Heavyweight—Harold Johnson, Philadelphia
Middleweight—Dick Tiger, Nigeria (recognized by WBA); Paul Pender, Brookline, Mass. (recognized by Mass. Athletic Commission)
Junior Middleweight—Denny Moyer, Portland, Oreg.
Welterweight—Emile Griffith, New York
Junior Welterweight—Eddie Perkins, Chicago
Lightweight—Carlos Ortiz, New York
Junior Lightweight—Gabriel (Flash) Elorde, Philippines
Featherweight—Davey Moore, Springfield, Ohio
Bantamweight—Eder Jofre, Brazil
Flyweight—Masahika Harada, Japan

National AAU Senior Championships
(Cincinnati, Ohio, March 29–31)

112 Pounds—George Colon, New York
119 Pounds—Victor Melendez, Puerto Rico
125 Pounds—Steve Freeman, Houston
132 Pounds—George Foster, Cincinnati
139 Pounds—Jackie Range, Elizabethton, Tenn.
147 Pounds—Wade Smith, Portland, Oreg.
156 Pounds—Roy McMillan, Toledo, Ohio
165 Pounds—Richard Gosha, Chicago
178 Pounds—William Joiner, Cincinnati
Heavyweight—Wyce Westbrook, Cincinnati
Team—Ohio

BRIDGE, CONTRACT

World Team Championship (New York, N.Y., Feb. 10–18)—Italy (Walter Alvarelli, Massimo D'Alelio, Giorgio Belladonna, Eugenio Chiaradia, Pietro Forquet, Benito Garozzo, Carl'Alberto Perroux, nonplaying captain) defeated North America, France, and Argentina

Spring Nationals
(Lexington, Ky., March 24–April 1)

Harold S. Vanderbilt Cup Team—Jerry Levitt, Mrs. Carolyn Levitt, Garrett Nash, George DeRuntz, and Larry Kolker, St. Louis
Men's Pairs—Philip Feldesman, New York, and Ivan Erdos, Los Angeles
Women's Pairs—Mrs. Sylvia Stein, Detroit, and Mrs. Carol Sanders, Nashville, Tenn.
Mixed Pairs—(tie) Mrs. Jessie Cook, Mt. Clemens, Mich., and Grant Marsee, Dearborn, Mich.; Mrs. Shirlee Harris, Houston, Texas, and Edward Rosen, Chicago
Men's Teams—Kelsey Petterson, Long Beach, Calif., Harold Guiver and Mike Shuman, Los Angeles, Alphonse Moyse, Jr., New York
Women's Teams—Mrs. Irving Bright, Mrs. Milton Livingstone, Mrs. George Crounse, and Mrs. Melvin Cornilland, Paducah, Ky., and Mrs. E. M. Novak, Salem, Ill.
Open Pairs—Arthur Robinson and Robert Jordan, Philadelphia
Open Individual—Mrs. Isabelle Alcone, New York

Summer Nationals
(Minneapolis, Minn., July 28–August 5)

Masters Knockout Teams—Edwin Kantar, Los Angeles; Marshall Miles, San Bernardino, Calif.; Leonard Harmon, New York; Ivar Stakgold, Chicago
Mixed Teams—Eric Murray, Toronto, Ont.; Mrs. Ralph Gordon, Buffalo, N.Y.; Mrs. Henry Portugal, Los Angeles; Charles Coon, New York
Masters Pairs—Philip Feldesman, New York, and Ira Rubin, Fair Lawn, N.J.
Men's Pairs—Philip Feldesman and Ira Rubin
Women's Pairs—Mrs. Clarice Holt, Ft. Worth, Texas, and Mrs. Greeley Warner, Pampa, Texas

Fall Nationals
(Phoenix, Ariz., November 24–December 2)

Men's Team—(tie) Sam Stayman, Victor Mitchell, and Philip Feldesman, New York; Eric Murray, Toronto,

Ont.; and Richard Freeman, Washington, D.C. Lew Mathe and Ed Taylor, Los Angeles; Harold Guiver, Long Beach, Calif.; Paul Allinger, Alameda, Calif.
Women's Team—Mrs. Edith Kemp, Miami Beach, Fla.; Mrs. Ann Burnstein, Las Vegas; Mrs. Stella Rebner and Mrs. Alicia Kempner, New Orleans; Mrs. Stephen Warner, Fair Lawn, N.J.
Mixed Pairs—Paul Levitt, Miami Beach, and Mrs. Clarice Holt, Ft. Worth, Texas
Women's Pairs—Mrs. Margaret Wager, Atlanta, and Mrs. Barbara Kachmar, Bronxville, N.Y.
Men's Pairs—Sam Fuoto and Victor Mitchell, New York
Open Teams—(tie) Edward Kantar and Don Krauss, Los Angeles; R. D. Hamman, Van Nuys, Calif.; and Marshall Miles, San Bernardino, Calif. Lew Mathe and Ed Taylor, Los Angeles; Harold Guiver, Long Beach, Calif.; Paul Allinger, Alameda, Calif.; Ron von der Porten, Berkeley, Calif.; and Erik Paulsen, Anaheim, Calif.
Open Pairs—Mrs. Dorothy Hayden, Hastings-on-Hudson, N.Y., and B. Jay Becker, New York

CANOEING

American Canoe Association Championships
(Washington, D.C., July 28–29)

Men, 1,000 Meters

Canoe Singles—Roger Van de Meulebroecke, Potomac Boat Club, Washington, D.C. (time, 5:04)
Kayak Singles—Charles Lundmark, Washington (D.C.) C.C. (4:32)
Canoe Tandem—Frank B. Havens and Charles Lundmark, Washington (D.C.) C.C. (5:00)
Kayak Tandem—William Kelly and Neil O'Keeffe, Inwood C.C., New York (4:00)
Canoe Fours—Frank B. Havens, Andy Weigand, Dennis Van Valkenburgh, and John Beerbower, Washington (D.C.) C.C. (4:47)
Kayak Fours—William Kelly, Neil O'Keeffe, Tom Healy, and Eric Feicht, Inwood C.C., New York

Women, 500 Meters

Kayak Singles—Francine Fox, Washington (D.C.) C.C. (2:25)
Kayak Tandem—Marcia Jones and Eileen Murphy, Niles (Mich.) C.C. (2:26)
Kayak Fours—Marcia Jones, Eileen Murphy, Diane Jerome, and Joan Jerome, Niles (Mich.) C.C. (2:25)

Team Champion

Washington (D.C.) C.C.

CHECKERS

World Champions—*Three-move:* Walter Hellman, Gary, Ind.; *two-move:* Samuel Cohen, London, England; *blindfold:* Newell W. Banks, Detroit, Mich.; *go-as-you-please:* Thomas Wiswell, Brooklyn, N.Y.
U.S. Champions—*North:* Paul Wexler, New York, N.Y.; *South:* Elbert Lowder, Albemarle, N.C.; *three-move:* Basil Case, Haleyville, Ala.; *team* (North American and U.S.): Checker Club of New York

CHESS

World Champions—*Men:* Mikhail Botvinnik, USSR; *women:* Nona Gaprindashvili, USSR
U.S. Champions—*Men:* Robert Fischer, New York; *women:* Mrs. Gisela K. Gresser, New York; *open:* Antonio Medina, Venezuela; *women's open:* Kathryn Slater, New York; *junior:* Larry Gilden; Takoma Park, Md.; *amateur:* Ben Greenwald, New York, and Max Cohen, Philadelphia, co-champions; *women's amateur:* Adele Goddard, Miami, Fla.

COURT TENNIS

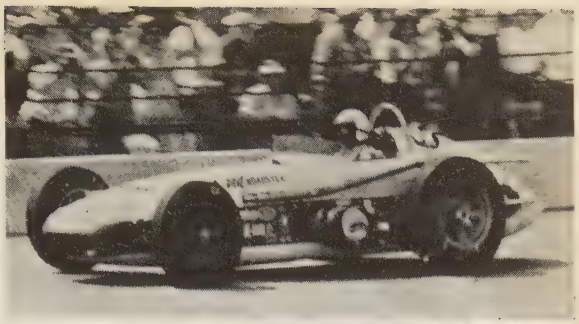
U.S. Open Championship—James Bostwick, Old Westbury, N.Y.
U.S. Amateur Championship—Northrup Knox, Buffalo, N.Y.
U.S. Amateur Doubles—Alastair B. Martin, Glen Head, N.Y., and William Vogt, Philadelphia

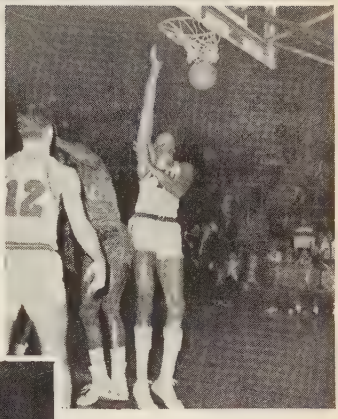
CROSS-COUNTRY

AAU (10,000 meters)—Peter McArdle, New York A.C. (29:53); *team:* Los Angeles Track Club (46 pts.)
NCAA (4 miles)—Tom O'Hara, Loyola (19:20.3); *team:* San Jose (58 pts.)
ICAAAA (5 miles)—Vic Zwolak, Villanova (24:47.3); *team:* Villanova (49 pts.)
Heptagonal (5 miles)—Edwin Hamlin, Harvard (26:02.0); *team:* Navy (79 pts.)

CURLING

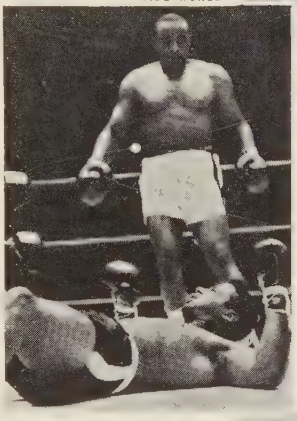
U.S. Men's Championship (Detroit, March 7–10)—Hibbing, Minn. (Fran Kleffman, skip)
U.S. Women's Championship (St. Paul, Minn., Feb. 1–4)—Wauwatosa, Wis. (Mrs. Steuart Tray, skip)
Scotch Cup (Falkirk and Edinburgh, Scotland, March 15–20)—1st, Canada; 2d, Hibbing, Minn.
Gordon International (Utica, N.Y., March 10)—U.S. 392, Canada 387
Gordon Medal (Schenectady, N.Y., March 4)—Ardsley (R. C. Wells, skip)
Mitchell Medal (Utica, N.Y., Jan. 21)—Avonlea (Brad Sumner, skip)





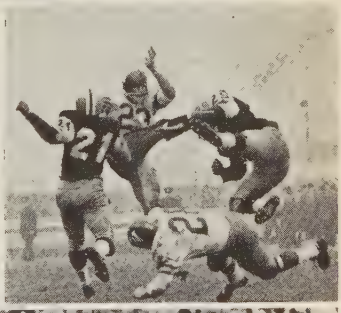
(*Above*) Rodger Ward flashes across the finish line to win 500-mile auto racing classic at Indianapolis, May 31. His average speed of 140.292 mph. set new record. (*Right*) Wilt Chamberlain of the Philadelphia (later San Francisco) Warriors continued his assault on the record books of the National Basketball Association. Here, against New York Knicks on March 2, he nets 100th point of game.

WIDE WORLD



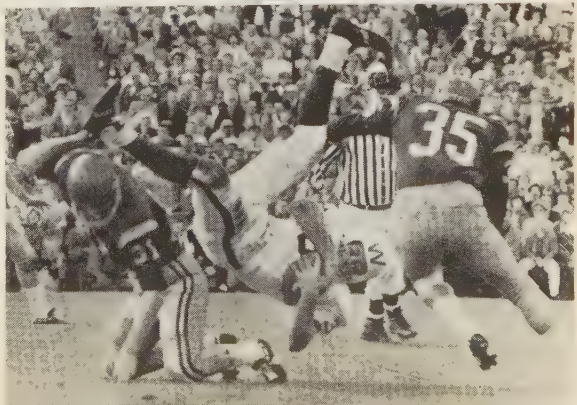
(*Left*) Charles (Sonny) Liston won heavyweight title in Chicago, September 25, by finishing off Floyd Patterson in 2:06 of opening round. (*Below*) Jack Delveau of Winnipeg gets off punt against Hamilton in Canada's Grey Cup game. Blue Bombers scored 28–27 upset in contest that required two days to complete when dense fog halted play December 1.

WIDE WORLD; UPI



(*Below*) In wildest game in Rose Bowl history, the nation's No. 1 college eleven, Southern California, edged second-ranked Wisconsin, 42–37, on Jan. 1, 1963. Here, Wisconsin's Ralph Kurek is upended after receiving pass from Ron VanderKelen, who made Rose Bowl history by completing 33 of 48 aerials for 401 yards.

UPI



Allen Medal (Utica, N.Y., Jan. 21)—New York Caledonian (Ernest Slaybaugh, skip)
Douglas Medal (Hastings-on-Hudson, N.Y., Jan. 14)—Potomac (William Onysko, skip)
Griffith Medal (Hastings-on-Hudson, N.Y., Jan. 14)—Winchester (Lawrence Burke, skip)

CYCLING

Tour de France—*Professional* (June 25–July 15; distance, 2,654 miles): Jacques Anquetil, France (141:31:54); *amateur* (July 2–15; 1,315.2 miles): Antonio Gomez Moral, Spain (54:47:53)
Giro d'Italia—*Professional* (May 18–June 9; 2,484 miles): Franco Balmamion, Italy (127:7:3)

World Championships

Professional

Cyclo-Cross (Esch-sur-Alzette, France, Feb. 18)—Renato Longo, Italy
Road (Salo, Italy, Sept. 2)—Jean Stablinski, France (184.9 miles; 7:43:11)
Track (Milan, Italy, Aug. 24–31)—*Sprint:* Antonio Maspes, Italy; *pursuit:* Henrik Nydam, Netherlands; *motor-paced:* Guillermo Timoner, Spain

Amateur

Road (Salo, Italy, Sept. 1)—Renato Bongioni, Italy (112 miles; 4:30:50); *team time trial*—Italy (69 miles; 2:28:48.5)
Track (Milan, Italy, Aug. 24–31)—*Sprint:* Sergio Bianchetto, Italy; *pursuit:* Kay Jensen, Denmark; *team pursuit:* Germany (4,000 meters; 4:26.6); *motor-paced:* Romain DeLoof, Belgium

Women

Road (Salo, Italy, Sept. 1)—Marie Rose Gaillard, Belgium (40 miles; 1:53:56)
Track (Milan, Italy, Aug. 24–31)—*Sprint:* Valentina Savina, USSR; *pursuit:* Beryl Burton, Great Britain

U.S. Amateur Championships
(St. Louis, Mo., September 25–26)

Senior Men—Jim Rossi, Chicago
Senior Women—Nancy Burghart, New York

DOG SHOWS

Westminster Kennel Club Show (New York, N.Y., Feb. 12–13)—*Best in show:* West Highland terrier, Ch. Elfinbrook Simon, owned by Florence and Barbara Worcester, Little Falls, N.J. (2,570 dogs shown)
International Kennel Club Show (Chicago, Ill., April 7–8)—*Best in show:* Norwegian elkhound, Ch. Gladjac Royal Oslo, owned by Mrs. Susan D. Phillips, South Royalton, Vt. (2,622 dogs shown)

FENCING

World Championships
(Buenos Aires, Argentina, July 16–28)

Individual—*Foil,* Gherman Sveshnikov, USSR; *épée:* Istvan Kausz, Hungary; *saber:* Zoltan Horvath, Hungary; *women's foil:* Olga Szabo, Rumania
Team—*Foil:* USSR; *épée:* France; *saber:* Poland; *women's foil:* Hungary; *overall:* Hungary

United States Championships
(New York, N.Y., June 30–July 7)

Individual—*Foil:* Edwin Richards, New York A.C.; *épée:* Gil Eisner, New York A.C.; *saber:* Michael Dasaro, U.S. Modern Pentathlon; *women's foil:* Yoshie Takeuchie
Team—*Foil:* Fencers Club of New York (Daniel Bukantz, Harold Goldsmith, Albert Axelrod, Aubrey Seeman); *épée:* New York A.C. (Ralph Spinella, James Powell, Paul Pesthy, Edwin Richards); *saber:* New York A.C. (Tibor Nyilas, Attila Keresztes, Tomas Orley, Laszlo Pongo); *women's foil:* Southern California Composite (Mrs. Janice-Lee Romary, Mrs. Maxine Mitchell, Mrs. Bonnie Linkmeyer); *3-weapon:* Fencers Club of New York (Albert Axelrod, James Adams, Harry Mayer)

National Collegiate (NCAA) Championships
(Columbus, Ohio, March 30–31)

Individual—*Foil:* Herbert Cohen, N.Y.U.; *épée:* Thane Hawkins, Navy; *saber:* Barton Nisonson, Columbia
Team (*3-weapon*)—Navy

FLY AND BAIT CASTING

National Association Championships
(Columbus, Ohio, August 14–19)

Men's Combined

(Distances given represent the total distance for the three longest of five casts made in each of two events, involving different baits or flies.)

All-Around—Jon Tarantino, San Francisco, and Terry Schneider, Jeffersonville, Ind. (tie)
All-Distance—Jon Tarantino (3,269 ft.)
All-Accuracy—Tom Sibila, Massillon, Ohio (393 pts.)
Distance (Baits)—Jon Tarantino (2,166 ft.)
Distance (Flies)—Jon Tarantino (1,103 ft.)
Accuracy (Baits)—Tom Sibila and Bill Gill, Sr., Chicago (tie; 196 pts.); accuracy (flies)—Don Bertelson, Louisville, Ky. (199 pts.)

Women's Combined

All-Accuracy—Mollie Schneider, Jeffersonville, Ind. (375 pts.)
Accuracy (Baits)—Dawn Holiday, Union, Ky. (190 pts.)
Accuracy (Flies)—Grace Perkins, Dayton, Ohio (193 pts.)

Skish

Men's Combined

All-Around—Jon Tarantino
All-Distance—Jon Tarantino (1,832 ft.)
All-Accuracy—Jon Tarantino (240 pts.)
Distance (Baits)—Ben Fontaine, New Orleans, La. (1,481 ft.)
Accuracy (Baits)—Don Bertelson (160 pts.)

Women's Combined

All-Accuracy—Mollie Schneider (157 pts.)
Accuracy (Baits)—Edna Mae Young, Columbus, Ohio (124 pts.)

FOOTBALL

In a season marked by upsets of form, 15 college football teams finished with unbeaten and untied records in 1962. Among these were Southern California, Mississippi, and Dartmouth. Southern California, playing in a rugged Big Six conference which showed clearly that west coast football was regaining its formidable stature, was not expected to finish in the first 10 teams nationally. As it turned out, the Trojans—victors over Duke, Southern Methodist, Iowa, California, Illinois, Washington, Stanford, Navy, UCLA, and Notre Dame—were named the top team in the year-end polls of both news services. In a sensational Rose Bowl game on Jan. 1, 1963, the Trojans outlasted second-ranked Wisconsin, 42–37.

Mississippi pulled out a 13–6 triumph over Mississippi State to complete its unblemished season and gain the Southern Conference championship. Ole Miss shut out Kentucky, Tulane, and Vanderbilt, and did not yield more than seven points to any one of its other six opponents. Dartmouth won the Ivy League title and, with a 9–0 overall record, completed its first perfect season since 1925.

The Army-Navy game, on December 1, produced another glorious triumph for the Middies and another crushing defeat for the Cadets. With the victory, Wayne Hardin became the first coach to lead Navy to four victories in a row over Army, as the heralded three platoons of Coach Paul Dietzel bowed to Navy, 34–14. The Middies were paced by a sophomore quarterback, Roger Staubach, who played a truly exceptional game, scoring two touchdowns and passing for two more.

Quarterback Terry Baker of Oregon State won the Heisman Trophy as the best college football player in the country.

The National Football League continued to be both a financial and an artistic success. For the second year the Green Bay Packers—who had dominated the regular season with a 13–1 record—captured the league championship. The New York Giants fell victim to Coach Vincent Lombardi's club again, this time by a score of 16–7.

Enjoying banner years in the NFL were Green Bay fullback Jim Taylor and New York quarterback Y. A. Tittle. Taylor scored 19 touchdowns during the regular season (a record) and led the league in rushing with 1,474 yards. Tittle led the Giants to a 12–2 campaign with his great passing, and in the final regular-season game tossed 6 touchdown passes to give him 33 for the year (a new record). Earlier, he had fired 7 touchdown passes in one game, tying a league mark.

In the American Football League championship game on December 23, fans were treated to a double-overtime thriller. The Dallas Texans of the Western Division defeated the Houston Oilers of the East, 20–17, when Tommy Brooker kicked a field goal at 2:54 of the second extra quarter. The Oilers had won the title in both of the league's first two seasons.

A sparkling Canadian Football League season wound up in a two-day fog. As the Winnipeg Blue Bombers sought to defend their championship against the favored Hamilton Tiger-Cats in Toronto on December 1 in the traditional Grey Cup game, mist drifted in over the field from Lake Ontario. By the start of the second period, the play on the field was obscured from most of the fans in the capacity crowd of 32,655. Later the fog obscured even the players from one another and also left the officials completely in the dark. Therefore, with 9 minutes 29 seconds left to play, the finish of the game was postponed until the next day, when Winnipeg won without further scoring by 28 to 27.

Major Bowl Games
(Games played Jan. 1, 1963, unless otherwise indicated)

Rose (Pasadena, Calif.)—USC 42, Wisconsin 37
Sugar (New Orleans)—Mississippi 17, Arkansas 13
Cotton (Dallas)—Louisiana State 13, Texas 0
Orange (Miami)—Alabama 17, Oklahoma 0
Gator (Jacksonville, Fla., Dec. 29, 1962)—Florida 17, Penn State 7
Liberty (Philadelphia, Dec. 15, 1962)—Oregon State 6, Villanova 0
Tangerine (Orlando, Fla., Dec. 22, 1962)—Houston 49, Miami (Ohio) 21

Bluebonnet (Houston, Dec. 22, 1962)—Missouri 14, Georgia Tech 10
Blue-Gray Game (Montgomery, Ala., Dec. 29, 1962)—Blue 10, Gray 6
Senior Bowl (Mobile, Ala., Jan. 5, 1963)—South 33, North 27
Shrine North-South Game (Miami, Dec. 22, 1962)—South 15, North 14
Shrine East-West Game (San Francisco, Dec. 29, 1962)—East 25, West 19
Gotham Bowl (New York, Dec. 15, 1962)—Nebraska 36, Miami 34
NFL Pro Bowl (Los Angeles, Jan. 13, 1963)—East 30, West 20
AFL All-Star Game (San Diego, Calif., Jan. 13, 1963)—West 21, East 14

NATIONAL FOOTBALL LEAGUE (FINAL STANDINGS, 1962)

Eastern Conference	W.	L.	T.	Pct.	Points for	Points against
New York[1]	12	2	0	.857	398	283
Pittsburgh[2]	9	5	0	.643	312	363
Cleveland	7	6	1	.538	291	257
Washington	5	7	2	.417	305	376
Dallas	5	8	1	.385	398	402
St. Louis	4	9	1	.308	287	361
Philadelphia	3	10	1	.231	282	356
Western Conference						
Green Bay[1]	13	1	0	.929	415	148
Detroit[2]	11	3	0	.786	315	177
Chicago	9	5	0	.643	321	287
Baltimore	7	7	0	.500	293	288
San Francisco	6	8	0	.429	282	331
Minnesota	2	11	1	.154	254	410
Los Angeles	1	12	1	.077	220	334

[1] Green Bay won championship at New York on December 30 by defeating Giants, 16–7. [2] Detroit defeated Pittsburgh, 17–10, in the NFL Playoff Bowl at Miami, Jan. 6, 1963.

AMERICAN FOOTBALL LEAGUE (FINAL STANDINGS, 1962)

Eastern Division	W.	L.	T.	Pct.	Points for	Points against
Houston[1]	11	3	0	.786	387	270
Boston	9	4	1	.692	346	295
Buffalo	7	6	1	.538	309	272
New York	5	9	0	.357	278	423
Western Division						
Dallas[1]	11	3	0	.786	389	233
Denver	7	7	0	.500	353	334
San Diego	4	10	0	.286	314	392
Oakland	1	13	0	.071	213	370

[1] Dallas won championship by defeating Houston, 20–17, in double-overtime game at Houston on December 23.

INTERCOLLEGIATE AND CONFERENCE CHAMPIONS
(Figures in parentheses represent wins, losses, and ties in conference games only)

National (AP and UPI Polls)—Southern California
Eastern (Lambert Trophy)—Penn State
Eastern Small College (Lambert Cup)—Delaware
Ivy League—Dartmouth (7–0)
Yankee—New Hampshire (4–0–1)
Middle Atlantic—*University Division:* Delaware (5–0); *Northern College Division:* Susquehanna (5–0); *Southern College Division:* Drexel and Western Maryland (tie, 5–1)
Atlantic Coast—Duke (6–0)
Southern—Virginia Military Institute (6–0)
Southeastern—Mississippi (6–0)
Mid-American—Bowling Green (5–0)
Missouri Valley—Tulsa (3–0)
Ohio Valley—East Tennessee, Eastern Kentucky, Middle Tennessee, Morehead State (4-way tie, 4–2)
Big Ten—Wisconsin (6–1)
Big Eight—Oklahoma (7–0)
Southwest—Texas (6–0)
Western Athletic—New Mexico (2–1)
Rocky Mountain—Adams State (4–0)
Big Six—Southern California (4–0)
Major Independents—Penn State (9–1)

GOLF

Jack Nicklaus, who won the United States Amateur golf championship in 1961, played his first year as a professional in 1962 and was a smashing success. His major 1962 tournament victory was the National Open, played at the tough Oakmont (Pa.) Country Club in June. The 22-year-old Nicklaus carded a 71 to Arnold Palmer's 74 to win a play-off after both had finished the regulation 72 holes with 283's.

Palmer himself had won a three-way play-off for the Masters title at Augusta, Ga., on April 9. After finishing in a tie with Gary Player and Dow Finsterwald at 280, Palmer carded a 68 to win by 3 strokes. Player was second and Finsterwald was third with a 77. This victory had opened Palmer's bid for the world's four major titles—the Masters, the British and United States Opens, and the Professional Golfers Association (PGA) championship. Palmer set a record in capturing the British Open at Troon, Scotland, with a 12-under-par 276.

After Nicklaus had stopped Palmer in the National Open, Player, of Johannesburg, South Africa, became the first nonresident of the United States to win the PGA championship, as Palmer slipped to a tie for 17th place.

For taking the four big titles, Palmer, Nicklaus, and Player qualified for a television tournament in September with a total prize of $75,000. The rookie Nicklaus won the "World Series of Golf" with a score of 135 and walked off the Akron, Ohio, course with the $50,000 first prize. Palmer and Player shared the remaining $25,000 for finishing in a tie at 139.

Palmer, who was voted "player of the year" by the PGA, bettered his own PGA money-winning record for the year with a total of $81,000, while Nicklaus collected $61,000 in PGA earnings alone.

Labron Harris, Jr., of Oklahoma State University beat Downing Gray, 1 up, in September to gain the United States Amateur championship. Harris also helped Deane Beman, Richard Sikes, and Billy Joe Patton to triumph in the world amateur golf tournament held in Japan. The squad won the Eisenhower Cup with a total of 854 strokes.

In women's golf, Mrs. Murle MacKenzie Lindstrom won her first major tournament in the United States Open, scoring with a 301 total. Judy Kimball took the PGA title and JoAnne Gunderson won the National Amateur championship. The American women's team defeated the British squad, 8 to 1, at the Broadmoor Golf Club, Colorado Springs, to retain the Curtis Cup.

MEN'S INDIVIDUAL CHAMPIONS

U.S. Open—Jack Nicklaus, Columbus, Ohio
U.S. Amateur—Labron Harris, Jr., Stillwater, Okla.
PGA—Gary Player, Johannesburg, South Africa
Masters—Arnold Palmer, Latrobe, Pa.
Tournament of Champions—Arnold Palmer
Thunderbird Classic—Gene Littler, San Diego, Calif.
U.S. Public Links—Dick Sikes, Springdale, Ark.
NCAA—Kermit Zarley, Yakima, Wash.
NAIA—Steve Spray, Eastern New Mexico University
Seattle World's Fair—Jack Nicklaus
North-South Amateur—Billy Joe Patton, Morganton, N.C.
American Classic—Arnold Palmer
Eastern Open—Doug Ford, Vernon Hill, N.Y.
Eastern Amateur—Charles Smith, Gastonia, N.C.
Southern Amateur—Bunky Henry, Valdosta, Ga.
Trans-Mississippi—Bob Ryan, Tulsa, Okla.
Western Open—Jacky Cupit, Longview, Texas
Western Amateur—Art Hudnutt, Elyria, Ohio
British Open—Arnold Palmer
British Amateur—Richard Davies, Pasadena, Calif.
English Amateur—Michael Bonallack, England
French Open—Alan Murray, Australia
French Amateur—Gaetan Morgue D'Algue, France
German Open—Bob Verwey, South Africa
Canadian Open—Ted Kroll, Fort Lauderdale, Fla.
Canadian Amateur—Reg Taylor, Johannesburg, South Africa
Canadian PGA—Alvie Thompson, Toronto
World Senior Professional—Paul Runyan, La Jolla, Calif.
World Senior—Howard Creel, Colorado Springs, Colo.
PGA Senior—Paul Runyan
U.S. Senior—George Dawson, Glen Ellyn, Ill.
USGA Senior—Merrill Carlsmith, Hilo, Hawaii
World Series—Jack Nicklaus

WOMEN'S INDIVIDUAL CHAMPIONS

U.S. Open—Mrs. Murle MacKenzie Lindstrom, St. Petersburg, Fla.
U.S. Amateur—JoAnne Gunderson, Kirkland, Wash.
PGA—Judy Kimball, Sioux City, Iowa
Titleholders'—Mickey Wright, Dallas
Eastern Amateur—Mrs. Charles Wilson, Philadelphia
Western Open—Mickey Wright
Western Amateur—Carol Sorenson, Janesville, Wis.
North-South Amateur—Clifford Ann Creed, Alexandria, La.
Trans-Mississippi—Jeannie Thompson, Tulsa, Okla.
Southern Amateur—Clifford Ann Creed
Canadian Open Amateur—Gayle Hitchins, Vancouver, B.C.
British Amateur—Mrs. A. D. Spearman, Sudbury, England
U.S. Junior—Mary Lou Daniel, Louisville, Ky.
U.S. Senior—Mrs. Harrison Flippin, Douglassville, Pa.
USGA Senior—Maureen Orcutt, Haworth, N.J.

TEAM CHAMPIONS

Canada Cup (professional)—U.S. (Arnold Palmer 278, Sam Snead 279; total 557)
Carling Cup (professional-amateur)—U.S. defeated Canada, 5½ to ½ (Bob Gardner and Dow Finsterwald defeated Al Balding and Phil Brownlee, 3–0, and Julius Boros and Chuck Kocsis defeated Gordie Brydson and Nick Weslock, 2½ to ½)
World—U.S., 854; *individual:* Gary Cowan, Canada, 280
Curtis Cup (women)—U.S. defeated Britain, 8 to 1
NCAA—Houston

GYMNASTICS

NATIONAL AAU CHAMPIONSHIPS
(Seattle, Wash., May 3–5)

All-Around—Donald Tonry, New York A.C. (113.550 pts.)
Floor Exercises—Donald Tonry (19.300)

Long Horse—Wilhelm Weiler, Alliston, Ont. (19.450)
Side Horse—William Buck, Chicago Turners (19.350)
Parallel Bars—Donald Tonry (19.550)
Horizontal Bar—Robert Lynn, Southern California (19.525)
Still Rings—Carl Wolf, Pasadena City College (19.325)
Flying Rings—Charles Denny, Washington (Seattle) A.C. (17.750)
Tumbling—Harold Holmes, Urbana, Ill. (19.250)
Rebound Tumbling—Frank Schmitz, Lafayette (La.) H.S. (18.550)
Rope Climb—Steve Leidner, Altadena, Calif. (time, 0:03.1)
Team—Los Angeles Turners (43 pts.)

Women

All-Around—Dale McClements, Seattle YMCA (75.7670)
Floor Exercises—Muriel Grossfeld, Champaign, Ill. (19.4830)
Side Horse—Dale McClements (19.5000)
Balance Beam—Muriel Grossfeld (19.2835)
Uneven Parallel Bars—Gail Sontgerath, West Palm Beach, Fla. (19.1000)
Tumbling—Barbara Galleher, Dallas A.C. (18.6000)
Rebound Tumbling—Beverly Avery, Austin (Texas) Crenshaw A.C. (187.5000)
Team—Austin (Texas) Crenshaw A.C. (13 pts.)

NATIONAL COLLEGIATE (NCAA) CHAMPIONSHIPS
(Albuquerque, N.Mex., March 30–31)

All-Around—Robert Lynn, Southern California (547.75)
Horizontal Bar—Robert Lynn (95.5)
Parallel Bars—Robert Lynn (97.0)
Side Horse—Mike Aufrecht, Illinois (95.0)
Still Rings—Dale Cooper, Michigan State (96.5)
Tumbling—Rusty Mitchell, Southern Illinois (94.5)
Rebound Tumbling—Steve Johnson, Michigan State (93.0)
Free Exercise—Robert Lynn (94.0)
Rope Climb—Paul Davis, California (time, 0:02.9)
Team—Southern California (95½)

HANDBALL

National AAU—*1-wall singles:* Carl Obert, New York A.C.; *1-wall doubles:* Ken Davidoff and Howie Eisenberg, Hebrew Educational Society, Brooklyn

National Combined AAU–YMCA—*4-wall singles:* Carl Obert; *4-wall doubles:* Oscar and Ruby Obert, New York A.C.; *masters doubles:* Jack Weitz and William Gluck, 92d Street YMHA, New York

U.S. Handball Association—*4-wall singles:* Oscar Obert; *4-wall doubles:* Jim Jacobs and Marty Decatur, New York; *masters doubles:* Frank Coyle, La Jolla, Calif., and Gus Lewis, Skokie, Ill.

HARNESS RACING

Su Mac Lad, an 8-year-old gelding, was the most consistent racer among the standardbreds during 1962 and was named "horse of the year" by the United States Trotting Association. Irving W. Berkemeyer's trotter won 7 of 13 starts and earned $112,350 to raise his career winnings to $560,349, an all-time high for a harness horse (exceeding Bye Bye Byrd's $554,257). The new champion also raced a 2-minute mile for the second time in the Trader Horn on September 28 at Roosevelt Raceway, Westbury, N.Y. This was only the third 2-minute mile by a trotter on a half-mile track in harness racing history.

There were many other fine racers during the year. Among them were Elaine Rodney, who won the $60,000 United Nations Trot at Yonkers on October 25, and Tie Silk of Canada, who won the $50,000 International Trot at Roosevelt Raceway on August 18. In each of these races, Su Mac Lad was the runner-up.

Four world records were set at the Westbury oval during the year. Duke Rodney lowered the mark for a mile and a sixteenth to 2:08⅘ when he won the $67,105 Realization Trot on May 4. Porterhouse scored in the American Trotting Championship on August 11 in 2:32⅗ for a mile and a quarter. Irvin Paul captured the $50,000 National Pacing Derby on September 1 in world record time for a mile and a quarter (2:29⅗). This was the first time a harness racer ever had raced five straight quarters under a 30-second average. Irvin Paul's time was four fifths of a second faster than the previous record of 2:30⅖ set by his full brother, Stephan Smith, on May 19. Thus, the mark was lowered twice in 1962 at Roosevelt Raceway.

A.C.'s Viking won the first two parts of the trotting triple crown—the Yonkers Futurity and the Hambletonian—but failed in his bid for the third portion. Safe Mission took the Kentucky Futurity in two straight heats.

The pacing triple crown was shared by Ranger Knight, who captured the Cane Pace; Thor Hanover, who scored in the Messenger; and Lehigh Hanover, victor in the Little Brown Jug. The Messenger was worth $169,430—a harness racing record.

For the second consecutive year, Robert G. Farrington of Richwood, Ohio, set a record for winning harness races. He drove 204 victors during 1962, 3 more than in 1961. He had 50 more winners than his nearest rival, Delmer M. Insko of South Beloit, Ill.

U.S. TROTTING ASSOCIATION CHAMPIONS

Horse of the Year—Su Mac Lad
Two-Year-Old Trotter—Speedy Scot
Two-Year-Old Pacer—Overtrick
Three-Year-Old Trotter—A.C.'s Viking
Three-Year-Old Pacer—Lehigh Hanover
Aged Trotter—Su Mac Lad
Aged Pacer—Henry T. Adios

MAJOR STAKES WINNERS

Messenger Stake—Thor Hanover
Cane Futurity—Ranger Knight
Hambletonian—A.C.'s Viking
Yonkers Futurity—A.C.'s Viking
Dexter Cup—Lord Gordon
Roosevelt Futurity—Steady Beau
Westbury Futurity—Speedy Scot
Little Brown Jug—Lehigh Hanover
National Pacing Championship—Irvin Paul
Realization Pace—Henry T. Adios
American National Pace—Henry T. Adios
Realization Trot—Duke Rodney
Good Time Pace—Stephan Smith
United Nations Trot—Elaine Rodney
Kentucky Futurity—Safe Mission
H.T.A. Finale (Pace)—Henry T. Adios
H.T.A. Finale (Trot)—Porterhouse
American Trotting Classic—Duke Rodney
American Trotting Championship—Porterhouse
Roosevelt International Trot—Tie Silk
Roosevelt Trot—Merrie Duke
American Pacing Classic—Irvin Paul
National Pacing Derby—Irvin Paul
International Pace—Royal Rick

HOCKEY

A season attendance record was set in the professional National Hockey League and world amateur hockey was marked by an international dispute during the 1961–62 season.

The NHL attracted 2,436,000 fans during the regular season to surpass the record of 2,397,000 set in 1946–47. The Toronto Maple Leafs won the Stanley Cup for the first time since 1951—defeating the Chicago Black Hawks, 4 games to 2—after the Montreal Canadiens had gained the regular-season title for the fifth time in a row. Bobby Hull of the Chicago Black Hawks and Andy Bathgate of the New York Rangers were tied with 84 points each at the end of the season, but Hull won the Ross Trophy as the leading scorer for having more goals. He scored 50 goals, equaling the record shared by Bernie (Boom Boom) Geoffrion and Maurice Richard, both of the Canadiens. Jacques Plante of Montreal won the Hart Trophy as the most valuable player in the league, and also took the Vezina Trophy as the top goalie. Doug Harvey, the No. 1 defenseman, resigned as player and coach of the New York Rangers following the season, but was persuaded to return, as a player only, for the 1962–63 campaign. Muzz Patrick, the general manager, took over as coach.

In amateur hockey, Sweden won the world title in Colorado in March, but five teams originally entered in the tournament did not compete. The Allied Travel Council in West Berlin, in reprisal against the Berlin wall, refused to let the East German team go to the United States. Four countries in the Communist camp—the Soviet Union, Czechoslovakia, Yugoslavia, and Rumania—withdrew from the tournament in protest. The Russians tried to have the championship status of the tournament nullified, but did not succeed. Canada finished second, followed by the United States, Finland, Norway, West Germany, Switzerland, and Great Britain.

NATIONAL HOCKEY LEAGUE
(Final Standings, March 25, 1962)

Team	Won	Lost	Tied	Points	Goals for	Goals against
Montreal	42	14	14	98	259	166
Toronto	37	22	11	85	232	180
Chicago	31	26	13	75	217	186
New York	26	32	12	64	195	207
Detroit	23	33	14	60	184	219
Boston	15	47	8	38	177	306

Stanley Cup Play-offs

Semifinals—Chicago defeated Montreal, 4 games to 2; Toronto defeated New York, 4 games to 2
Finals—Toronto defeated Chicago, 4 games to 2

Individual National Hockey League Awards

Hart Trophy (most valuable player)—Jacques Plante, Montreal
Ross Trophy (leading scorer)—Bobby Hull, Chicago (50 goals and 34 assists for 84 points)
Vezina Trophy (leading goal tender)—Jacques Plante
Norris Trophy (leading defenseman)—Doug Harvey, New York
Lady Byng Trophy (sportsmanship)—Dave Keon, Toronto
Calder Trophy (outstanding rookie)—Bobby Rousseau, Montreal

OTHER PROFESSIONAL CHAMPIONS

American Hockey League—*Eastern Division:* Springfield; *Western Division:* Cleveland; *Calder Cup Play-offs:* Springfield
Western Hockey League—*Southern Division:* Portland; *Northern Division:* Edmonton; *Play-offs:* Edmonton

Eastern Professional League—*Regular Season and Play-offs:* Hull-Ottawa

AMATEUR CHAMPIONS

World—Sweden
International League—*Regular season and play-off:* Muskegon (Mich.) Zephyrs
Eastern League—*Northern Division:* Clinton, N.Y.; *Southern Division:* Greensboro, N.C.; *play-off:* Johnstown, Pa.
Amateur Hockey Assn. of U.S.—*Intermediate open:* Syracuse (N.Y.) Stars; *Senior:* Estes of Rockland, Mass.; *intermediate:* Chicago (Ill.) Blades; *Junior:* Conley of West Roxbury, Mass.; *Juvenile:* Madison (Wis.) Hawks; *Midget:* Soo Iroquois, Sault Ste. Marie, Mich.; *Bantam:* Teamsters No. 247, Detroit, Mich.

Canadian

Allan Cup (senior)—Smoke Eaters, Trail, B.C.
Memorial Cup (junior)—Red Wings, Hamilton, Ont.

United States Intercollegiate

NCAA—Michigan Tech (defeated Clarkson Tech in final, 7–1)
ECAC—St. Lawrence (defeated Clarkson Tech in final, 5–2)
Western Association—Michigan Tech (defeated Michigan in final, 6–4)
Ivy League—Harvard (won 9, lost 1)

HORSE RACING

Showing little early foot in 1962, Mrs. Richard C. du Pont's Kelso nevertheless came on in the stretch to win "horse of the year" honors for the third time in a row, beating Carry Back in the balloting of the Thoroughbred Racing Associations. Kelso earned $254,585 during the year, winning five of his 11 races, and becoming the fifth horse in history to top the $1 million mark in career winnings. (His total was $1,011,940.) The handicap champion scored stakes victories in the Woodward, Jockey Club Gold Cup, and Stymie Handicaps. These consecutive triumphs came all in one month, from September 19 to October 20.

Carry Back had considerable backing in some quarters for his great heart. The little 4-year-old campaigner owned by Mrs. Katherine Price ran 18 times, winning 5 races, and placing second 5 times and third 3 times. Carry Back's stakes scores came in the Metropolitan, Monmouth, and Whitney over a period from May 30 to August 4. In their three meetings of the year, however, Kelso finished ahead of Carry Back, although Kelso did not win any of those races—the Suburban, Man o' War, and Washington (D.C.) International. Carry Back, winner of the Kentucky Derby in 1961, was retired to stud on December 1, having won a total of $1,170,825 in the 35 (out of 55) races in which he had finished in the money.

Beau Purple, who went to the post 19 times, won the Suburban and Man o' War. The Washington (D.C.) International was taken by Match II of France, with Kelso second and Carry Back third.

The Arlington-Washington Futurity, held on September 8, became the richest thoroughbred race in history by offering $357,250. The winner's share of this race for 2-year-olds—$142,250—went to Candy Spots. Manuel Ycaza, who was in riding trouble repeatedly during the year, finished second on Never Bend and was suspended for making a frivolous claim of foul.

Eddie Arcaro, the leading money winner among jockeys in the sport's history, announced his retirement on April 3. He had won $30,039,543 in purses over a 31-year career. Ron Ferraro, a 19-year-old rider from Cornwells Heights, Pa., earned more than $100,000 in gaining the national jockey championship with 350 winners.

A survey by United Press International of 24 states with legalized on-course betting showed that attendance had risen 1.28% during the year, from 33,453,617 in 1961 to 33,881,860, while betting was up 5.57%, from $2,538,107,934 (1961) to $2,679,461,505. By comparison, there had been a 5.41% increase in attendance and a 3.03% increase in betting from 1960 to 1961.

THOROUGHBRED RACING ASSOCIATIONS CHAMPIONS

American Champion—Kelso
Older Horse—Kelso
Older Filly or Mare—Primonetta
3-Year-Old Colt—Jaipur
3-Year-Old Filly—Cicada
2-Year-Old Colt—Never Bend
2-Year-Old Filly—Smart Deb
Steeplechase Champion—Barnabys Bluff

STAKES WINNERS

Acorn Stakes (Aqueduct)—Cicada
American Derby (Washington Park)—Black Sheep
Aqueduct Stakes—Crozier
Arlington Classic—Ridan
Arlington Handicap—El Bandido
Arlington Lassie—Smart Deb
Arlington-Washington Futurity—Candy Spots
Beldame Stakes (Aqueduct)—Cicada
Belmont Stakes—Jaipur
Brooklyn Handicap (Aqueduct)—Beau Purple
Californian (Hollywood Park)—Cadiz
Carter Handicap (Aqueduct)—Merry Ruler
Champagne Stakes (Belmont)—Never Bend

(Above) "Big Three" of golf in 1962 (l. to r.): Arnold Palmer (Masters champion); Gary Player (PGA); Jack Nicklaus (U.S. Open). (*Left*) Chicago's Bobby Hull displays puck he shot for 50th goal of season, tying NHL record. (*Below*) Canadian champ Tie Silk (5) defeats "harness horse of year" Su Mac Lad in Roosevelt International Trot.

WIDE WORLD: UPI: UPI

(*Right*) Mrs. Richard C. Du Pont's Kelso, voted "horse of the year" in 1962 for the third straight time, earned $254,585 to raise his total career winnings over the $1 million mark. (*Below*) Donald Jackson of Canada displays the form that overcame all opposition in the men's world figure skating competition in Prague, Czechoslovakia.

WIDE WORLD

Coaching Club American Oaks (Belmont)—Bramlea
Cowdin (Belmont)—Never Bend
Delaware Handicap—Seven Thirty
Del Mar Futurity—Slipped Disc
Dwyer Handicap (Aqueduct)—Cyane
Flamingo Stakes (Hialeah)—Prego
Florida Derby (Gulfstream)—Ridan
Frizette (Belmont)—Pams Ego
Futurity (Aqueduct)—Never Bend
Gallant Fox Handicap (Aqueduct)—Sensitivo
Garden State Stakes—Crewman
Gardenia Stakes (Garden State)—Main Swap
Grand National Steeplechase (Belmont)—Barnabys Bluff
Grey Lag Handicap (Aqueduct)—Ambiopoise
Gulfstream Park Handicap—Jay Fox
Hawthorne Gold Cup—Beau Purple
Hialeah Turf Cup—El Loco
Hollywood Derby—Drill Site
Hollywood Gold Cup—Prove It
Hollywood Juvenile Champion—Y Flash
Hopeful (Saratoga)—Outing Class
Jerome Handicap (Aqueduct)—Black Beard
Jersey Derby (Garden State)—Jaipur
Jockey Club Gold Cup (Belmont)—Kelso
John B. Campbell Memorial Handicap (Bowie)—Yorktown
Kentucky Derby (Churchill Downs)—Decidedly
Lawrence Realization (Belmont)—Battle Joined
Man o' War Handicap (Belmont)—Beau Purple
Massachusetts Handicap (Suffolk Downs)—Air Pilot
Matron Stakes (Aqueduct)—Smart Deb
Metropolitan Handicap (Aqueduct)—Carry Back
Monmouth Handicap—Carry Back
Mother Goose Stakes (Belmont)—Cicada
New Castle (Delaware)—Rose O'Neill
Pimlico Futurity—Right Proud
Preakness Stakes (Pimlico)—Greek Money
Princess Pat (Washington Park)—Smart Deb
Roamer Handicap (Aqueduct)—Dead Ahead
San Juan Capistrano (Santa Anita)—Olden Times
Santa Anita Derby—Royal Attack
Santa Anita Handicap—Physician
Santa Anita Maturity—Four-and-Twenty
Sapling (Monmouth)—Delta Judge
Sorority (Monmouth)—Affectionately
Stars and Stripes Stakes (Arlington Park)—Porvenir II
Stymie Handicap (Aqueduct)—Kelso
Suburban Handicap (Aqueduct)—Beau Purple
Sunset Handicap (Hollywood Park)—Prove It
Temple Gwathmey Steeplechase Handicap (Belmont)—Barnabys Bluff
Travers Stakes (Saratoga)—Jaipur
United Nations Handicap (Atlantic City)—Mongo
Washington (D.C.) International (Laurel)—Match II
Washington Park Handicap—Prove It
Whitney Handicap (Saratoga)—Carry Back
Widener Handicap (Hialeah)—Yorky
Withers Stakes (Aqueduct)—Jaipur
Wood Memorial (Aqueduct)—Admiral's Voyage
Woodward Stakes (Aqueduct)—Kelso
World's Playground (Atlantic City)—Rambunctious

Foreign Races

Epsom Derby (England)—Larkspur
Grand National Steeplechase (England)—Kilmore
King George VI and Queen Elizabeth (England)—Match II
Prix de l'Arc de Triomphe (France)—Soltikoff
Queen's Plate (Canada)—Flaming Page
Irish Derby—Tambourine II

HORSE SHOWS

American Horse Shows Association
High-Score Winners

Arabian Horse—Douglas B. Marshall's Surf, Houston, Texas
Hackney Pony—Mrs. Victoria Armstrong's Croftland's Dainty Doris, Brompton, Ont., Canada
Harness Pony—Adolph G. Storz' King's Glamour Girl, Omaha, Nebr.
Green Conformation Hunter—Mrs. A. E. Cunningham's Cap and Gown, Warrenton, Va.
Regular Conformation Hunter—Mrs. J. Deane Rucker's Cold Climate, Grosse Pointe Farms, Mich.
Green Working Hunter—Jack B. Ward's High Frontier, Ridgefield, Conn.
Regular Working Hunter—Mr. and Mrs. O. C. Carmichael Jr.'s Navy Commander, Niles, Mich.
Junior Hunter—Susan Dickson's Good 'n Safe, Gwynedd Valley, Pa.
Junior Jumper—Kerby Saunders II's Silhouette, North Caldwell, N.J.
Small Hunter Pony—Susan W. Burr's Wizard of Oz, Kimberton, Pa.
Large Hunter Pony—Margaret Hausman's Serendipity, Great Neck, N.Y.
Green Jumper—Donald Shapiro's Dusty Roads, Glen Head, N.Y.
Open Jumper—Mr. and Mrs. Bernard C. Duffy's McLain Street, Rye, N.Y.
Morgan Horse—Mr. and Mrs. John A. Noble's Dennisfield, Clarks Summit, Pa.
Parade Horse—Mr. and Mrs. Willard Beanland's Maximilian, Canoga Park, Calif.
Roadster—W. M. Keck Jr.'s Trick or Treat, Rosamond, Calif.
Three-Gaited Saddle Horse—Joan Van Ness' Captain's Carnation, Belle Mead, N.J.
Five-Gaited Saddle Horse—Mr. and Mrs. Fred M. Link's High Voltage, Pittstown, N.J.
Fine Harness Horse—Mr. and Mrs. Alan R. Robson's Alluring Lady, West Chester, Pa.
Shetland Pony—The Langfelds of Danby Farm's Larigo's Patton L. II, Omaha, Nebr.
Tennessee Walking Horse—Mrs. H. Fishkin's Waltzing Matilda, Gibsonia, Pa.
Stock Horse—Mrs. James McCandlish's Colonel Bonite, Costa Mesa, Calif.
Trail Horse—Mrs. Philip G. Gough Jr.'s Clutch, Bradbury, Calif.
Western Pleasure Horse—Patricia Elliott's Elkhorn Star, Santa Ana, Calif.

National Horse Show Championships
(Madison Square Garden, New York, Oct. 30–Nov. 6)

Green Conformation Hunter—Mr. and Mrs. A. E. Cunningham's Cap and Gown, Warrenton, Va.
Pony Working Hunter (under 13 hands)—Mrs. William Cox's Coed Coch Llywdren, Cohasset, Mass.
5-Gaited Saddle Horse (Mare)—Daneshall Stables' My-My, Louisville, Ky.
N.H.S., Saddle Seat—Nancy Ripa, Newport, R.I.
A.H.S.A. Medal, Hunter Seat—Carol Altmann, Harrison, N.Y.
P.H.A. Trophy—Colony Farms' Jacks or Better, Montville, N.J.
Pony Working Hunter (over 13 hands)—Terry Rudd's Hot Shot Kid, Berwyn, Pa.
5-Gaited Saddle Horse (stallion or gelding)—Dodge Stables' The Lancer, Lexington, Ky.
A.H.S.A. Medal, Saddle Seat—Lindy Patrick, Pasadena, Calif.
A.S.P.C.A. MacLay Trophy—Carol Altmann, Harrison, N.Y.
3-Gaited Saddle Horse (over 15.2 hands)—Dodge Stables' Belle of the Dell, Lexington, Ky.
Shetland Pony Roadster (10.2 hands and under)—Matt Britten's Thistle Dew's Lamplighter, Marshfield, Wis.
Shetland Pony Roadster (over 10.2 hands)—Armond Guertin's Remember Me, West Warwick, R.I.
3-Gaited Saddle Horse (amateur)—Nancy Cunningham's Techi-Star, Beloit, Wis.
Fine Harness Horse—Mr. and Mrs. Bruce H. Seabright's Feudist Star, Bridgeport, Ohio
Shetland Pony (10.2 hands and under)—The Longfelds of Danby Farm's Larigo's Patton L. II, Omaha, Nebr.
Working Hunter—Laughin' Place Stables' Navy Commander, Niles, Mich.
Working Hunter Open—Navy Commander
Single Shetland Pony (over 10.2 hands)—Gerald Lee and Sons' Cedargroves Red Jacket, Van Buren, Ind.
Open Jumper—Mr. and Mrs. C. S. Florman's Unusual, Midlothian, Va.
International Jumping, Team—United States
International Jumping, Individual—Major Piero D'Inzeo, Italy
5-Gaited Saddle Horse—Mr. and Mrs. Harold C. Stuart's Legal Tender, Tulsa, Okla.
Regular Conformation Hunter—Mrs. J. Deane Rucker's Cold Climate, Grosse Pointe, Mich.
3-Gaited Grand Championship Stake—Belle of the Dell

HORSESHOE PITCHING

(Greenville, Ohio)

World Champions—*Men:* Paul Focht, Dayton, Ohio; *women:* Sue Gillespie, Portland, Ind.; *senior:* Joseph Wilkinson, St. Petersburg, Fla.; *junior:* Gary Roberts, Lucasville, Ohio

ICE SKATING

Figure Skating
World Championships
(Prague, Czechoslovakia, March 14–17)

Men—Donald Jackson, Canada
Women—Sjoukje Dijkstra, Netherlands
Pairs—Otto and Maria Jelinek, Canada
Dance—Pavel and Eva Romanov, Czechoslovakia

United States Championships
(Boston, Mass., February 1–4)

Men's Senior—Monty Hoyt, Broadmoor Skating Club, Colorado.
Women's Senior—Barbara R. Pursley, Arctic Blades F.S.C., Paramount, Calif.
Senior Pairs—Dorothyann Nelson and Pieter Kollen, Lake Placid, N.Y.
Dance—Yvonne N. Littlefield and Peter F. Betts, Arctic Blades F.S.C.

Speed Skating
World Championships—Men
(Moscow, USSR, February 17–18)

All-Around—Viktor Kosichkin, USSR (188.340 pts.)
500 Meters—Yevgeny Grishin, USSR (time, 0:41.7)

1,500 Meters—Boris Stenin, USSR (2:13.5)
5,000 Meters—Ivar Nilsson, Sweden (8:03.2)
10,000 Meters—Jonny Nilsson, Sweden (16:29.4)

World Championships—Women
(Imatra, Finland, February 17–18)
All-Around—Inga Voronina, USSR (204.683 pts.)
500 Meters—Elvira Seroczynska, Poland (0:47.6)
1,000 Meters—Inga Voronina, USSR (1:41.6)
1,500 Meters—Inga Voronina, USSR (2:32.2)
3,000 Meters—Inga Voronina, USSR (5:27.3)

North American Outdoor
(Petoskey, Mich., February 3–4)

Senior Men
Champion—Dick Hunt, Los Angeles (16 pts.)
220 Yards—Richard McDermott, Essexville, Mich. (0:19)
440 Yards—Richard McDermott (0:35.4)
880 Yards—Tom Augustitus, Detroit (1:41.2)
¾ Mile—Dick Hunt (2:17.6)
Mile—Tom Augustitus (3:35.8)
2 Miles—Dick Hunt (6:15.5)
5 Miles—Bob Fenn, Flushing, N.Y. (20:43.4)

Senior Women
Champion—Jeanne Omelenchuk, Detroit (20 pts.)
220 Yards—Beverly Gorton, St. Paul, Minn. (0:22.1)
440 Yards—Beverly Gorton (0:40.8)
880 Yards—Jeanne Omelenchuk (1:39)
¾ Mile—Jeanne Omelenchuk (2:14.4)
Mile—Jeanne Omelenchuk (3.56.5)

North American Indoor
(Lake Placid, N.Y., March 24–25)

Senior Men
Champion—Ken LeBel, Lake Placid, N.Y. (16 pts.)
440 Yards—Richard McDermott, Essexville, Mich. (0:42.7)
880 Yards—Bob Fenn, Flushing, N.Y. (1:27.0)
¾ Mile—Ken LeBel (2:15.7)
Mile—Keith Meyer, Glen Ellyn, Ill. (3:03.5)
2 Miles—Ken LeBel (6:23.6)

Senior Women
Champion—Karen Kaper, Northbrook, Ill. (20 pts.)
440 Yards—Karen Kaper (0:45.8)
880 Yards—Karen Kaper (1:32.9)
¾ Mile—Karen Kaper (2:30.0)
Mile—Karen Kaper (3:27.4)

United States Outdoor
(St. Paul, Minn., January 27–28)

Senior Men
Champion—Floyd Bedbury, St. Paul, Minn. (15 pts.)
220 Yards—Richard McDermott, Essexville, Mich. (0:18.5)
440 Yards—Ron Schwartzbauer, St. Paul, Minn. (0:36.2)
880 Yards—Tom Augustitus, Detroit (1:17.5)
¾ Mile—Floyd Bedbury, St. Paul, Minn. (2:09.3)
Mile—Tom Augustitus (2:54.8)
2 Miles—Dick Hunt, Pasadena, Calif. (6:17.7)
5 Miles—Dick Hunt (15:12.5)

Senior Women
Champion—Jeanne Omelenchuk, Detroit (18 pts.)
220 Yards—Beverly Gorton, St. Paul, Minn. (0:21.0)
440 Yards—Beverly Gorton (0:42.0)
880 Yards—Jeanne Omelenchuk (1:28.5)
¾ Mile—Jeanne Omelenchuk (2:22.2)
Mile—Jeanne Omelenchuk (3:04.4)

United States Indoor
(Champaign, Illinois, March 11–12)

Senior Men
Champion—Charles Aedo, Los Angeles (14 pts.)
440 Yards—George Wilson, Saranac Lake, N.Y. (0:39.7)
880 Yards—Bud Campbell, Paramount, Calif. (1:21.4)
¾ Mile—Bud Campbell (2:04.7)
Mile—Richard Wurster, Ballston Spa, N.Y. (2:55.1)
2 Miles—Charles Aedo (6:02.1)

Senior Women
Champion—Dianne White, St. Paul, Minn. (11 pts.)
440 Yards—Karen Kaper, Northbrook, Ill. (0:41.9)
880 Yards—Darlene Sechanic, Jersey City (1:28.1)
¾ Mile—Darlene Sechanic (2:30.3)
Mile—Lu Whitney, Minneapolis (3:16.9)

JUDO

National AAU Championships
(Chicago, Ill., April 28–29)
140 Pounds—Shintaro Yoshida, Los Angeles, Calif.
160 Pounds—Kazuo Shinohara, Los Angeles, Calif.
180 Pounds—Haruo Imamura, Fresno, Calif.
Heavyweight—Ben Campbell, Sacramento, Calif.
Grand Champion—Kazuo Shinohara, Los Angeles, Calif.
Team—Southern Pacific

LACROSSE

National Open—Mt. Washington, Baltimore
Intercollegiate Champion—Navy; (division champions) *Cy Miller* and *Roy Taylor,* Harvard; *Laurie Cox,* Syracuse
Ivy League—Princeton
North-South Game—South 14, North 4

MOTORBOATING

Major Trophy Winners
Diamond Cup—*Miss Century 21* (owner, Willard Rhodes, Seattle, Wash.; driver, Bill Muncey, Seattle)
Gold Cup—*Miss Century 21*
Governor's Trophy—*Miss Century 21*
President's Cup—*Miss Century 21*
Spirit of Detroit—*Miss Century 21*

National Inboard Champions
7 Liter—Ray Gassner, St. Petersburg, Fla.
280-Cubic-Inch Hydroplane—Ray Lynn, Philadelphia, Pa.
266 Hydroplane—Curtis Estes, Norfolk, Va.
225 Hydroplane—Bob Ellis, Compton, Calif., and Marion Beaver, Parker, Ariz.
150 Hydroplane—Lars Stromstedt, McHenry, Ill.
145 Hydroplane—George Cusick, Cambridge, Md.
91 Hydroplane—F. C. Moor, Hialeah, Fla.
48 Hydroplane—F. C. Moor
44 Hydroplane—Victor L. Bupp, Mount Wolf, Pa.
Crackerbox—Gary Robarge, Provo, Utah
44 Runabout—Richard McConnell, Metairie, La.
Jersey Speed Skiff—Robert Perri, Oceanport, N.J.
Ski Racing Runabout—Don Towle, Los Angeles, Calif.
E Racing Runabout—Ross Davis, Provo, Utah
E Service Runabout—Harold Satterfield, Arlington, Va.
F Service Runabout—Del Daily, Miami, Fla.

National Stock Outboard Champions
JU Runabout—Jim Downing, Seattle, Wash.
AU Runabout—Jeff Merlin, Niagara Falls, N.Y.
BU Runabout—Larry Castagnet, Jr., Melrose, Mass.
CU Runabout—Don Pontius, Hummels Wharf, Pa.
DU Runabout—Don Pontius
36 Class—Ron Rake, Springfield, Ill.
A Stock Hydroplane—George Stillwell, Sr., Pompano Beach, Fla.
B Stock Hydroplane—Vernon Kargus, Menasha, Wis.
C Stock Hydroplane—Bob Brown, Miami, Fla.
D Stock Hydroplane—Don Baldaccini, Miami, Fla.

MOTORCYCLING

National Champions
5 Miles—Bart Markel, Flint, Mich. (4:43.85)
8 Miles—Al Gunter, Alhambra, Calif. (7:56.8)
10 Miles—Bart Markel, Flint, Mich. (9:17.5)
15 Miles—Bart Markel (13:36.4)
20 Miles—Bart Markel (13:53.10)
50 Miles—Bart Markel (35:13.55)
100 Miles—Dick Mann, El Sobrante, Calif. (1:36:15.12)
150 Miles—Carroll Resweber, Cedarburg, Wis. (1:46:34.39)
200 Miles—Don Burnett, Danvers, Mass. (2:46:42.51)
45 cu. in. TT, 7 Miles—Bart Markel (7:16.16)
80 cu. in. TT, 7 Miles—Dick Hammer, Lakewood, Calif. (7:19.73)

POLO

National Champions
Open—Santa Barbara (Ronald Tongg, William Linfoot, Robert Skene, Roy Barry, Jr.) defeated Royal Palm, 8–7
20-Goal—Milwaukee (James Karml, Jr., Wayne Brown, George Oliver, Robert A. Ulhlein, Jr.) defeated Santa Barbara, 8–7
Intercircuit—Norman Broad Acres (A. D. Black, Don Black, Clark Hetherington, Jack F. Dean) defeated Farmington-Columbia, 9–8
12-Goal—Memphis (Lee Taylor, R. E. L. Wilson, 3d, John B. Armstrong, Arthur L. Herman) defeated Tulsa, 6–4
Butler Handicap—Santa Barbara (Ronald Tongg, William Linfoot, Robert Skene, Roy Barry, Jr.) defeated Royal Palm, 8–4
Intercollegiate—Cornell (James Morse, Frank S. Butterworth, 3d, John Walworth, James Reynolds) defeated Yale, 14–5
Sherman Memorial—*Northeastern Division:* Centaurs (Peter Dunning, David Ellis, Robert Powers); *Central Division:* Joy Farm (Edward Lutz, Richard Manhardt, Donald McCarroll); *Southeastern Division:* Dollbaby (Carlos Rizo-Patron, Mark Cunningham, Robert Rawlings)
12-Goal Arena—*Northeastern Division:* Huntington (H. Russell Drowne, 3d, David Rizzo, Frank Rice); *Central Division:* Joy Farm (Edward Lutz, William E. Stevens, Donald McCarroll); *Southeastern Division:* Farmington (William S. Farish, 3d, Juan Rodriguez, R. C. Riemenschneider)

RACQUETS

National Amateur—David Norman, Montreal, Canada

ROLLER SKATING

World Tournament
(Essen, Germany, April 29–May 1)
Men's Singles—Karlheinz Losch, West Germany
Women's Singles—Marlis Fahse, West Germany
Mixed Pairs—Werner Hoffman and Margot Ludolph, West Germany
Dance—Gerd Meier and Margot Nissen, West Germany

U.S. Amateur Roller Skating Assn.
(Harvey, Ill., July 8–14)

Men's Singles—Larry Adams, Livonia, Mich.
Women's Singles—Linda Kobane, Levittown, L.I.
Mixed Pairs—Raymond Steinberg and Marlene Steinberg, Livonia, Mich.
Women's Pairs—Linda Klein and Linda Kobane, Levittown, L.I.
Fours—Lee Brown, Sandra Speicher, Lyndell Edgington, and Renee Aulberry, Marion, Ind.
Dance—Robert Shaffer and Jacqueline Zimmerman, Melrose Park, Ill.

Speed Events

Men—Virgil Dooley, Chicago
Women—Jean Marie Plichta, Grand Haven, Mich.
5-Mile Relay Race—Walter Cooley and Virgil Dooley, Chicago

Roller Skating Rink Operators Assn. of America
(Lincoln, Nebr.)

Dance—Adolph Wacker and Linda Mottice, Canton, Ohio
Men's Singles—John Renz, San Diego, Calif.
Women's Singles—Beverly Bowers, Toronto, Ont.
Men's Figures—Philip Sukel, Oak Lawn, Ill.
Women's Figures—Linda Jo Baker, Atlanta, Ga.
Pairs—Paul Boehm and Pamela Cornwall, Houston, Texas
Fours—David Tassinari, Alan Welch, Diane Kern, and Lorna Jean Urban, Norwood, Mass.

Speed Events

Men—Eddie Perelas, Cardena, Calif.; *440 yards:* Don Munoz, Detroit (0:47.1); *880 yards:* Eddie Perelas (1:33.9); *one mile:* George Grudza, Riverside, N.J. (3:09.6); *two miles:* Gerald Gohs, Detroit (6:21.6); *five miles:* Eddie Perelas (16:27.5)
Women—Linda Durbin, Lincoln, Nebr.; *440 yards:* Karyn Chapman, San Antonio, Texas (0:50); *880 yards:* Maria Mularczyk, Detroit (1:41.8); *one mile:* Sally Richardson, Detroit (3:22.1).

ROWING

World Championships
(Lucerne, Switzerland, September 6–9)

Eight-Oared Shell—Germany (time, 5:50.83)
Four-Oared Shell with Coxswain—Germany (6:29.12)
Four-Oared Shell without Coxswain—Germany (6:19.24)
Pairs with Coxswain—Germany (7:19.1)
Pairs without Coxswain—Germany (6:54.62)
Doubles—France (6:33.9)
Singles—Vyacheslav Ivanov, USSR (7:07.09)

United States Championships
(Buffalo, N.Y., July 21–22; 2,000 meters, except dashes)

150-Pound Singles—John Welchli, Detroit B.C. (7:14.1)
150-Pound Doubles—John Welchli and Bill Smoke, Detroit B.C. (6:49.2)
150-Pound Quadruple Sculls—Detroit B.C. (6:26.5)
150-Pound Fours with Coxswain—West Side R.C., Buffalo, N.Y. (6:40.2)
150-Pound Eights—Detroit B.C. (6:06.3)
150-Pound ¼-Mile Dash, Singles—James Joy, St. Catharines (Ont.) R.C. (1:12.5)
Heavyweight ¼-Mile Dash, Singles—Seymour Cromwell, Riverside B.C., Cambridge, Mass. (1:06.8)
Intermediate Eights—St. Catharines (Ont.) R.C. (5:58.4)
Association Singles—Robert Lea, 3d, Riverside B.C., Cambridge, Mass. (7:01.1)
Heavyweight Quadruple Sculls—Undine Barge Club, Philadelphia, Pa. (7:08.0)
Championship Eights—St. Catharines (Ont.) R.C. (6:22.3)
Four-Oared Shells with Coxswain—Lake Washington R.C., Seattle, Wash. (6:34.4)
Championship Single Sculls—Seymour Cromwell, Riverside B.C. (7:02.2)
Pair-Oared Shell with Coxswain—Stanford Crew Association, Palo Alto, Calif. (7:21.3)
Double Sculls—Bill Knecht and Dave Wilmerding, Vesper B.C., Philadelphia, Pa. (6:57.8)
Four-Oared Shells without Coxswain—Lake Washington R.C., Seattle, Wash. (6:20.4)
Pair-Oared Shell without Coxswain (at Philadelphia)—Robert Brayton and Dan Watts, Lake Washington R.C., Seattle, Wash. (7:09.4)
Team (Barnes Trophy)—Detroit B.C. (96½ pts.)

Intercollegiate Team Champions

I.R.A. Regatta (Syracuse, June 16)—*Varsity:* Cornell (3 miles, 17:02.9); *junior varsity:* Navy (3 miles, 16:57.3); *freshman:* Cornell (2 miles; 11:10.8); *Ten Eyck Trophy:* Cornell (19 pts.)
Eastern Association (Worcester, Mass., May 19)—*Varsity:* Yale and Pennsylvania, tie (2,000 meters; 6:09.3); *junior varsity:* Cornell (6:16.4); *freshman:* Cornell (6:11.8); *varsity lightweight:* Cornell, M.I.T., and Navy, 3-way tie (6:14.5); *junior varsity lightweight:* Harvard (6:28.9); *freshman lightweight:* Harvard (6:16.8); *Rowe Cup:* Cornell (21 pts.)
Western Intercollegiate—Washington (2,000 meters; 6:11.8)
Washington-California—Washington (3 miles; 15:18.5)
Harvard-Yale—Yale (4 miles; 21:26.0)
Oxford-Cambridge—Cambridge (4¼ miles; 19:46.0)
Cups and Trophies—*Adams Cup:* Pennsylvania (1¾ miles; 8:53.2); *Blackwell Cup:* Yale (1 5/16 miles; 6:35.0); *Carnegie Cup:* Cornell (2 miles; 11:17.2); *Childs Cup:* Pennsylvania (2 miles; 11:45.4); *Compton Cup:* Massachusetts Institute of Technology (1¾ miles; 9:35.8); *Dad Vail Trophy:* Georgetown (1 5/16 miles; 6:34.6); *Goes Trophy:* Cornell (2 miles; 11:06.2); *Goldthwaite Cup:* Harvard (1 5/16 miles; 6:42.5); *Packard Cup:* Syracuse (2 miles; 10:50.0)

Canadian Henley
(St. Catharines, Ont., July 28)

Team Trophy—St. Catharines (Ont.) R.C. (39½ pts.)
Senior Fours—Lake Washington R.C., Seattle, Wash. (6:40.5)
Senior Eights—St. Catharines (Ont.) R.C. (6:13.8)
Senior Singles—Seymour Cromwell, Riverside B.C., Cambridge, Mass. (7:15.9)

British Henley
(Henley-on-Thames, England, July 4–7; 1 5/16 miles)

Diamond Sculls (singles)—Stuart MacKenzie, Australia (8:38)
Grand Challenge Cup (eights)—Central Sports Club, USSR Navy (6:40)
Thames Challenge Cup (lightweight eights)—National Provincial Bank R.C., England (6:46)
Stewards Cup (fours)—Trud R.C., USSR (7:43)
Double Sculls—George Justicz and Nick Birkmyre, England (7:39)
Silver Goblets (pairs)—Wolfgang Neuss and Klaus Jordan, Germany (8:02)

RUGBY

International Rugby Union Championship—France

SHOOTING

Rifle

National Outdoor Champions

Smallbore (.22 caliber), Prone—1st Lt. Presley W. Kendall, U.S. Army (4,793–377); *women:* Janet S. Friddell, Toledo, Ohio (4,777–336); *collegiate:* J. Eric Sundstrom, Glen Ridge, N.J. (4,783–388) M-1 Service—Corp. David A. Luke, U.S. Marine Corps (790–69); *women:* SP4 Barbara J. Hile, U.S. Army (770–44); *civilian:* Glenn C. Dershem, Bellefonte, Pa. (780–55); *collegiate:* Paul D. Mahaffy, Warren, Pa. (777–51)
Smallbore (.22 caliber), 4-Position—1st Lt. Tommy G. Pool, U.S. Army (1,558–84); *women:* Jean Linton, Akron, Ohio (1,524–65); *collegiate:* Alan M. Dapp, Corvallis, Oreg. (1,544–84)
Bolt—Earl H. Burton, Vacaville, Calif. (780–71); *women:* Pauline S. Tubb, Canadian, Texas (758–54); *collegiate:* William K. Kessler, La Habra, Calif. (772–67)
Trophy Matches—Sgt./F.C. Vernon R. Read, U.S. Army (248–27); *team:* U.S. Army Eastern (1,466–113)

National Indoor Champions

Smallbore (.22 caliber)—1st Lt. Robert B. Trew, U.S. Army (797); *collegiate:* Michael P. Capute, U.S. Naval Academy (294); *team:* U.S. Army (1,584); *collegiate team:* Oregon State (1,170)

Pistol

National Outdoor Champions

Men—Sgt./F.C. William B. Blankenship, Jr., U.S. Army (2,633–128)
Police—H. R. Mitchell, U.S. Border Patrol (2,591–96)
Women—1st Lt. Gail N. Liberty, U.S. Air Force (2,513–60)
Collegiate—Edward A. Schilke, Glen Ellyn, Ill. (2,553–68)
Trophy Matches—S/Sgt. James H. McNally, U.S. Army (293–9); *team:* U.S. Army Western (1,129–32)

National Indoor Champions

Men—S/Sgt. Edwin L. Teague, U.S. Air Force (882)
Collegiate—Jack D. Renfro, U.S. Naval Academy (288)
Team—U.S. Air Force Blue (1,180); *collegiate:* U.S. Military Academy (1,112)

Skeet

World Championships
(St. Janvier, Quebec, July 29–August 4)

All-Around—*Open:* S/Ldr. Barney C. Hartman, Ottawa, Ont. (546x550, 4-gun aggregate); *women:* Kathleen McGinn, Houston, Texas (535x550); *industry:* Fred Missildine, Sea Island, Ga. (545x550); *senior:* Larry H. Smith, Birmingham, Mich. (545x550); *subsenior:* Chesley J. Crites, Detroit, Mich. (538x550)
12-Gauge—*Open:* Kenneth D. Gilbert, Fort Benning, Ga. (250x250); *women:* Kathleen McGinn (249x250); *industry:* Fred Missildine (250x250); *senior:* Larry H. Smith (249x250); *subsenior:* Hugh S. Garland, Montreal, Que. (249x250)
20-Gauge—*Open:* William T. Sesnon, 3d, Los Angeles, Calif. (100x100); *women:* Kathleen McGinn (98x100) *industry:* Fred Missildine (99x100); *senior:* Larry H. Smith (99x100); *subsenior:* Chesley J. Crites (100x100)
28-Gauge—*Open:* Harold E. Myers, San Antonio, Texas (100x100); *women:* Kathleen McGinn (99x100); *industry:* David H. Yaeger, Anoka, Minn. (99x100);

senior: Henry Alcus, New Orleans, La. (100x100); *subsenior:* Mig P. Brown, San Antonio, Texas (99x100)
.410-Gauge—*Open:* Donald E. Jacobsen, Stockton, Calif. (99x100); *women:* Mrs. Marjorie C. Annan, Aspen, Colo. (94x100); *industry:* Fred Missildine (98x100); *senior:* Larry H. Smith (98x100); *subsenior:* Chesley J. Crites (97x100)

N.S.S.A. World Championships
(Montreal, July 31–August 4)

Men

All-Around—Barney C. Hartman, Ottawa, Ont. (546x550)
12-Gauge—Sgt. Kenneth D. Gilbert, Fort Benning, Ga. (250x250)
20-Gauge—William T. Sesnon, 3d, Los Angeles (100x100)
28-Gauge—Sgt. Harold E. Myers, San Antonio, Texas (100x100)
.410-Gauge—Donald E. Jacobsen, Stockton, Calif. (99x100)

Women

All-Around—Kathleen McGinn, Houston (535x550)
12-Gauge—Kathleen McGinn (249x250)
20-Gauge—Kathleen McGinn (98x100)
28-Gauge—Kathleen McGinn (99x100)
.410-Gauge—Marjorie C. Annan, Aspen, Colo. (94x100)

TRAP

Grand American Championships
(Vandalia, Ohio, August 17–25)

Grand American Handicap—Milt Youngs, Chicago (20 yds., 99x100)
Women's Grand American—Elizabeth Dickey, Anderson, Ind. (18 yds., 96x100)
Professional Grand American—Fred Missildine, Sea Island, Ga. (22 yds., 97x100)
Champion of Champions—Dan Orlich, Reno, Nev. (100x100)
Women's Champion of Champions—Frances King, Atlanta, Ga. (96x100)
North American Clay Target—Bernard Kalapach, Highland, Ind. (200x200)
Women's North American Clay Target—Rhoda Wolf, Philadelphia (196x200)
Professional North American Clay Target—Cliff Doughman, Alton, Ill. (200x200)
High Overall—Bernard Kalapach (968x1,000)
Women's High Overall—Punkin Flock, Miami, Fla. (938x1,000)
Professional Overall—Robert L. Andrews, Jr., Jackson, Miss. (956x1,000)
All-Around—John Sternberger, Trotwood, Ohio (388x400)
Women's All-Around—Shirley Couch, South Gate, Calif. (373x400)

SKIING

WORLD ALPINE CHAMPIONSHIPS
(Chamonix, France, February 11–18)

Men's Events

Giant Slalom—Egon Zimmerman, Austria (1:38.97)
Special Slalom—Charles Bozon, France (1st run, 1:09.1; 2d run, 1:12.57; total, 2:21.67)
Downhill—Karl Schranz, Austria (2:24.33)
Combined—Karl Schranz (11.04 pts)

Women's Events

Giant Slalom—Marianne Jahn, Austria (1:41.53)
Special Slalom—Marianne Jahn (1st run, 0:48.63; 2d run, 0:46.21; total, 1:34.84)
Downhill—Christine Haas, Austria (2:09.08)
Combined—Marielle Goitschell, France (41.13 pts.)

WORLD NORDIC CHAMPIONSHIPS
(Zakopane, Poland, February 18–25)

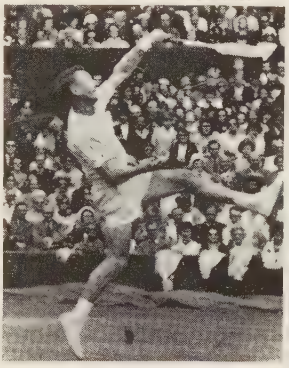
15-Kilometer Cross-Country—Asser Roennlund, Sweden (55:22.8)
30-Kilometer Cross-Country—Eero Mantyranta, Finland (1:52:39.4)
40-Kilometer Cross-Country Relay—Sweden (2:24:39.3)
50-Kilometer Cross-Country—Sixten Jernberg, Sweden (3:03:48.5)
Jumping (100-Meter Hill)—Helmut Recknagel, East Germany (97.5, 103, and 98.5-meter jumps; 241.4 pts.)
Combined (15-Kilometer Cross-Country and 70-Meter Hill Jump)—Arne Larsen, Norway (454.33)
Special Jumping (70-Meter Hill)—Toralf Engan, Norway (68, 67, and 70.5-meter jumps; 223.6 pts.)

UNITED STATES CHAMPIONSHIPS

Jumping (Fox River Grove, Ill., Jan. 21)—Ansten Samuelstuen, Steamboat Springs, Colo. (226.5 pts.)
Four-Event Meet (South Tahoe, Calif., Feb. 24)—*cross-country:* Jennings Cress, Western State, Gunnison, Colo. (37:49.6); *slalom:* Jim Gaddis, University of Utah (1:27.8); *downhill:* Jim Gaddis (288.28); *jumping:* Jennings Cress (204); *four-event combined:* Jim Bombard, Western State (98.04 FIS pts.)
Cross-Country—*15-Kilometer* (Crested Butte, Colo., Jan. 28): Mike Gallagher, Colorado University (0:53:55); *30-Kilometer* (Andover, Me., March 11): Raimo Ahti, Fitchburg, Mass. (2:00:07)
Alpine (Solitude, Utah, March 9)—Men: *giant slalom:* Jim Gaddis (1:32.0); *slalom:* Bill Barrier, University of Montana (1:53.4); *downhill:* Dave Gorsuch, Western

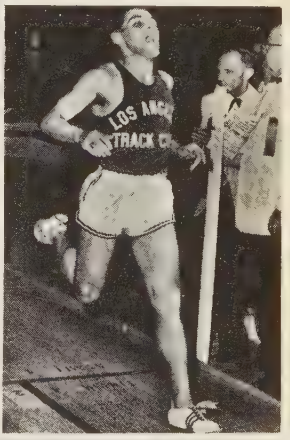
(*Above*) *Miss Century 21*, with Bill Muncey of Seattle at the wheel, swept all five major hydroplane racing events in 1962. Here the combination captures the President's Cup Regatta in Washington, D.C., September 16, with record speed of 109.157 mph. (*Right*) Murray Rose, Australian free-style specialist, registered two victories in the AAU outdoor championships in August.

WIDE WORLD



(*Left*) Rod Laver of Australia, shown returning ball at Wimbledon, achieved grand slam of tennis in 1962 by winning four titles.

WIDE WORLD



(*Right*) Jim Beatty hits the tape at Los Angeles, February 10, to set a new indoor mile record of 3:58.9. Beatty won the Sullivan Award as foremost amateur athlete of 1962. (*Below*) Action in second race of America's Cup competition, off Newport, R.I., in September. Australian challenger *Gretel* (left) won this race, but United States retained the prized trophy as *Weatherly* took the next three tests.

WIDE WORLD

State (1:51.6); *combined:* Dave Gorsuch (1.18 FIS pts.). Women: *giant slalom:* Tammy Dix, Solitude, Utah (1:29); *slalom:* Linda Myers, Mammoth Mt., Calif. (2:01.0); *downhill:* Sharon Pecjak, Aspen, Colo. (1:28.4); *combined:* Linda Myers (1.79 FIS pts.)

NATIONAL COLLEGIATE (NCAA) CHAMPIONSHIPS
(Squaw Valley, Calif., March 23–25)

Slalom—Jim Gaddis, University of Utah (1st run, 0:44; 2d run, 0:42.7; total time, 1:26.7); *team:* Denver (96.65 pts.)
Downhill—Mike Baar, Denver (1:44.8); *team:* Denver (98.04)
Jumping—Oyvind Floystad, Denver (201 and 217 feet; 223.6 pts.); *team:* Denver (99.28 pts.)
Cross-country—James Page, Dartmouth (0:59:03.7); *team:* Denver (96.18 pts.)
Alpine Combined—Jim Gaddis (209.7 pts.); *team:* Denver (194.60 pts.)
Nordic Combined—Tor Fageraas, Montana State (193.51 pts.)
Team—*Overall:* Denver (390.08 pts.)
Skimeister—James Page (361.67 pts.)

SOCCER

UNITED STATES CHAMPIONS

National Challenge Cup—New York Hungaria
National Amateur Cup—Carpathia Kickers, Detroit
National Junior Cup—Schumachers, St. Louis
American League—Philadelphia Ukrainians
German-American League—New York Hungaria
National League—Gjoa S.C., New York
National Collegiate—St. Louis University

BRITISH CHAMPIONS

Football Association Cup—Tottenham Hotspur
English Football League—Ipswich Town
Scottish Football Association Cup—Glasgow Rangers
Scottish League—*Cup:* Glasgow Rangers; *title:* Dundee

OTHER CHAMPIONS

World Soccer Cup—Brazil
European Soccer Cup—Portugal (Benfica of Lisbon)
Intercontinental Cup—Brazil
International League—*First Section:* America of Rio de Janeiro (Brazil); *Second Section:* Belenenses of (Lisbon) Portugal; *Play-off:* America of Rio de Janeiro; *American Challenge Cup:* Dukla of Prague (Czechoslovakia)

SOFTBALL

AMATEUR SOFTBALL ASSOCIATION CHAMPIONS

Men—Clearwater Bombers, Clearwater, Fla.
Women—Orange Lionettes, Orange, Calif.

SQUASH RACQUETS

U.S. Open—Azam Khan, Pakistan
U.S. Amateur—Sam Howe, Philadelphia, Pa.
Men's Doubles—G. Diehl Mateer, Jr., and John Hentz, Philadelphia, Pa.
Women's Singles—Margaret Varner, Wilmington, Del.
Women's Doubles—Mrs. Charles Classen, Bryn Mawr, Pa., and Mrs. Frances A. C. Vosters, Wilmington, Del.
Canadian Open—Roshan Khan, Pakistan

SWIMMING

Five world records were set by Americans in the Amateur Athletic Union's national outdoor championships in August 1962, but an Australian, Murray Rose, gained much of the glory at the meet. Making a comeback at 23 years of age, Rose captured two titles, although he had fared poorly in the indoor championships. Rose set an American record in the outdoor 400-meter freestyle with a clocking of 4 minutes 17.2 seconds, and won the 1,500-meter final with a time of 17:16.7 for another American mark.

The world records were set by Tom Stock of the Indianapolis A.C., Carl Robie of the Vesper Boat Club, Ted Stickles of the Indianapolis A.C., and a relay team from the Indianapolis A.C. Stock accounted for two of the records and shared in a third. He swam the 200-meter backstroke in 2:10.9 and the 100-meter in 1:00.9. Stock, teamed with Chet Jastremski, Fred Schmidt, and Pete Sintz, won the 400-meter medley relay in the world record time of 4:01.6. Robie, who captured the 200-meter butterfly final in 2:10.8, had lowered the mark to 2:12.4 in a heat. Stickles swam the 400-meter medley in 4.51.5. In addition, Don Schollander of the Santa Clara (Calif.) S.C. equaled the world record for the 200-meter freestyle (2:00.4).

Another "old-time" Australian, 25-year-old Dawn Fraser, turned in performances at least as impressive as Rose's. In the trials for the British Empire Games, Miss Fraser became the first woman to cover 100 meters in one minute. She went on in the same trials to lower the record to 59.9 seconds in the final. In the Empire Games, held in Perth, Australia, at the end of November, these two stars won four gold medals each.

A 16-year-old, Carolyn House of the Los Angeles A.C., set a world 1,500-meter freestyle record in the women's AAU outdoor championships in Chicago in August. Her time was 18:44. She also won the 400-meter and the 200-meter crowns.

MEN'S AAU OUTDOOR CHAMPIONSHIPS
(Cuyahoga Falls, Ohio, August 10–12)

100-Meter Freestyle—Steve Jackman, Gopher S.C., Minneapolis, Minn. (time, 0:54.6)
200-Meter Freestyle—Don Schollander, Santa Clara (Calif.) S.C. (2:00.4; equals existing world record)
400-Meter Freestyle—Murray Rose, Los Angeles A.C. (4:17.2)
1,500-Meter Freestyle—Murray Rose (17:16.7)
100-Meter Backstroke—Tom Stock, Indianapolis (Ind.) A.C. (1:00.9; world record)
200-Meter Backstroke—Tom Stock (2:10.9; world record)
100-Meter Breaststroke—Chet Jastremski, Indianapolis A.C. (1:08.2)
200-Meter Breaststroke—Chet Jastremski (2:30.0)
100-Meter Butterfly—Ed Spencer, North Carolina A.C. (0:58.9)
200-Meter Butterfly—Carl Robie, Vesper B.C., Philadelphia, Pa. (2:10.8; world record)
200-Meter Individual Medley—Ted Stickles, Indianapolis A.C. (2:16.2)
400-Meter Individual Medley—Ted Stickles (4:51.5; world record)
400-Meter Medley Relay—Indianapolis A.C. "B" Team (Tom Stock, Chet Jastremski, Fred Schmidt, Pete Sintz; 4:01.6; world record)
800-Meter Freestyle Relay—Santa Clara S.C. "A" Team (Mike Wall, Steve Clark, Ed Townsend, Don Schollander; 8:12.2)
3-Meter Springboard Diving—Lou Vitucci, Blue Hill (Mass.) C.C. (487.2 pts.)
Platform Diving—Bob Webster, Santa Ana, Calif. (472.7 pts.)
Team Champion—Indianapolis A.C. (124 pts.)
Long Distance—*Individual:* Ed Glick, Huntington (Ind.) YMCA (1:29:57.6); *team:* Rubber City S.C.

MEN'S AAU INDOOR CHAMPIONSHIPS
(Bartlesville, Okla., April 5–7)

100-Yard Freestyle—Steve Jackman, Minneapolis, Minn. (time, 0:48.3)
220-Yard Freestyle—Roy Saari, El Segundo, Calif. (1:58.6)
440-Yard Freestyle—Roy Saari (4:14.6)
1,500-Meter Freestyle—Roy Saari (16:54.1)
100-Yard Backstroke—Bob Bennett, Southern California Freshmen (0:54.1)
220-Yard Backstroke—Tom Stock, Bloomington, Ind. (2:08.0)
100-Yard Breaststroke—Chet Jastremski, Bloomington, Ind. (0:59.1)
220-Yard Breaststroke—Chet Jastremski (2:25.3)
100-Yard Butterfly—Larry Schullhof, Bloomington, Ind. (0:52.1)
220-Yard Butterfly—Larry Schullhof (2:10.7)
200-Yard Individual Medley—Chet Jastremski (1:59.4)
400-Yard Individual Medley—Ted Stickles, Bloomington, Ind. (4:18.1)
400-Yard Medley Relay—North Carolina A.C. (Thompson Mann, Peter Fogarasy, Ed Spencer, Bill McGinty; 3:37.9)
400-Yard Freestyle Relay—Santa Clara S.C. (Steve Clark, Ed Townsend, Nick Schoenman, Don Beukers; 3:17.4)
1-Meter Diving—Bob Webster, Sammy Lee Swim School, Santa Ana, Calif. (463.95 pts.)
3-Meter Diving—Rick Gilbert, Bloomington, Ind. (542.55 pts.)
Team—Southern California Freshmen and North Carolina A.C. (tie; 34 pts.)

WOMEN'S AAU OUTDOOR CHAMPIONSHIPS
(Chicago, Ill., August 16–19)

100-Meter Freestyle—Robyn Ann Johnson, North Virginia (Arlington) A.C. (time, 1:02.2)
200-Meter Freestyle—Carolyn House, Los Angeles A.C. (2:14.6)
400-Meter Freestyle—Carolyn House (4:45.3)
1,500-Meter Freestyle—Carolyn House (18:44.0; world record)
100-Meter Backstroke—Donna de Varona, Santa Clara (Calif.) S.C. (1:10.4)
200-Meter Backstroke—Ginnie Duenkel, Summit (N.J.) YWCA (2:32.1; world record)
100-Meter Breaststroke—Wiltrud Urselmann, West Germany (1:20.6)
200-Meter Breaststroke—Wiltrud Urselmann (2:53.3)
100-Meter Butterfly—Mary Stewart, Canadian Dolphin (Vancouver, B.C.) S.C. (1:07.6; world record)
200-Meter Butterfly—Sharon Finneran, Los Angeles A.C. (2:32.1; world record)
200-Meter Individual Medley—Donna de Varona (2:33.3)
400-Meter Individual Medley—Sharon Finneran (5:25.4; world record)
400-Meter Medley Relay—Vesper (Philadelphia, Pa.) B.C. "A" Team (Nina Harmer, Lynn Tally, Susan Doerr, Martha Randall; 4:47.5)
400-Meter Freestyle Relay—Vesper B.C. (Susan Doerr, Martha Randall, Mary Brundage, Elaine Johnson; 4:14.8)
3-Meter Springboard Diving—Barbara McAlister, Dick Smith S.G., Phoenix, Ariz. (416.45 pts.)
Platform Diving—Linda Cooper, Commerce (Calif.) S.C. (281 pts.)

Team—Los Angeles A.C. (80 points)
Long Distance—Kathy Baker, Dolphin S.C., Lakewood, Calif. (1:10.47)

Women's AAU Indoor Championships
(Sacramento, Calif., April 19–21)

100-Yard Freestyle—Robyn Ann Johnson, North Virginia (Arlington) A.C. (time, 0:55.5)
250-Yard Freestyle—Robyn Ann Johnson (2:34.6)
500-Yard Freestyle—Robyn Ann Johnson (5:27.2)
100-Yard Breaststroke—Ruby Whipple, Santa Clara (Calif.) S.C. (1:13.3)
250-Yard Breaststroke—Andrea Hopkins, Bethel Park, Pa. (3:15.2)
100-Yard Butterfly—Mary Stewart, Canadian Dolphin (Vancouver, B.C.) S.C. (0:59.2)
200-Yard Butterfly—Sharon Finneran, Los Angeles A.C. (2:16.8)
100-Yard Backstroke—Donna de Varona, Santa Clara S.C. (1:04.0)
200-Yard Backstroke—Donna de Varona (2:17.9)
200-Yard Individual Medley—Donna de Varona (2:18.9)
400-Yard Individual Medley—Sharon Finneran (4:52.9)
400-Yard Freestyle Relay—Cleveland S.C. "A" Team (Sue Tucek, Wilma Reimenschneider, Joan Lloyd, Judy Norton; 3:52.2)
400-Yard Medley Relay—Riviera S.C., Indianapolis (Sunny Gerdt, Ann Brown, Ann McIntyre, Sharon Marston; 4:17.9)
1-Meter Diving—Patsy Willard, Dick Smith S.C., Phoenix, Ariz.
3-Meter Diving—Mrs. Joel Lenzi O'Connell, Santa Clara S.C.
Team—Santa Clara S.C. (46 pts.)

National Collegiate (NCAA) Championships
(Columbus, Ohio, March 29–31)

50-Yard Freestyle—Steve Jackman, Minnesota (0:21.1)
100-Yard Freestyle—Steve Jackman (0:47.5)
220-Yard Freestyle—Jim Spreitzer, Illinois (2:00.9)
440-Yard Freestyle—Murray Rose, S. California (4:20.0)
1,500-Meter Freestyle—Murray Rose (17:26.7)
400-Yard Freestyle Relay—(tie) Michigan State (Jeff Mattson, Doug Rowe, Bill Wood, Mike Wood; 3:15.8) and Minnesota (John Bergman, Ralph Allen, Dan Crocker, Steve Jackman; 3:15.9)
100-Yard Backstroke—L. B. Schaefer, Ohio State (0:53.9)
200-Yard Backstroke—L. B. Schaefer (1:58.8)
100-Yard Butterfly—Ed Spencer, N. Carolina State (0:52.3)
200-Yard Butterfly—Artie Wolfe, Ohio State (1:58.0)
100-Yard Breaststroke—Dick Nelson, Michigan (1:01.7)
200-Yard Breaststroke—Virgil Luken, Minnesota (2:16.8)
200-Yard Individual Medley—Marty Mull, Ohio State (2:02.3)
400-Yard Medley Relay—Ohio State (L. B. Schaefer, Tom Kovacs, Artie Wolfe, John Plain; 3:37.6)
1-Meter Diving—Lou Vitucci, Ohio State (470.5 pts.)
3-Meter Diving—Lou Vitucci (506.45 pts.)
Team—Ohio State (92 pts.)

Intercollegiate Team Champions

NCAA—Ohio State
NAIA—North Central (Illinois)
College Conferences—*Eastern:* Harvard; *Middle Atlantic:* West Chester State; *Mason-Dixon:* Loyola; *Atlantic Coast:* Maryland; *Southeastern:* Florida; *Southwest:* Southern Methodist; *Mid-American:* Bowling Green; *Big Ten:* Indiana; *Big Eight:* Oklahoma; *Big Five:* Southern California

TABLE TENNIS

U.S. Table Tennis Association Championships (New York, N.Y., April 27–29)—*Singles:* Richard Miles, New York; *women's singles:* Mildred Shahian, Chicago; *doubles:* Richard Miles and Norbert van de Walle, Chicago; *women's doubles:* Valleri Smith, Los Angeles, and Barbara Chaimson, Washington, D.C.; *mixed doubles:* Bernard Bukiet, New York, and Barbara Chaimson

TENNIS

The Australians again dominated amateur tennis in 1962, with Rodney Laver becoming the second man in tennis history to win the world's four major titles in the same year. Laver beat fellow Australians in the finals of each of the top tournaments. He stopped Roy Emerson in the last round of the Australian and French championships, beat Marty Mulligan at Wimbledon, and completed the sweep by downing Emerson in the finals of the United States championships at Forest Hills, N.Y., on September 10. Donald Budge of the United States, who won the Big Four titles in 1938, was the only other man to gain the tennis grand slam.

Australia retained the Davis Cup for the fourth straight year with an easy, 5–0 victory over Mexico in the matches at Brisbane, December 26–28. Laver and Emerson won the doubles decisively, while the singles were won by Laver and Neale Fraser over the Mexican team of Rafael Osuna and Antonio Palafox. At the conclusion of the Cup competition, Laver turned professional.

The United States for the first time failed to advance to the finals of the American Zone eliminations in Davis Cup competition. The Mexicans ousted the United States by a score of 3–2 in the semifinals, which were held in the thin air and high altitude of Mexico City, August 4–6. Palafox gained a victory for Mexico by beating Jon Douglas, Santa Monica, Calif., who also lost to Osuna. Palafox and Osuna won the doubles by halting Chuck McKinley and Dennis Ralston. The American victories were scored by McKinley over Osuna and Mario Llamas.

Margaret Smith and Fred Stolle, both of Australia, dominated grass-court tennis in the United States. Miss Smith won the national singles tournament at Forest Hills, in addition to the Eastern and Pennsylvania championships. On the world tour she had won the French, Swiss, and Italian titles. Stolle shared the mixed doubles title with Miss Smith in the United States championship at Forest Hills and won the men's singles in the Eastern and Southampton events. Stolle also helped win the Wimbledon doubles crown for Australia, playing with Robert Hewitt. In the women's finals at Forest Hills, the 20-year-old Miss Smith halted the defending champion, Darlene Hard.

Major Amateur Tournaments

Davis Cup—Australia (defeated Mexico, 5–0, at Brisbane, Australia, Dec. 26–28)
Wightman Cup (Women)—United States (defeated Britain, 4–3, at Wimbledon, England, June 15–16)
U.S. Outdoor Doubles (Brookline, Mass.; finals Aug. 26)—Rafael Osuna and Antonio Palafox, Mexico; *women:* Darlene Hard, Long Beach, Calif., and Maria Bueno, Brazil
U.S. Outdoor Singles and Mixed Doubles (Forest Hills, N.Y.; finals Sept. 10)—Rod Laver, Australia; *women:* Margaret Smith, Australia; *mixed doubles:* Fred Stolle and Margaret Smith, Australia
U.S. Clay Court (River Forest, Ill.; finals July 22–23)—Chuck McKinley, St. Ann, Mo.; *men's doubles:* Ramsey Earnhart, Ventura, Calif., and Martin Riessen, Evanston, Ill.; *women's singles:* Donna Floyd, Arlington, Va.; *women's doubles:* Darlene Hard, Long Beach, Calif., and Sue Behlmar, Yonkers, N.Y.
U.S. Men's Indoor (New York, N.Y.; finals Feb. 11)—Chuck McKinley; *doubles:* Chuck McKinley and Rod Laver
U.S. Women's Indoor (Brookline, Mass.; finals March 2)—Carole Wright, Brooklyn, N.Y.; *women's doubles:* Belmar Gunderson, Indian Lake Estates, Fla., and Ruth Jeffery, Melrose, Mass.; *mixed doubles:* Chauncey Depew Steele, Cambridge, Mass., and Carole Wright
Australian National (Sydney; finals Jan. 14–15)—Rod Laver; *men's doubles:* Neale Fraser and Roy Emerson, Australia; *women's singles:* Margaret Smith; *women's doubles:* Margaret Smith and Robyn Ebbern, Australia; *mixed doubles:* Fred Stolle and Lesley Turner, Australia
Wimbledon (England; finals July 6–7)—Rod Laver; *men's doubles:* Fred Stolle and Bob Hewitt, Australia; *women's singles:* Karen Hantze Susman, Chula Vista, Calif.; *women's doubles:* Karen Hantze Susman and Billie Jean Moffitt, Long Beach, Calif.; *mixed doubles:* Neale Fraser and Margaret Osborne du Pont, Wilmington, Del.
French International (Paris; June 1–3)—Rod Laver; *men's doubles:* Neale Fraser and Roy Emerson; *women's singles:* Margaret Smith; *women's doubles:* Sandra Reynolds Price and Renee Schuurman, South Africa; *mixed doubles:* Bob Howe, Australia, and Renee Schuurman

Teams

NCAA—Southern California
NAIA—Pan American

TRACK AND FIELD

With few "barriers" left in the world of sports, the United States gained the distinction in 1962 of having the first pole vaulter to soar 16 feet. Lofted by the spring in the popular fiberglass pole, John Uelses scaled 16 feet ¼ inch in the Millrose Games at Madison Square Garden, New York, on February 2. The next night in Boston he cleared 16 feet ¾ inch. Marine Lt. Dave Tork, on April 28, raised the world outdoor record to 16 feet 2 inches, and a Finnish athlete, Pentti Nikula, lifted this to 16 feet 2½ inches on June 22. A new world indoor record (unofficial) was set by Don Meyers in Chicago, December 20, when he scaled 16 feet 1¼ inch.

There seemed to be more bounce in the boards, too, as Jim Beatty, running for the Los Angeles Track Club, became the first American to cover the mile indoors in less than 4 minutes. The 27-year-old graduate of the University of North Carolina turned in a time of 3 minutes 58.9 seconds in Los Angeles on February 10. Outdoors, Beatty also was a sensation. He became the first American in a generation to hold the world record for 2 miles when he ran that distance in 8:29.8 at Los Angeles on June 8. For his exploits, Beatty won the James E. Sullivan Memorial Trophy as the outstanding amateur athlete of 1962.

Peter Snell of New Zealand indicated what kind of year it was going to be when he lowered the world record for the mile to 3:54.4 on a grass track in Wanaganui on January 27. This bettered by a tenth of a second the mark set by Herb Elliott four years before. Snell also shattered the record for 880 yards with a 1:45.1 clocking a week after he had clipped the mile mark. The 880 record had been set by Tom Courtney (1:46.8) in 1957.

Al Oerter of the New York Athletic Club entered the circle of magic-mark surpassers when he threw the discus 200 feet 5½ inches in Los Angeles in May. The barrier was also topped by Vladimir Trusenev of Russia, when he made a mark of 202 feet 2¾ inches in Leningrad, but Oerter recaptured the title with a throw of 204 feet 10½ inches at Chicago on July 1.

The United States won its fourth victory in its fourth meeting with the Soviet Union, by a score of 128–107, at Palo Alto, Calif., on July 21–22. Also, as has become customary, the Russian women beat the American women, 66–41.

Valeri Brumel continued to catch the eyes of the track and field world with his prodigious leaps. The Russian holder of the world high jump record soared 7 feet 5 inches in the United States meet and later scaled 7 feet 5¼ inches in Moscow.

A dispute between the National Collegiate Athletic Association and the Amateur Athletic Union of the United States over control of American athletes in international meets was unsettled as the year drew to a close. Attorney General Robert F. Kennedy had arranged an uneasy truce and a tentative agreement on a coalition of the organizations, but fighting between the factions continued. However, on Jan. 19, 1963, Gen. Douglas MacArthur, who had been appointed by President Kennedy to arbitrate the dispute, reported that he had succeeded in formulating a compromise agreement.

Men's AAU Outdoor Championships
(Walnut, Calif., June 22–23)

100-Yards—Robert Hayes, Florida A.&M. (0:09.3)
220-Yards—Paul Drayton, Villanova (0:20.5; equals world record)
440-Yards—Ulis Williams, Southern California Striders (0:45.8)
880-Yards—Jerry Siebert, Santa Clara Youth Village (1:47.1)
Mile—Jim Beatty, Los Angeles Track Club (3:57.9)
3-Mile—Murray Halberg, New Zealand (13:30.6)
6-Mile—Bruce Kidd, East York Track Club, Toronto (28:23.1)
2-Mile Walk—Ron Zinn, U.S. Army (14:35.8)
120-Yard High Hurdles—Jerry Tarr, Emerald Empire A.C. (0:14.4)
220-Yard Low Hurdles—Jerry Tarr (0:22.6)
440-Yard Hurdles—Willie Atterberry, Los Angeles Track Club (0:50.5)
3,000-Meter Steeplechase—George Young, Las Cruces, New Mexico (8:48.2)
Javelin—Dan Studney, Santa Clara Youth Village (246 ft. 6 in.)
High Jump—John Thomas, Boston Univ. (6 ft. 10 in.)
Shot Put—Gary Gubner, Grand Street Boys Association, New York (63 ft. 6½ in.)
Broad Jump—Ralph Boston, Nashville, Tenn. (26 ft. 6 in.)
Discus—Al Oerter, New York A.C. (202 ft. 2 in.)
Hammer—Al Hall, New York A.C. (219 ft. 3 in.)
Pole Vault—Ron Morris, So. Calif. Striders (16 ft. ¼ in.)
Hop, Step, and Jump—Bill Sharpe, Philadelphia Pioneer Club (52 ft. 1¼ in.)
Team—Southern California Striders (53 pts.)

Long-Distance Events

Marathon (Yonkers, N.Y., May 13)—John J. Kelley, Boston A.A. (2:27:39.8)
3,000-Meter Team Race (Baltimore, Md., May 20)—Baltimore Olympic Club (Vinton, Pflaging, Berryhill)
One-Hour Run (San Diego, Calif., Sept. 8)—Peter McArdle, New York A.C. (11 mi. 1,236 yds. 34 in.)
15-Kilometer Run (Greenbelt, Md., Sept. 2)—Peter McArdle (42:04.8)
20-Kilometer Run (Needham, Mass., July 4)—Fred Norris (63:12.0)
30-Kilometer Run (New York, N.Y., March 11)—Peter McArdle (1:41:21.0)
10-Kilometer Walk (Chicago, Ill., May 26)—Ronald Zinn, Green and Gold A.C. (47:53.8)
15-Kilometer Walk (Detroit, Mich., Sept. 9)—John W. Allen, Buffalo, N.Y. (1:16:07.2)
20-Kilometer Walk (Chicago, Ill., July 8)—Ronald Zinn (1:43:59.0)
25-Kilometer Walk (Providence, R.I., Oct. 12)—Alex Oakley, Gladstone A.C. (2:03:14.0)
30-Kilometer Walk (Chicopee Falls, Mass., April 15)—Jack Mortland, Ohio T.C. (2:36:02.0)
35-Kilometer Walk (Seattle, Wash., July 21)—Ronald Laird, New York A.C. (3:20:21.0)
40-Kilometer Walk (Grand Island, N.Y., April 1)—John W. Allen, Garden Town A.C. (3:30:22.0)
50-Kilometer Walk (Long Island City, N.Y., May 20)—Ronald Laird (5:25:30.0)

Other Events

AAU Pentathlon (Boulder, Colo., July 7)—Paul Herman, Westmont College, Santa Barbara, Calif. (3,389 pts.)
AAU Decathlon (Tulare, Calif., June 29–30)—C. K. Yang, Taiwan (8,249 pts.)
AAU All-Around (Baltimore, Md., Aug. 5)—Tom Pagani, New York A.C. (8,265 pts.)
Boston Marathon (April 19)—Eino Oksanen, Finland (2:23:48)

Men's AAU Indoor Championships
(New York, N.Y., February 24)

60-Yards—Frank Budd, Villanova (0:06.2)
60-Yard High Hurdles—Hayes Jones, Craftsman A.C., Detroit (0:07.1)
600-Yards—Bill Crothers, East York Track Club, Toronto (1:10.8)
1,000-Yards—George Reilly, Georgetown (2:11.0)
Mile—Jim Beatty, Los Angeles Track Club (4:00.2)
3-Mile Run—Bruce Kidd, East York T.C. (13:48.8)
Mile Relay—Morgan State (John Bertha, Robert Bagley, Hubert Brown, Lawson Smart; 3:18.2)
2-Mile Relay—Fordham (Donald O'Conner, Tom Kenny, Doug Tynan, Frank Tomeo; 7:40.6)
Sprint Medley Relay—Villanova (Carl Wagner, Al Jackman, Frank Budd, Paul Drayton; 1:53.3)
Mile Walk—Ron Zinn, West Point (6:36.0)
High Jump—John Thomas, Boston Univ. (7 ft. 2 in.)
Pole Vault—Henry Wadsworth, U.S. Army (15 ft. 4 in.)
Broad Jump—Charles Mays, Maryland State (24 ft. 10¾ in.)
Shot Put—Gary Gubner, New York Univ. (62 ft. 10 in.)
35-Pound Weight Throw—Al Hall, New York A.C. (64 ft. 7¼ in.)
Team—Villanova (18 points)

Women's AAU Outdoor Championships
(Los Angeles, Calif., July 7–8)

100-Yards—Wilma Rudolph, Tennessee State (0:10.8)
220-Yards—Vivien Brown, Tenn. State (0:24.1)
440-Yards—Suzanne Knott, Columbus, Ohio (0:58.1)
880-Yards—Leah Bennett, Univ. of Hawaii (2:12.3)
80-Meter Hurdles—Cherie Parrish, San Francisco (0:11.3)
440-Yard Relay—Tennessee State (Wyomia Tyus, Wilma Rudolph, Edith McGuire, Vivien Brown; 0:46.0)
880-Yard Medley Relay—Chicago Mayor Daley Youth Foundation "A" Team (Harris, Rallings, White, Bush; 1:47.1)
High Jump—Kinuko Tsutsumi, Japan (5 ft. 3 in.)
Broad Jump—Willye White, Chicago Mayor Daley Y.F. (20 ft. 3 in.)
Shot Put—Earlene Brown, Los Angeles Spikers (48 ft. 10¾ in.)
Discus—Olga Connolly, Chicago (172 ft. 2 in.)
Javelin—Karen Mendyka, Hawaii (158 ft. 5 in.)
Team—Tennessee State (64 points)
Pentathlon—Pat Daniels, San Mateo G.A.A. (3,941 points)

Women's AAU Indoor Championships
(Louisville, Ky., February 17)

50-Yards—Willye White, Chicago Mayor Daley Youth Foundation (time, 0:05.9)
100-Yards—Willye White (0:11.2)
220-Yards—Vivien Brown, Tennessee State (0:25.5)
440-Yards—Suzanne Knott, Ohio Track Club (0:58.2)
880-Yards—Leah Bennett, Univ. of Hawaii (2:17.5)
70-Yard Hurdles—Joann Terry, Tennessee State (0:09.2)
440-Yard Relay—Tenn. State (Holmes, Dunn, McGuire, Brown; 0:48.6)
880-Yard Relay—Ohio T.C. "A" Team (Davis, Long, Fuller, Watkins; 1:53.8)
Shot Put—Sharon Sheppard, Cleveland Recreation Division (43 ft. 9 in.)
Running Broad Jump—Willye White (19 ft. 6½ in.)
High Jump—E. Baskerville, Ohio T.C. (5 ft. 2 in.)
Basketball Throw—Cynthia Wyatt, Univ. of Hawaii (105 ft. 7½ in.)
Team—Tennessee State (30 points)

National Collegiate (NCAA) Championships
(Eugene, Oreg., June 15–16)

100-Yards—Frank Budd, Villanova (0:09.4)
220-Yards—Harry Jerome, Oregon (0:20.8)
440-Yards—Hubert Brown, Morgan State (0:46.9)
880-Yards—James Dupree, So. Illinois (1:48.2)
Mile—Dyrol Burleson, Oregon (3:59.8)
3-Miles—Patrick Clohessy, Houston (13:51.6)
3,000-Meter Steeplechase—Patrick Traynor, Villanova (8:48.6)
120-Yard High Hurdles—Jerry Tarr, Oregon (0:13.5)
440-Yard Hurdles—Jerry Tarr (0:50.3)
High Jump—Roger Olsen, California (6 ft. 10 in.)
Broad Jump—Tony Watson, Oklahoma (26 ft. ½ in.)
Pole Vault—(tie) John Belitza, Maryland; Fred Hansen, Rice; Dexter Elkins, SMU; and Don Meyers, Colorado (15 ft. 3 in.)
Hop, Step, and Jump—Kermit Alexander, UCLA (50 ft. 11½ in.)
Shot Put—Dallas Long, Southern Calif. (64 ft. 7 in.)
Discus—David Weill, Stanford (188 ft. 1 in.)
Javelin—Jan Sikorsky, Southern Calif. (249 ft. 4 in.)
Hammer—Ted Bailey, Harvard (193 ft. 11 in.)
Team—Oregon (85 pts.)

U.S.–USSR Track Meet
(Palo Alto, Calif., July 21–22)

Team Scores—*Men:* U.S. 128, USSR 107; *Women:* USSR 66, U.S. 41

Intercollegiate Team Champions

NCAA—Oregon
ICAAAA—*Indoor and Outdoor:* Villanova
NAIA—Texas Southern
Heptagonal—*Indoor:* Harvard; *Outdoor:* Yale

College Conference Champions—*Yankee:* Maine; *Atlantic:* Maryland (indoor and outdoor); *Middle Atlantic* (University Division): St. Joseph's; (College Division): West Chester; *Mason-Dixon:* Roanoke; *Southern:* Furman (indoor and outdoor); *Southeastern:* Mississippi State; *Southwest:* Baylor; *Border:* Arizona State; *Midwest:* Grinnell (indoor and outdoor); *Mid-American:* Western Michigan; *Big Ten: Wisconsin* (indoor) and Michigan (outdoor); *Big Eight:* Kansas (indoor) and Oklahoma (outdoor); *Mountain:* Brigham Young; *Big Five:* Southern California; *New England:* (tie) Boston College and Boston University; *Atlantic:* Maryland; *Central:* Western Michigan (indoor and outdoor); *Missouri Valley:* Tulsa

VOLLEYBALL

U.S. Volleyball Association Championships (Philadelphia, Pa., May 9–12)—*Open:* Hollywood (Calif.) YMCA Stars; *masters:* Beverly Hills (Calif.) YMCA; *intercollegiate:* Santa Monica (Calif.) City College; *women:* Ahern Shamrock, Long Beach, Calif. *armed forces:* Alameda (Calif.) NAS.

WATER POLO

AAU Indoor—Illinois A.C.
AAU Outdoor—City of Commerce (Calif.) S.C.
AAU Women—Ann Arbor (Mich.) S.C.

WATER SKIING

American Water Ski Association

National Championships
(Pine Mountain, Ga., August 23–26)

Men—*Overall:* Chuck Stearns, Bellflower, Calif. (2,751 pts.); *slalom:* Chuck Stearns (23½ buoys); *tricks:* Al Tyll, Litchfield, Conn. (3,311 pts.); *jumping:* Larry Penacho, San Diego, Calif. (153 ft.)
Women—*Overall:* Jenny Hodges, Birmingham, Ala. (3,000 pts.); *slalom:* Jenny Hodges (35½ buoys); *tricks:* Jenny Hodges (2,069 pts.); *jumping* Cecele Campbell, San Francisco (77 ft.)

WEIGHTLIFTING

World Championships
(Budapest, Hungary, September 16–22)

Bantamweight—Yoshinobu Miyake, Japan (777 lbs.)
Featherweight—Yevgeni Minayev, USSR (799)
Lightweight—Vladimir Kaplunov, USSR (914¾)
Middleweight—Aleksandr Kurynov, USSR (931¼)
Light Heavyweight—Gyozo Veres, Hungary (1,014)
Middle Heavyweight—Louis Martin, England (1,058)
Heavyweight—Yuri Vlasov, USSR (1,190¼)
Team—USSR (39 pts.)

National AAU Championships
(Highland Park, Mich., June 2–3)

123-Pound Class—Dick Krell, Torio H. C., Toledo (670 lbs.)
132-Pound Class—Walter Imahara, U.S. Army (720)
148-Pound Class—Anthony Garcy, York (Pa.) Barbell Club (800)
165-Pound Class—Joseph Puleo, York B.C. (875)
181-Pound Class—Tommy Kono, Hawaii York A.C. (945)
198-Pound Class—Bill March, York B.C. (975)
Heavyweight Class—Norbert Schemansky, Detroit (1,140)
"Mr. America" Contest—Joe Abbenda, Long Island City, N.Y. (89 pts.)

WRESTLING

World Championships
(Toledo, Ohio, June 21–27)

Freestyle

114.5 Pounds—Ali Aliev, USSR
125.5 Pounds—Huseyin Akbas, Turkey
138.5 Pounds—Osamu Watanabe, Japan
154 Pounds—Enkou Valtchev, Bulgaria
171.5 Pounds—Imam Ali Habibi, Iran
191.5 Pounds—Mansour Mendizadeh, Iran
213.5 Pounds—Aleksandr Medved, USSR
Heavyweight—Aleksandr Ivanitski, USSR
Team—USSR (29 pts.)

Greco-Roman

114.5 Pounds—Sergei Rybalki, USSR
125.5 Pounds—Masamitsu Ichiguchi, Japan
138.5 Pounds—Imre Polyak, Hungary
154 Pounds—Kazim Ayvaz, Turkey
171.5 Pounds—Anatoli Kolesov, USSR
191.5 Pounds—Tevtik Kisd, Turkey
213.5 Pounds—Rostom Adachidze, USSR
Heavyweight—Istvan Kozma, Hungary
Team—USSR (40 pts.)

National AAU Senior Championships
(New York, N.Y., June 6–10)

Freestyle

114.5 Pounds—Horyuka Harada, Japan
125.5 Pounds—Dave Auble, New York A.C.
138.5 Pounds—Osamu Watanabe, Chuo University, Tokyo
154 Pounds—Kazuo Abe, Japan
171.5 Pounds—Jim Ferguson, Olympic Club of San Francisco
191.5 Pounds—Shunichi Kawano, Japan
213.5 Pounds—Dan Brand, Olympic Club of San Francisco
Heavyweight—Jiro Seki, Japan
Outstanding Wrestler—Osamu Watanabe, Chuo University (Tokyo)
Team—Olympic Club of San Francisco (40 pts.)

Greco-Roman

114.5 Pounds—Sakurama Koji, Tokyo Club
125.5 Pounds—Masamitsu Ichiguchi, Tokyo Club
138.5 Pounds—Nobuyuki Motokawa, Simi (Calif.) H.S.
154 Pounds—Toshiyoki Sawauchi, Tokyo Club
171.5 Pounds—Rudy Williams, Taha Grapplers (Detroit)
191.5 Pounds—Ron Lewis, U.S. Navy
213.5 Pounds—Dan Brand, Olympic Club of San Francisco
Heavyweight—Hallow Wilson, U.S. Navy
Outstanding Wrestler—Dan Brand, Olympic Club of San Francisco
Team—Olympic Club of San Francisco (49 pts.)

National Collegiate (NCAA) Championships
(Stillwater, Okla., March 22–24)

115 Pounds—Gray Simons, Lock Haven (Pa.) State
123 Pounds—Masaaki Hatta, Oklahoma State
130 Pounds—Mickey Martin, Oklahoma
137 Pounds—Bill Carter, Oklahoma
147 Pounds—Mike Natvig, Army
157 Pounds—Jack Flasche, Colorado College
167 Pounds—Ronnie Clinton, Oklahoma State
177 Pounds—Bob Johnson, Oklahoma State
191 Pounds—Wayne Baughman, Oklahoma
Heavyweight—Sherwyn Thorson, Iowa
Team—Oklahoma State (82 pts.)

YACHTING

Australia, the tennis leader of the world and a power in track and swimming, tried unsuccessfully in 1962 to win the America's Cup, the most important international yachting trophy. Its first 12-meter sloop, *Gretel,* was the first craft since 1934 to win a race against an American vessel. But *Weatherly,* the defender for the United States, won four of five races off Newport, R.I., beginning September 15, to keep the Cup in the United States. Under her skipper, Alexander (Jock) Sturrock, *Gretel* mounted a stalwart challenge, winning the second race. But the American skipper, Emil (Bus) Mosbacher, Jr., had learned all he needed to know about his craft in the first two races, and he won the next three in a row. The margin of victory in the fourth race, however, was only 26 seconds—the closest finish in the 111-year-old series. The series marked the 18th time that the United States had successfully defended the cup, which the sloop *America* first won in a race around the Isle of Wight in 1851.

America's Cup Summaries

First Race
September 15

	Elapsed time	Winning margin
Weatherly	3:13:57	3:46
Gretel	3:17:43	...

Course—Windward-leeward, twice around, 24 miles. Wind—10 to 18 knots, 275 degrees.

Second Race
September 18

Gretel	2:46:58	0:47
Weatherly	2:47:45	...

Course—Triangular, 24 miles. Wind—18 to 25 knots, 285 degrees.

Third Race
September 20

Weatherly	4:21:16	8:40
Gretel	4:29:56	...

Course—Windward-leeward, twice around, 24 miles. Wind—4 to 10 knots, 015 and 330 degrees.

Fourth Race
September 22

Weatherly	3:22:28	0:26
Gretel	3:22:54	...

Course—Triangular, 24 miles. Wind—6 to 15 knots, 165 to 180 degrees.

Fifth Race
September 25

Weatherly	3:16:17	3:40
Gretel	3:19:57	...

Course—Windward-leeward, twice around, 24 miles. Wind—10 to 15 knots, 245 to 225 degrees magnetic.

International Match Events

Seawanhaka Cup (5.5-Meter)—Carlo Masterson's *Pride,* U.S.
International Catamaran Challenge Trophy—Ian Norris's *Hellcat,* England

North American Y.R.U. Champions

Men's (Mallory Cup)—Jim Payton, Mendota Y.C., Madison, Wis.
Women's (Adams Cup)—Mrs. Sue Sinclair, Noroton (Conn.) Y.C.
Junior's (Sears Cup)—Henry Sprague, 3d, Newport Harbor, Calif.

Single-Handed (O'Day Trophy)—Peter Barrett, Madison, Wis.

One Design Classes

Star (World)—Richard L. Stearns, Wilmette, Ill.
Star (North American)—Bill Buchan, Seattle
Lightning (North American)—Tom Allen, Buffalo, N.Y.
Comet (International)—Norman Freeman, Ithaca, N.Y.
Luders 16 (International)—Charles Eschleman, New Orleans
Raven (National)—Carter Sales, Grosse Pointe, Mich.
Firefly (North American)—Steven Reid, Montreal
Jet 14—Doub Kenyon, Wales, Mass.
Atlantic—Webb Ray, Southport, Conn.
Flying Scot (National)—Gordon K. Douglass, Oakland, Md.
Thistle (National)—Peter Bordes, Milford, Conn.
210 (National)—Fred Pothier, Marblehead, Mass.
Blue Jay (National)—Steve Moore, Manhasset, N.Y.
Rhodes 18 (National)—Bob Curtis, Greenwich, Conn.
Celebrity—Joseph Corbi, Indian River, Del.
Day Sailer—James Connolly, Marblehead, Mass.
Tallstar—Tom Bigelow, Niantic, Conn.
Rebel—David Mahan, Oakland, Md.
5–0–5—Henry Schefter, Mamaroneck, N.Y.
Y-Flyer—Louis Stender, Charleston, S.C.
Jollyboat (North American)—Roger Saunders, Hollis, N.H.
Moth—Charles Dagit, Merion, Pa.
5.5-Meter (World)—Britton Chance, Philadelphia
Flying Dutchman (World)—Hans Fogh, Denmark
Finn (North American)—Fred Miller, Newport Beach, Calif.

Intercollegiate

Morss Trophy—U.S. Coast Guard Academy
Ivy League—Harvard

Distance Races

Newport-Bermuda (635 miles)—De Coursey Fales' schooner *Niña*, New York
Southern Ocean Racing Conference (6 races)—Jack Powell's yawl *Paper Tiger*, St. Petersburg, Fla.
Chicago–Mackinac Island (333 miles)—James Doane's cutter *Flame*, Chicago
Port Huron–Mackinac Island (235 miles)—Clare Jacobs' sloop *Falcon II*, Detroit
Storm Trysail Club Block Island (200 miles)—Dick Carter's sloop *Rabbit*, Marblehead, Mass.
Stamford Y.C. Vineyard Trophy (233 miles)—S. A. Long's yawl *Ondine*, Larchmont, N.Y.

George McNickle,
Sports Staff, "The New York Times."

STAMPS. See Philately; Post Office Department.

STANDARDS, National Bureau of. See National Bureau of Standards.

STANDARDS OF LIVING

Industrial and agricultural production and consumption expanded at a slower pace in 1961 and early 1962 than in the immediately preceding years in most countries. Widespread bad weather in the crop year 1961–62, a slackening in expenditures on plant and equipment in both the developed and centrally planned economies, the declining importance of exports as a factor of growth, downward pressures on prices of primary commodities, and the exhausting of manpower and plant capacity in many European countries were the major influences, according to data assembled by various United Nations agencies.

United States.—Per capita purchasing power and real consumption both increased nearly 3% in 1962, after very small rises in the previous year. Consumer prices increased by about 1% and the population increased by nearly 3 million, or 1.6%, while incomes after taxes and consumption both increased by well over 5%.

Consumption.—While consumer preferences for various goods and services have been shifting, total real consumption has grown since 1947 at a rather steady rate of a little less than 3.5% per year, approximately twice the rate of population growth (1.8%). Food and clothing acquisitions have increased by about 2% a year. Service spending, in real terms, has grown more than 4% annually, which represents a faster rate than it was in the mid-1950's. This is reflected in increased outlays for medical care, personal business, and education. Public transportation outlays, on the other hand, have risen more slowly than any other service items. Durable goods takings grew abut 4% a year over the period, but recently have fallen below 3%. The purchase of autos and parts, which increased more than 8% a year during the early post-World War II period, has shown little real rise in recent years.

In 1962, per capita real outlays for services increased by about 3%—a slower pace than in the late 1950's—and those for nondurable goods also increased by about 2%.

Real per capita purchases of durable goods, on the other hand, increased by about 6%, after three years of little change or slight decline, reflecting a strong (although not buoyant) demand for furniture, household equipment, and radios and television sets, together with a very strong rise in purchases of new automobiles in the spring and again after the 1963 models were introduced. More than 7 million new passenger cars were sold in 1962, less than half a million below the previous high established in 1955. Private automobile registrations totaled 65.5 million at the end of 1962, a rise of 2.5 million over 1961.

In 1962, state and local government outlays, which are largely to provide education, highway, health and sanitation, and safety services for consumers, also increased about 3% per person after price adjustment.

Per capita outlays for health, both public and private, averaged $170 in the fiscal year 1962, as compared with $107 in 1955 and $81 in 1950. Similarly, outlays for social insurance and welfare averaged $209 per person in 1962, as against $112 in 1955 and $79 in 1950.

The American Family.—Income before taxes of families and unattached individuals averaged $7,020 in 1961, a gain in real terms of 1.3% over the year, compared with an annual average gain since 1947 of 1.8%. In 1961, 47% of all units had incomes before taxes of $6,000 or more; in dollars of the same purchasing power, the comparable ratios were 30% in 1947 and 15% in 1929.

Data for seven major cities surveyed by the Bureau of Labor Statistics as part of a two-year 66-area study, first available in late 1962, showed that families increased their real incomes in the decade of the 1950's by 15–20% in San Francisco, Chicago, New York City, Atlanta, and Washington, D.C.; 23% in Detroit; and more than 40% in Boston. Real expenditures for current living increased by smaller ratios, ranging from 9% to 23%, resulting in substantial increases in assets over liabilities. The average income after taxes in 1960 ranged from $5,412 in Atlanta to $6,869 in Boston, and the average family spent from 86% to 95% of its income for current expenses. In all cities, the long-term downtrend in the proportion spent for food and clothing continued, accompanied by increases in the shares for shelter, automobile purchase and operation, personal insurance, and gifts and contributions.

The birth rate continued to decline during 1961–62 from the postwar peaks of 1957, reaching the lowest levels since 1945. The death rate of infants under 1 year dropped to new lows in 1961 and 1962, approximately half the 1940 rate; and maternal deaths in 1961 averaged less than one tenth of the 1940 rate. Life expectancy at birth in 1960 was nearly 67 years for males and 73 years for females, an increase over the decade of more

than 1½ years for males and 2 years for females. (See also CENSUS DATA, U.S.; DEATH, CAUSES OF.)

The average person made 4.7 physician visits and 1.4 dental visits in the fiscal year 1959.

Income and Savings.—Personal income after taxes increased steadily throughout the year, and the year's average of more than $382 billion was 5.7% above the record set in 1961. About two thirds of the year's rise was in wages and salaries, with the sharpest increase in government and the service industries where employment gains have been largest. The rate of savings averaged 6.8%, about the same as in 1959 and 1961 but less than in most years of the 1950's. (See also INCOME; SAVINGS.)

Individuals' net equity in financial assets increased by $115 billion in 1961 to a year-end total of $890 billion; most of the gain reflected higher market values of stock issues. Debt increased by $15 billion during the year, primarily because of increased mortgages, while currency, deposits, and savings shares increased by nearly $20 billion. The number of persons owning shares in publicly held American corporations increased to 17 million in 1962, from 8.6 million in 1956; nearly 1 out of 6 adults was a shareowner in 1962, twice the ratio of 1956.

Canada.—Real personal consumption increased nearly 3% between 1960 and 1961, despite a rise of less than 2% in the gross national product. The year's increase was sharpest in durable goods outlays, but such services as shelter, medical care and household operation continued to take a growing share of the consumer's dollar.

Housing starts, which had fallen sharply in 1960, were stimulated during 1961 by government action to liberalize lending terms and by eased mortgage credit; by mid-1962 the annual rate was about 140,000 units, about equal to the peak reached in 1959.

The death rate reached a record low in 1961 of 7.7 per thousand population. The birth rate dropped for the fourth year, to 26.1; and the marriage rate also fell, to 7.0—the lowest since the mid-1930's.

Consumer prices rose less than 1% in 1961 and held practically steady in the first half of 1962. Hourly earnings of factory workers increased from $1.78 in 1960 to $1.83 in 1961 and $1.89 by mid-1962.

Latin America.—Living standards have improved at a more modest pace in Latin America in recent years than in the 1950's. Production increased about 4% in 1961—the same rate as in the three previous years—but since population growth was about 2.5%, per capita income increased about 1.6% instead of the 2.5% established as the minimum for the objectives of the Alliance for Progress. Between 1957 and 1961, total apparent consumption increased at an annual rate of about 4%, compared with approximately 5% between 1950 and 1957.

Real consumption per capita advanced strongly between 1960 and 1961 in Venezuela, Puerto Rico, Colombia, Chile, Argentina, and Brazil, and moderately in Guatemala, Peru, and Mexico. The cost of living continued to rise very sharply in Brazil and Argentina, in both 1961 and early 1962, and also increased significantly in Chile and Colombia.

Western Europe.—In most of the industrial countries, total private consumption increased in 1961 at annual rates of 5% to 7%—about the same as the previous year—reflecting rising disposable incomes. The rate of increase fell only in the United Kingdom, from 3.7% to 2%, as a result of restraints, higher indirect taxes, and tighter hire-purchase terms.

Retail sales of consumers durable goods (especially electrical appliances) generally increased more strongly than did textiles or total sales. However, a tendency for consumers to switch from durable goods to clothing, food, and services appeared in some of the wealthier countries. There were fewer refrigerators sold in West Germany in 1961 than in 1960, and the same number of television receiver licenses was issued in both years; similar developments appeared in Sweden and the United Kingdom.

Earlier, the share of consumer expenditures allocated to durables had risen sharply. In Austria, Denmark, Netherlands, Norway, Belgium, and Sweden, the ratio was 7.5–10% in 1950 and 9.5–16% in 1960. Ratios were lower, but rates of growth quite high, in France and the United Kingdom.

In France, at the beginning of 1962, 85% of all households had a radio, 23% had a television set, 35% a refrigerator, 30% a washing machine, and 34% a vacuum cleaner or electric floor waxer; 35% of single adult Frenchmen or families owned automobiles, up from 28% two years earlier.

New registrations of automobiles continued to increase rather rapidly in West Germany, Italy, and Switzerland, but in most other countries the rate of increase was slower than in preceding years. Ownership of autos was 111 per thousand inhabitants in France, 92 in the United Kingdom, and 70 in West Germany, compared with 335 in the United States.

Among the less industrialized countries, there were marked rises in 1961 in both supplies and real consumption in Spain, Greece, Portugal, and Ireland.

Construction of dwellings continued at a high level in 1961, but the rate of gain was slower than in earlier years in many countries because of the strains arising from three years of extremely high production.

Retail prices generally increased more in 1961 than in 1960; increases were especially notable in Austria, Denmark, Norway, and the United Kingdom. Food prices rose sharply in many countries, partly because of poor harvests, but also because of government measures—notably in France, West Germany, and the Scandinavian countries—to raise farm income.

Eastern Europe and USSR.—Increases in real incomes of wage and salary earners varied between 2% and 5% in 1961, as a rise in the output of consumers' manufactures and services more than offset a drop in farm output which occurred in all countries except Poland. Sales of textiles and clothing increased in most countries but, as in previous years, some specific items were scarce and others overabundant. Hungary introduced a consumers' credit scheme for a number of items, and credit facilities were further extended in the Soviet Union, but were curtailed in Czechoslovakia and East Germany.

Dwelling construction increased markedly in 1961 in Czechoslovakia, East Germany, Hungary, and Rumania, and moderately in Poland, but declined, in terms of living area, in the Soviet Union and especially in Bulgaria. Working hours were reduced in the Soviet Union and Czechoslovakia.

In the Soviet Union, the academic year 1961–62 was the first in which 8 years of education was compulsory; entitlement to free higher education also increased, and the number of university and technical students rose. In Rumania also, 8-year schooling is compulsory; and in Czechoslovakia, 9-year schooling was introduced in 1960.

Per capita income rose throughout the 1950's in all countries of the region. The annual rate of growth was between 5% and 6% in Hungary, Poland, and Yugoslavia, somewhat higher in Czechoslovakia, and about 9% in Rumania, Bulgaria, the Soviet Union, and East Germany. The rise reflected largely the shift from agriculture to industry and the increase in the amount of capital per worker.

Wage reform plans in the Soviet Union, intended to narrow income differentials, continued in 1961, with liberalization of income tax, an increase in social security benefits and state outlays for health and education, and an

increase in wages at the lower end of the scale, especially on state farms.

Africa.—Per capita real consumption increased markedly in 1961 in the Rhodesias, moderately in Ethiopia and Ghana, and was relatively steady in the Sudan and South Africa.

There were 5 million organized workers on the African continent in 1962, 2 million more than in 1958. Nearly 60% of the union membership was in the United Arab Republic (UAR), Morocco, Ghana, and South Africa.

Middle East.—Apparent per capita consumption—in terms of food, major textile items, and major consumer durables—increased in 1961 about 2–5% in Jordan, Iraq and Syria, and by more than 6% in Israel, but remained stationary in the UAR and Turkey. In the region as a whole, gross per capita real income increased from $183 in 1957 to $193 (at 1957 prices) in 1960; considerable declines in Cyprus and Syria and a minor decline in Jordan were offset by rises in Iran, Iraq, Israel, Lebanon, Turkey, and the UAR.

Far East.—A recent United Nations survey of economic growth showed that real per capita private consumption increased during the 1950's in all the private enterprise economies of the region except Pakistan. The annual growth rate averaged 7% in Japan, 5% in Taiwan, between 2% and 3% in the Philippines, Burma, Thailand, and South Korea, and 1.2% or less in Ceylon, India, and Indonesia. Housing standards apparently improved only slightly, if at all, during the decade, with the rate of new construction at the end of the period still below replacement and population growth needs; rates were high only in Ceylon, Japan, and Thailand. Per capita supplies of food and clothing also increased slowly or negligibly. Income levels, except in the Federation of Malaya, Japan, and the Philippines, continued to be among the lowest in the world.

Mortality rates have been lowered in all countries of the region, however, reflecting eradication of malaria, prevention of tuberculosis, and improved prenatal and maternity care.

Between 1960 and 1961, per capita real consumption increased 2–5% in most countries, with sharper rates of growth in India, Pakistan, and Taiwan, little change in Indonesia, and some decline in South Korea.

The percentage of school-age population enrolled in school (excluding mainland China, Nepal, and South Vietnam) increased from 9.2 in 1951 to 11.2 in 1958; in mainland China the reported ratios increased from 8.2 to 14.5.

Oceania.—Per capita supplies declined in Australia between 1960 and 1961, and consumption was unchanged, reflecting disinflationary measures introduced in late 1960 which depressed demand and increased unemployment. Policies were changed during 1961, so that the economy was again rising in 1962. Consumer prices increased about 2% in 1961 after a 4% rise the year earlier, and held steady during the first half of 1962. Factory wages have been rising somewhat more rapidly. In early 1962 it was announced that there would be no change in the federal basic wage in 1962, following an increase of U.S.$1.30 in July 1961.

In New Zealand, output and consumption both increased between 1% and 3% per capita in 1961, and unemployment fell to very low levels. Consumer prices increased about 1% in both 1960 and 1961, but advanced 4% between June 1961 and June 1962. Factory wages increased 7% in 1960 and 3% in 1961, but held virtually steady in early 1962.

(See also COST OF LIVING.)

HYMAN L. LEWIS,
Chief, Office of Labor Economics, Bureau of Labor Statistics, U.S. Department of Labor.

STARS. See ASTRONOMY.

STATE DEPARTMENT, U.S. See FOREIGN POLICY OF THE U.S.; UNITED STATES.

STATE GUARD. See NATIONAL GUARD.

STEEL. See IRON AND STEEL.

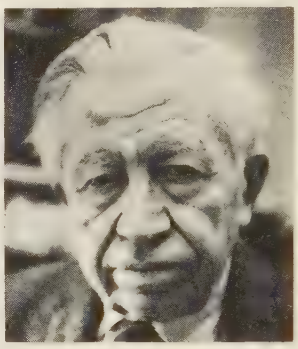
STEFANSSON, Vilhjalmur

U.S. Arctic explorer and writer: b. Arnes, Manitoba, Canada, Nov. 3, 1879; d. Hanover, N.H., Aug. 26, 1962.

Born to Icelandic immigrants who shortly moved to North Dakota, Stefansson was educated at the state universities of North Dakota and Iowa (A.B., 1903), then studied theology and anthropology at Harvard University, where he became an assistant instructor in anthropology. Trips to Iceland in 1904 and 1905 aroused a permanent interest in the Arctic, and over a period of 14 years he spent 10 winters and 13 summers in northern areas on a series of expeditions on which he explored much new territory, survived many dangers, and acquired a mass of information about Arctic regions and their peoples, though he never reached the North Pole.

During 1906 and 1907, Stefansson did ethnological work in the Mackenzie River delta and northern Alaska under a Harvard-Toronto University expedition. From 1908 to 1912 he surveyed the central Arctic coast for the American Museum of Natural History and the Geological Survey of Canada. Under the auspices of the Canadian government, he continued his explorations from 1913 to 1918 as commander of the Canadian Arctic Expedition. Using dog sleds after the ship *Karluk* was lost in 1914, he mapped large areas of the Arctic coast and Canadian Arctic Archipelago, studied the Eskimos, and demonstrated the feasibility of living off the country, even on ice floes, without outside supplies.

Stefansson became convinced that Arctic exploration could best be carried out by aircraft,



Vilhjalmur Stefansson (1879–1962)

WIDE WORLD

and made no long Arctic trips after his return in 1918. He wrote and lectured in support of Arctic economic development, contributing 24 authoritative books and at least 400 technical and popular articles covering many facets of northern regions, including anthropology, geography, geology, economics, linguistics, ethnology, and religion.

As early as 1922, Stefansson had predicted the regular use of polar routes for air travel between North America and Europe (initiated in 1952); and from 1932 to 1945 he was adviser on northern operations to Pan American World Airways. He also forecast travel under Arctic ice by submarines. His *Arctic Manual*, prepared for the U.S. Air Corps in 1935, proved valuable during World War II in teaching troops how to survive under Arctic conditions. In 1947 he became the Arctic consultant to the Northern Studies Program at Dartmouth College. He built up the Stefansson Collection of thousands of books and manuscripts on the Arctic, which was transferred to Dartmouth in 1951 and purchased by the college in 1953.

His writings include: *My Life With the Eskimo* (1913), *The Friendly Arctic* (1921), *The Northward Course of Empire* (1922), *Hunters of the Great North* (1922), *The Adventure of Wrangel Island* (1925), *Greenland* (1942), *The Arctic in Fact and Fable* (1945), *Not by Bread Alone* (1946), *Northwest to Fortune* (1958), and *Cancer: Disease of Civilization?* (1960).

STEINBECK, John Ernst. See NOBEL PRIZES.

STEREOPHONIC RECORDINGS. See RECORDINGS.

STERLING AREA. See Index entry.

STEVENSON, Adlai Ewing

U.S. ambassador to the United Nations: b. Los Angeles, Calif., Feb. 5, 1900.

An article in the Dec. 8, 1962, issue of *The Saturday Evening Post* raised a storm of contro-

versy about Adlai Stevenson that tended to overshadow his many accomplishments during the year.

Educated at Princeton University (B.A. 1922), Harvard Law School, and Northwestern University Law School (J.D., 1926), Stevenson was associated with several Chicago law firms in the practice of corporate law (1927–33, 1935–41, 1953–60). He served with the Agricultural Adjustment Administration (1933–34) and as special assistant to the secretary of the navy (1941–44). Named a special assistant to the secretary of state, he served as adviser to the U.S. delegation to the United Nations Conference on International Organization (San Francisco, 1945) and the Preparatory Commission of the United Nations (London, 1945). In 1946–47 he was senior adviser and later alternate delegate with the United States delegation to the UN General Assembly.

In his first candidacy for public office, he was elected Democratic governor of Illinois for the 1949–53 term. Drafted as the Democratic candidate in the 1952 presidential elections, he was decisively defeated by Dwight D. Eisenhower. In 1956 he sought and obtained the nomination but lost to Eisenhower again. An attempt to gain the nomination for him for the third time failed in 1960. He assumed his duties as ambassador to the United Nations on Jan. 23, 1961.

Distinguishing himself by the skillful conduct of his difficult role as head of the United States delegation to the United Nations, Adlai Stevenson remained throughout 1962 a consistent supporter of the United Nations and of settlement of international disputes through negotiation. Testifying on February 7 before the Senate Foreign Relations Committee in favor of United States purchases of United Nations bonds, he declared that the survival of the United Nations would be worth a gift, not simply a loan, of $100 million. In a speech at the dedication of the United Nations Pavilion at the Seattle World's Fair on June 19, he defended the equality of voting rights and representation in the United Nations against sharp criticism directed chiefly against the imbalance between voting strength in the United Nations and effective national power.

Stevenson's able handling of the Cuban issue before the United Nations on October 23 and the critical days that followed strengthened support for the United States position among other nations. Nevertheless, the Cuban issue was also responsible for the political storm in which he found himself as a result of the *Saturday Evening Post* article (written by two journalists close to the president), about which press reports began to appear on December 1.

The article, purporting to present the inside story of the secret National Security Council deliberations leading to the decision to impose a naval quarantine on Cuba, described Stevenson's position as "soft." One "nonadmiring official" was quoted as having declared later: "Adlai wanted a Munich. He wanted to trade the Turkish, Italian, and British missile bases for the Cuban bases." Stevenson flatly denied the charges, although he refused to divulge details of the secret proceedings. On December 4, in a "Dear Adlai" letter, President Kennedy expressed his continued confidence in the ambassador's work at the United Nations and appreciation for his role in the Cuban crisis. Nevertheless, rumors persisted that Kennedy was at least indirectly responsible for the access to reports of the secret proceedings given the authors of the article, and many observers voiced doubts as to Stevenson's future in the United Nations.

STIKKER, Dirk Uipko

Dutch diplomat and statesman: b. Winschoten, the Netherlands, Feb. 5, 1897.

A financial expert and former foreign minister of the Netherlands, Dirk U. Stikker succeeded Paul-Henri Spaak of Belgium as secretary general of the North Atlantic Treaty Organization on April 21, 1961. He has advocated an independent nuclear striking force for NATO. (See also North Atlantic Treaty Organization.)

After graduating from the University of Groningen (LL.D., 1922), Stikker entered banking and rapidly rose to the position of western area manager of the Twentsche Bank, one of the largest in the Netherlands. From 1935 to 1948 he directed the huge Heineken's Brewery interests in Holland and abroad. During World War II he helped to finance the Dutch resistance movement. President of an employers' association before the war, in 1945 he was instrumental in organizing cooperation between employers and trade unions in the Foundation of Labor, which speeded the Netherlands' postwar economic recovery.

Stikker entered politics in 1946 as leader of the Party of Freedom and a member of the upper chamber of the Dutch Parliament. When his party merged with other Liberal groups, he became president of the newly formed Party for Freedom and Democracy (1948).

While minister of foreign affairs (1948–52) in the coalition governments of Labor Party leader Willem Drees, Stikker guided his nation through the difficult period of negotiating Indonesian independence and the first steps toward western European unity. He was Council chairman (1950–52) of the Organization for European Economic Cooperation (OEEC), coordinating body for the distribution of Marshall Plan aid and forerunner of the Atlantic Community; he participated in the creation of the European Coal and Steel Community (1952), predecessor of the Common Market; and he signed the NATO Treaty (1949) for the Netherlands. From 1952 to 1958 he was ambassador to Great Britain, and from 1958 to 1961 was the permanent Dutch representative on the NATO Council and ambassador to the OEEC.

STOCKS AND BONDS

The sharpest decline in a quarter of a century reduced the net worth of common stockholders in the United States by an estimated $150 billion in 1962. From its historic top in December 1961 to its low in June 1962, the stock market lost almost 30%. At their bottom, average listed stock prices were back to mid-1956 levels. Over-the-counter stocks lost even more. Investment-grade issues were less heavily sold than the "growth" stocks that had been heavily traded in the closing stages of the preceding bull market, but no groups escaped the pressure of liquidation.

Several reasons have been advanced for the decline. The first is that stocks had reached levels that could be supported only by continuing and rapid expansion of earnings and dividends. At their peak late in 1961, industrial issues, as measured by the Standard & Poor's index, were selling at an average of almost 23 times earnings, to yield only about 2.7%.

Ticker tape and papers litter floor of the New York Stock Exchange on May 29 after hectic trading session halted the previous day's sharp drop in prices of stocks and bonds.

UPI

The second is that profits slid off slightly in the first quarter of 1962, and President Kennedy dramatized the end of the wage-price spiral when he forced the steel industry to cancel a price increase in April. Later forecasts that the rate of business expansion would slow down also contributed to speculative caution. Finally, the American bear market was partly in sympathy with a world movement; many foreign stock exchanges had been dropping long before the decline got under way in the United States.

After a technical recovery from the June 1962 lows, aided by a cut in margin requirements from 70% to 50% on July 10, stocks began drifting downward again in August, reaching an October selling climax at the time of the Cuban crisis. As shown in the following tabulation of important fluctuations by the Standard & Poor's stock price indexes (1941–43 = 10), October's lows almost duplicated the June bottoms, which were pierced by many individual stocks. A sharp recovery followed.

	Date[1]	Industrials	Rails	Utilities	500 Stocks
1961 low	Jan. 3	60.47	29.28	50.98	57.17
1961 high	Dec. 13	77.22	35.42	68.43	73.13
1961 close	Dec. 29	75.72	33.25	65.83	71.55
1962 high	Jan. 1	76.13	34.69	65.39	71.96
Declined to	June 25	53.77	26.41	48.39	51.35
Rose to	Aug. 23	63.28	28.74	58.16	60.33
Declined to	Oct. 24	54.79	26.70	52.22	52.55
1962 Close	Dec. 31	66.00	32.73	61.09	63.10

[1] Dates are for industrials. Rail and utility highs and lows in some instances occurred on other dates.

Although volume of trading was extremely heavy on panic days, reaching 14.8 million shares on "black Tuesday" (May 28, when prices dropped 6.5% in a single session), total turnover for the year dropped to 962 million shares from the near-record of 1,021 million reported in 1961.

A feature of the 1962 market was a wide increase in short selling. The short interest reached 6,080 million shares in mid-October, the greatest number since 1958. Another feature was a sharp drop in sale of shares by mutual funds, which reached $134 million in September 1962 (compared with $236 million in September 1961), the smallest total for any month since 1958. This decline reflected not only the general market atmosphere but also criticism of certain fund practices by the Wharton School of Economics report to the Securities and Exchange Commission. At no time, however, did sale of mutual fund shares to the public drop near the volume of redemptions by fund shareholders.

Volume of trading in bonds in 1962 was about the same as that of 1961. On the New York Stock Exchange alone, it amounted to $1,455 million, as compared with $1,636 million the year before, which was the largest since 1945.

Bond prices were generally firm as investors sought refuge from gyrations of the stock market. Conversely, yields declined. At the beginning of the year, AAA (highest grade) corporate issues yielded an average of 4.426%; at its close, that yield had dropped to 4.374%.

Money market factors were for the most part little changed during the year. Demand for bank credit rose only moderately. Both the discount rate and the prime New York commercial loan rate were unaltered at 3% and 4½%, respectively. Open market operations of the Federal Reserve Board resulted in only gradual contraction of free bank reserves, and the Federal Reserve Board ensured that banks had ample funds to meet heavy year-end credit needs by reducing reserve requirements against commercial bank time deposits from 5% to 4%.

New offerings of corporate bonds remained fairly heavy; in the first ten months of 1962 they totaled $7,332 million, against $7,779 million a year earlier. Common stock offerings, on the other hand, declined sharply. In the first ten months they amounted to only $1,222 million, as compared with $2,805 million in the corresponding 1961 period. State and municipal flotations reached a record volume of $7.4 billion in the first ten months, compared with $6.7 billion in the same period of 1961.

(See also BANKING; PUBLIC UTILITIES.)

LEWIS L. SCHELLBACH,
Senior Vice President,
Standard & Poor's Corporation.

STRAWBERRIES. See FRUITS.

STRIKES AND WALKOUTS. See Index entry.

SUBMARINES. See Index entry.

SUBVERSIVE ACTIVITIES. See Index entry.

SUDAN

Formerly the Anglo-Egyptian Sudan, the Republic of the Sudan is strategically situated in northeast Africa, bordering on the Red Sea. It has an area of 967,000 square miles, and is the largest country in Africa. The Sudan's population (1961 est.) is 12,109,000, largely concentrated along the Blue Nile and White Nile. About two thirds of the population lives in the north and is largely Arab; the population in the south is mainly Negroid. Principal cities and populations (1961 est.) are: Khartoum, the capital (312,465, including the adjoining cities of Omdurman and Khartoum North); El Obeid, 56,970; Wad Madani, 53,677; Port Sudan, 47,561 (1956); Kassala, 44,182; and Atbara, 36,298 (1956). Arabic is the official language; many central African languages are spoken in the south.

Government.—From Jan. 1, 1956, when the country became independent, until November 1958, the Sudan was governed under a transitional constitution providing for a parliamentary system of government. A coalition Council of Ministers (cabinet), composed of members of the Umma Party and the People's Democratic Party, under Prime Minister Abdullah Khalil (Umma), took office following the elections early in 1958 and served until the seizure of power by the army on Nov. 17, 1958. The Sudan has since been governed by the Supreme Council of the Armed Forces and the Council of Ministers, both headed by Gen. Ibrahim Abboud. Parliament is suspended, and political parties are proscribed.

Religion and Education.—The people in the north are mainly Muslims, belonging to the unorthodox Ansari sect or the orthodox Khatmia sect. The people in the south are animists or Christians.

An estimated 6% of the people are literate; only 8% of the school-age population attends school. In 1960–61 there were 2,551 government schools (337,025 pupils); 74 other schools (43,399); 21 technical schools (3,122); 9 teacher-training schools (1,234); and the University of Khartoum, with over 1,200 students.

Finance.—Budget for the fiscal year ending July 1963: revenue, £Sd61.0 million; expenditure, £Sd52.1 million. (The Sudanese pound, £Sd, equals U.S.$2.872.) The 1961–62 fiscal year closed with a surplus of £Sd10.5 million, compared with a budgeted surplus of £Sd6.7 million. From July 1959 to July 1960 the foreign exchange reserves doubled from £Sd27.0 million to nearly £Sd55.0 million; by July 1961 the reserves increased to £Sd60.8 million, but decreased to £Sd54.0 million as of July 1, 1962.

Transportation and Communications.—Few if any countries of the world are more dependent on railways than the Sudan, which has few modern roads. A 2,800-mile railway network connects Wadi Halfa in the north with Atbara, Port Sudan, Khartoum, Kassala, and Sennar. From Sennar one line extends along the Blue Nile to Roseires near the Ethiopian border; a second line extends west to Kosti, El Obeid, and Nyala. Construction of a new 280-mile line south from Babanusa, in Kordofan Province, to Wau, in Bahr el Ghazel Province, was completed in March 1962.

Government-operated steamers ply the Nile from Juba in the south to Khartoum. The government-owned Sudan Airlines operates scheduled internal and foreign service, with 14 foreign airlines providing additional scheduled flights to the Sudan. In 1962, Sudan inaugurated its merchant fleet (see below *Events, 1962*).

As of Jan. 1, 1961, there were 12,716 passenger cars, 11,744 trucks, and 2,483 taxis. In 1960 there were 24,500 telephones; radios numbered about 10,000 in 1959.

Production.—About 90% of the population is engaged in agriculture or stock raising, which accounted in 1960–61 for 57% of the gross national product of £Sd357.2 million. Cotton, the most important crop, provides for about 50% of the total value of exports. The 1961–62 crop of 1,137,221 bales (1 bale equals 420 pounds) was the largest Sudanese cotton crop on record (616,502 bales in

1960–61). Gum arabic is the second most important export crop, and the Sudan provides 80 to 90% of the world's supply. Up to Aug. 23, 1962, 44,049 tons of gum arabic had been collected, compared with 44,623 tons for the same period in 1961. Other important crops include durra (or sorghum, the major subsistence crop), wheat, peanuts, corn, barley, beans, melons, dates, coffee, rice, and tobacco.

Foreign Trade.—In 1961 there was an unfavorable balance of trade of £Sd19.3 million, compared with a slight favorable balance of £Sd0.38 million in 1960. Exports in 1961 amounted to £Sd62.22 million (£Sd63.35 million in 1960); imports were £Sd81.52 million (£Sd62.97 million in 1960). Principal exports in 1961 (in million £Sd): cotton, 31.2 (33.15 in 1960); and gum arabic, 6.13 (6.97). Other important export crops included peanuts, sesame, durra, and livestock.

Events, 1962.—On January 28, Abdullah Khalil and Ismail al-Azhari, former prime ministers, and 10 other ministers were released from jail. They had been detained since July 1961 for having signed a telegram which criticized the government of President Abboud.

The visit on February 15–18 of Yugoslav President Tito helped to strengthen relations between Sudan and Yugoslavia. On February 20 a frontier demarcation agreement between the Sudan and Chad was concluded. President Abboud paid an official visit in April to West Germany, where he was said to have laid the ground for increased German economic aid to Sudan.

The new Industrial Bank of the Sudan began banking operations on August 15. The bank was created to assist and promote the establishment and expansion of privately owned and operated industrial enterprises. The bank's paid-up share of capital was equivalent to $1.4 million, and it also obtained a government loan for the same amount.

The 4,750-ton *Sennar*, first of two ships for Sudan's new merchant fleet, was delivered at Port Sudan in early spring. An additional four ships are to be chartered by the Sudan Maritime Lines, a joint Sudanese–Yugoslav enterprise.

On May 10 a sugar mill located at Guneid, 40 miles south of Khartoum, started production with an initial yearly capacity of 60,000 tons. The Sudanese American Textile Company began operations with an annual capacity of 15 to 20 million square yards; eventual output is scheduled to be increased to 80 million.

In September the government announced a new 10-year development plan (1962–71), which includes 260 projects and is estimated to cost £Sd512 million. Main projects are the Roseires Dam (£Sd35.7 million), Khasm el Gerba Dam (£Sd14.5 million), development of education facilities (£Sd34.2 million), completion of the Mangil Extension of the Gezira Scheme (£Sd14.5 million), railway extension (£Sd35.0 million), and the resettlement of the Wadi Halfa population (£Sd20.0 million), due to flooding caused by the construction of the Aswân High Dam in the United Arab Republic. The government estimates that as a result of these projects the gross national product will be increased by 63%, and per capita income by 23%.

The Mangil Extension, started in 1956 and completed in 1962, added 830,000 acres of new land to the 1 million already under irrigation in the Gezira area southeast of Khartoum on the Blue Nile. An additional 1 million acres will be irrigated by water from the Roseires Dam under construction.

The Merille tribesmen who have been raiding Ethiopia from Kenya also raided villages in the Sudan during the year. On September 1, 32 raiders were killed near the village of Kamathia.

Sudan broke its informal links with the sterling area on February 3 and declared itself "an independent monetary area." The first effect of the new monetary status was the announcement on February 7 that the Bank of Sudan will handle all foreign currency balances and foreign investments formerly handled by the Bank of England.

FOREST G. WARREN,
Senior Economist,
Export-Import Bank of Washington.

SUDAN, French. See MALI.

SUEZ CANAL. See CANALS; UNITED ARAB REPUBLIC.

SUGAR

Production of sugar beets for sugar in the United States in 1962 was estimated in December at a record 18,169,000 tons by the Statistical Reporting Service of the U.S. Department of Agriculture. This compared favorably with an output in 1961 of 17,704,000 tons and the 10-year average of 13,613,000 tons. The 1962 yield per acre was estimated at 16.4 tons, the same as in 1961 and slightly lower than the 1951–60 average of 16.7 tons.

Production of sugarcane for sugar and seed (including that of Hawaii) was estimated at 21,462,000 tons, 7% above the 1961 output of 19,737,000 tons.

About 1,104,700 acres of sugar beets were harvested in 1962, compared with 1,077,000 acres in 1961 and the 1951–60 average of 813,000 acres. Acreage of sugarcane (including that of Hawaii) was 540,000 in 1962, as against 474,800 the year before.

U.S. PRODUCTION OF SUGAR BEETS AND SUGARCANE
(In thousand short tons)

State	Average 1951–60	1961	Est. 1962
Sugar beets:			
Ohio	244	307	415
Michigan	832	1,178	1,077
Wisconsin	81	65	...
Minnesota	779	1,258	1,038
North Dakota	404	592	565
South Dakota	62	94	120
Nebraska	880	1,155	945
Kansas	94	162	248
Montana	720	893	843
Idaho	1,559	2,272	2,453
Wyoming	518	706	614
Colorado	2,094	2,449	2,739
Utah	454	323	412
Washington	685	1,290	1,330
Oregon	417	478	501
California	3,710	4,388	4,766
Other states	78	94	103
United States	13,613	17,664	18,169
Sugarcane:			
Louisiana	5,671	7,683	5,944
Florida	1,417	2,308	5,244
Hawaii	9,142[1]	9,746	10,274
United States	...	19,737	21,462

[1] 1959–60 average.

United States sugar requirements for the calendar year 1962 were first set at 9,500,000 tons. This was 200,000 tons below anticipated sugar needs. The action was designed to achieve prices which would fairly and equitably maintain and protect the welfare of the domestic sugar industry. Requirements were later raised to 10,000,000 tons.

Despite a decline in Cuban output of 800,000 tons, world production of centrifugal sugar in the May 1962–April 1963 season was expected to be approximately 56,220,000 short tons, raw value, compared with 56,020,000 in the previous year and the record of 60,077,000 tons in 1960–61.

Production from sugarcane—at about 32.8 million tons—was expected to be about 835,000 tons higher than in 1961–62. Production of sugar beets, however, was forecast at only 23.4 million tons, which would be about 635,000 tons less than in 1961–62.

Higher production in the United States, Mexico, South America, Africa, Asia, and Oceania more than offset decreases in Cuba, western Europe, and eastern Europe (including the USSR).

WIDE WORLD

Members of the Supreme Court pose on November 19 for first new photograph in several years. In front, left to right, are Associate Justices Clark and Black, Chief Justice Warren, and Associate Justices Douglas and Harlan; in back are Associate Justices White, Brennan, Stewart, and Goldberg.

CENTRIFUGAL SUGAR PRODUCTION, BY MAJOR COUNTRIES[1]

(In thousand short tons, raw value)

Country	Average 1955–56 through 1959–60	1961–62	Prelim. 1962–63
Argentina	906	754	841
Australia	1,428	1,512	1,966
Brazil	3,110	3,928	3,950
Cuba	5,883	5,400	4,600
Dominican Republic	833	960	900
France[2]	1,571	1,878	1,648
Germany, West[2]	1,590	1,585	1,779
Hawaii	1,013	1,100	1,100
India	2,737	3,775	4,128
Indonesia	903	707	783
Italy[2]	1,271	1,033	1,047
Mexico	1,380	1,649	1,791
Peru	800	904	937
Philippines	1,356	1,668	1,739
Poland[2]	1,152	1,662	1,433
Puerto Rico	1,036	1,050	1,100
South Africa	989	1,174	1,300
Taiwan	963	800	800
USSR[2]	5,552	7,300	7,200
United Kingdom[2]	818	926	851
United States (continental):			
Beet	2,088	2,440	2,650
Cane	572	858	960
World:			
Cane	29,197	31,975	32,811
Beet	20,214	24,045	23,409
Total	49,411	56,020	56,220

[1] Centrifugal sugar includes cane and beet sugar produced by the centrifugal process, and is the principal kind used in international trade. The production of each country is credited to the May–April year in which harvesting and sugar production began. [2] Beet sugar.

C. J. Enzler,
Information Specialist, Office of Information, U.S. Department of Agriculture.

SUICIDES. See Index entry.

SUKARNO. See biographical sketch in the article Indonesia.

SULFUR

In 1961 world output of sulfur in all forms was 7% higher than in 1960, and set a new record. United States contribution to the total world output of elemental sulfur was 15%, the same as in 1960.

United States sulfur output in 1961 included increases of 9% in Frasch sulfur and 12% in recovered sulfur. Total imports included 649,000 long tons of Frasch sulfur from Mexico (which went principally to east coast markets) and 182,000 tons of sulfur from Canada (the recoverable sulfur went to Northwest markets). Exports declined because of a slower rate of industrial growth in the overseas market. In the first 10 months of 1962, output of native sulfur was 3,709,150 long tons and that of byproduct sulfur was 650,752 tons.

(See Mineral Production for table showing output by major sulfur-producing countries.)

SULFUR IN THE UNITED STATES

(Thousands of long tons)

	1958	1959	1960	1961
Total output	6,141.2	6,167.7	6,660.5	7,170.3
Native sulfur	4,645.6	4,639.8	5,037.3	5,477.5
Pyrite[1]	403.4	436.9	416.2	398.5
Byproduct acid[1]	359.7	316.6	345.1	332.0
Byproduct sulfur	640.1	686.4	766.5	856.0
Byproduct compound[1]	92.4	88.0	95.4	106.3
Exports	1,602.1	1,635.6	1,786.5	1,596.0
Domestic consumption (apparent)	5,262.8	5,917.1	5,863.5	5,435.5
Stocks[2]	4,619.0	3,950.0	3,777.8	4,813.5

[1] Sulfur content. [2] Frasch and recovered sulfur. (Source: U.S. Bureau of Mines.)

SULFURIC ACID. See Index entry.

SUMATRA. See Indonesia.

SUN. See Astronomy and the Index entry, *Sun*.

SUPREME COURT, U.S.

On Jan. 1, 1963, the personnel of the Supreme Court of the United States was as follows: chief justice, Earl Warren; associate justices, Hugo L. Black, William O. Douglas, Tom C. Clark, John M. Harlan, William J. Brennan, Jr., Potter Stewart, Byron R. White (q.v.), and Arthur J. Goldberg (q.v.). Justice White replaced Charles E. Whittaker, who retired March 29, 1962, and Justice Goldberg succeeded Felix Frankfurter, whose retirement was announced Aug. 29, 1962. The two Kennedy appointees, both Democrats, change the court's political alignment to six Democrats and three Republicans. The salary of the chief justice is $35,500, and that of the associate justices is $35,000.

During the term which began in October 1961 and ended in June 1962, the Supreme Court handed down 101 opinions, of which 16 were per curiam. Sixty-three per cent of these cases were decided by a divided court, with five cases being 5–4 decisions. There were three 5–3 opinions, seven 4–3 opinions, and one case decided by an evenly divided court. Because of illness and changes in the court, the figures are not readily comparable with those of other years. Seventy-seven cases (all but 24) involved either the government of the United States or of a state. Of the cases decided by opinion in which the federal government was a party, 14 involved criminal law, 8 dealt with federal taxation, 9 involved business regulation, and 5 concerned labor relations.

Justices Black and Stewart each wrote 12 opinions, the most written by any one justice. They were closely followed by Justices Douglas and Clark (11 each) and by Chief Justice Warren and Justices Harlan and Brennan (10 each). Justice Harlan was the chief dissenter, with 29 such votes. The court disposed of 2,157 cases during the 1961–62 term, leaving 428 cases on the docket at the end of the session.

(For a discussion of the Supreme Court's principal decisions in 1961–62, see Law; United States.)

Richard L. Hirshberg,
Attorney at Law.

SURGERY

Among the developments in surgery reported in 1962 were the treatment of ulcers through local cooling of the stomach, the use of dextran to im-

prove the flow of blood, and the use of heat with radiation to treat cancer.

Gastric Hypothermia.—Control of massive hemorrhage from the stomach by local cooling was reported in 1958 from the Department of Surgery of the University of Minnesota Medical School by Dr. Owen Wangensteen and his colleagues. Cooling was achieved by continuous perfusion of an admixture of absolute alcohol and ice water through an inlying stomach balloon. From the beginning, investigators believed that the suspension of gastric digestion observed during cooling could influence favorably the ulcer diathesis.

Wangensteen indicated that the critical temperature for freezing the stomach lining for an hour without injury was in the area of −25°C. Alcohol was used as a coolant, with the addition of a "booster" of frozen carbon dioxide.

These investigators reported on 24 duodenal ulcer patients, 10 of them in some detail. An 87% decrease in overnight secretion of gastric juice and a decrease in the amount of free acid within the stomach was shown by the 10, whose stomachs were frozen at −17° to −20°C. for an hour. Six had no free acid when studied later, and all had relief from stomach symptoms.

Patients with gastric ulcers appeared less able to tolerate the distension of the gastric balloon during the cooling procedure.

It was concluded that the secretion of gastric juice may be suppressed by prolonged gastric cooling, especially by an hour of actual freezing of the stomach during which the stomach lining is maintained at a temperature of −10° to −15°C. for more than half that time. Another effect was the disappearance of the hormonal response to food, a response which produces further secretion of acid and digestive enzymes by the stomach lining.

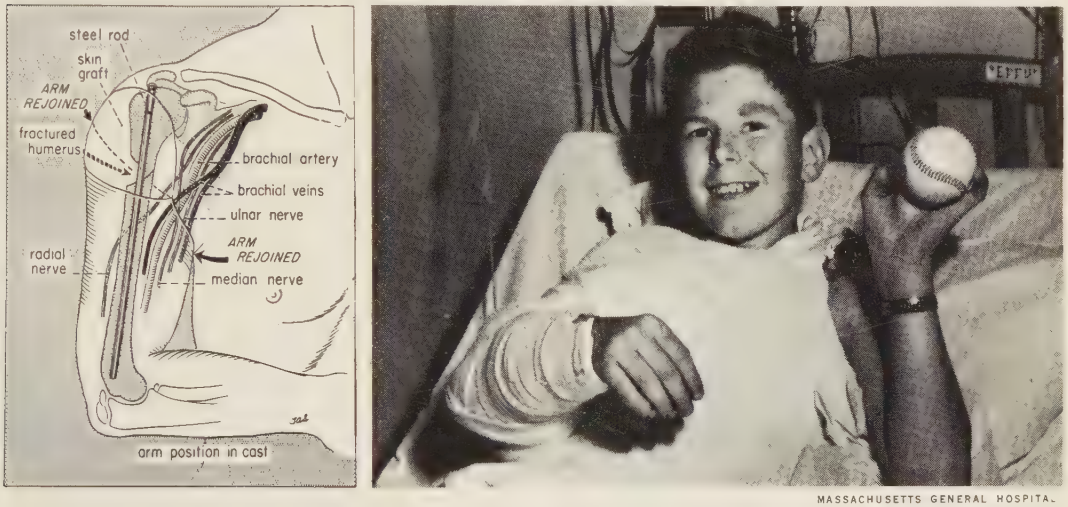
The authors indicated that freezing of the stomach lining had become useful in the control of many manifestations of peptic ulcer, that symptomatic relief of symptoms was the rule, and that the treatment was followed quite regularly by X-ray evidence of healing of duodenal ulcers. In animals the potential digestive activity of gastric juice had been suspended for an indefinite period, producing a "physiological gastrectomy." When well controlled, no harm was observed to attend the actual freezing of the stomach.

Dextran.—A substance used extensively as a substitute for whole blood and plasma, dextran is a water-soluble high-molecular carbohydrate which is formed in solutions of sugar (sucrose) infected with the bacterium *Leuconostoc mesenteroides*. The dextran molecule is built of glucose units linked in long, branched chains. The molecular weight of dextran may be very high, of the order of magnitude of many millions. By partial hydrolysis, dextran preparations of lower molecular weight can be made.

Native dextran of very high molecular weight produces severe aggregation of blood cells in blood vessels. Dextran fractions of molecular weights below 80,000, however, not only have no aggregating effect, but also reverse aggregations. Various sized aggregates were studied. Molecular weight distribution had to be regulated within narrow limits, since low-molecular-weight dextran is rapidly excreted through the kidney. Two varieties are now used clinically: a low-molecular-weight material, used as a "flow-improver" when capillary flow is impaired by aggregation of blood cells; and a larger-molecular compound, used when a pure plasma-expanding effect and some delay in the excretion of the dextran are desired.

At the annual Clinical Congress of the American College of Surgeons in Chicago in October 1961, Dr. D. Lepley, Jr., Dr. C. J. Mani, and Dr. Edwin H. Ellison, from the Division of Surgery of the Marquette University School of Medicine, reported on studies of the acute occlusion of the superior mesenteric vein, which drains the uppermost portion of the intestinal tract. Within one-half hour after occlusion, the intestines of all experimental animals became purple and swollen and lost all motility, and each animal succumbed. In all studies, the animals were given a specified amount of fluid, regulated by the weight of the animal, during a one-hour period. One hour after this infusion of fluid, the ligature was removed from the vein. Appropriate antibiotics were also given.

An infusion of normal salt solution was also given in the manner described, and again there were no survivors. Medium-molecular-weight dextran, the volume-expanding variety, was then given in the same dosage. Of the animals so treated, 40% survived and some weeks later were found to have grossly normal intestinal tracts.



MASSACHUSETTS GENERAL HOSPITAL

Everett Knowles, 3d, age 12, whose right arm was severed at the shoulder in a train accident on May 23, is shown in Massachusetts General Hospital, Boston, after the arm was sewn back. Diagram (left) illustrates the intricate surgery involved.

When low-molecular-weight dextran was used, a 20% mortality occurred. In further studies, the middle cerebral artery in the brains of dogs were occluded, whereupon all of the animals developed areas of death of brain tissue. An infusion of low-molecular weight dextran immediately prior to the occlusion of the artery resulted in much smaller areas of permanent damage.

Dextran has also been used to treat vascular disease patients. Operations of the smaller arteries had not been as successful as those on larger ones, and operations on arteries of 3 millimeters or less in external diameter had been almost universally unsuccessful owing to postoperative thrombus formation. At the Forum on Progress in Surgery at the Southeastern Surgical Congress in Louisville, Ky., a gold-medal paper by Dr. Milton F. Bryant, Dr. S. S. Brewer, and Dr. W. L. Blood, of Atlanta, Ga., reported investigations of thrombosis in small arteries of experimental animals treated by the infusion of dextran solutions. In these studies, the artery was opened and its lining removed for a small distance. The artery then was closed and observed. Approximately 90% of the arteries so treated were occluded by blood clots within two hours. The patency rate following the administration of dextran, however, was 90%. Several patients who required removal of arteriosclerotic obstructions from arteries measuring 3 millimeters or less in external diameter were given a dextran solution, and patency of the vessel was maintained in each case.

At the University Hospital in Baltimore, Dr. C. Thomas Flotte and Dr. E. F. Cox demonstrated the effectiveness of these solutions in treating acute occlusions of leg veins occurring after injury and pregnancy and in certain disease states. Among patients admitted to a large charity hospital in the South, it was estimated that 0.19% developed a blood clot in the leg vein, which in some cases broke off, became entrapped in a large vessel in the lung, and resulted in death. In this hospital in 12 years 1,223 patients suffered from this entity. Dextran was expected to have outstanding value in such cases. It has none of the drawbacks of other drugs used to prevent blood coagulation.

Heat Therapy for Cancer.—Many cancers are more susceptible to destruction by heat than are the tissues they grow in. Heat treatment was explored and used on humans by Dr. George Crile, Jr., at the Cleveland Clinic, Cleveland, Ohio, who also observed that heat acts synergistically, or perhaps additively, with roentgen irradiation in the treatment of certain cancers.

In June 1960 it was noted that a mouse tumor regressed after exposure to a temperature of 42°C. for two hours. This effect was reproducible. Pigmented tumors (melanomas) implanted on the feet of mice were sometimes destroyed by immersion for 30 minutes in water at 44°C., the temperature of a comfortably hot bath. In most instances, there was no damage to the normal tissues of the foot. Animals cured at the end of 21 days had no recurrence during three months of later observation.

The tumor had been moderately resistant to X-ray irradiation in doses up to 1,000 roentgens. But when it was heated to 44°C. for 30 minutes and immediately treated with 1,000 roentgens of irradiation, there was complete regression of tumor in 20 of 25 animals treated.

The studies were repeated on another type of tumor, a sarcoma, in female Swiss mice, 3–4 weeks old. Mice with tumors on their feet were exposed to temperatures ranging from 41° to 47°C. At 41°, destruction of the tumor required many hours of exposure. At 42°, 120 minutes was required to destroy tumor in more than 50% of the mice; at 43°, 60 minutes were required; at 44°, 30 minutes; at 45°, 15 minutes; and at 46°, 7½ minutes. Thus, the required exposure time was halved with each degree the temperature was raised.

The effects of heat were visible immediately. The tumor turned black within 24 hours and fell off at about the seventh day. If recurrence took place, it usually did so within two weeks.

Heat which was insufficient to destroy the tumor made it temporarily resistant to more heat. Conventional anticancer drugs did not seem to enhance the effect of heat on tumors.

Six patients were studied for the effects of heat and radiation therapy. Five patients had advanced incurable disease for which no further surgical or roentgen therapy seemed feasible. Three patients with widespread breast cancer were treated with hot packs at exposures ranging from 24 hours at 42°C. to one-half hour at 48°C. In each instance there was striking regression of cancer in the heated area. Skin metastases from cancer of the stomach showed no regression in one patient treated as above.

One patient had recurrent cancer of the lower colon, which had invaded adjacent structures extensively; the area was irrigated for 20 minutes with water at 50°C. and irradiated with 1,000 roentgens by cobalt-60 teletherapy immediately thereafter. Two weeks later there was no visible tumor, but tumor was found by biopsy to be present in the deeper tissues of the pelvis. One month later, tumor was again visible.

A further study was made on one patient with a cancer of the rectum, which was to be removed surgically. The tumor was heated to 50–51°C. for 15 minutes, and given 1,000 roentgens of cobalt-60 teletherapy. Resection of the tumor was accomplished seven days later. Examination of the tumor showed only an occasional deep-seated tumor cell distinguishable in the heat-treated area.

These studies were found to be reiterations of work reported a third of a century earlier, and almost forgotten. The conclusions of Crile "suggest that some cancers in man have a spectrum of heat sensitivity similar to cancers in mice and rats. It is therefore likely that heat could be used as a valuable adjunct to the treatment of cancer, especially when it is employed in conjunction with radiation."

(For additional references, see the Index entry *Surgery*.)

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SURINAM

Situated on the north coast of South America, Surinam is an autonomous part of the Kingdom of the Netherlands. It has an estimated area of 55,144 square miles, and a population (1961 est.) of 318,000. The population is concentrated along the coast and consists chiefly of Creoles (comprising 39% of the population), Hindus (30%), and Indonesians (16%). The chief languages are Dutch and a popular tongue called Sranan-tongo. Paramaribo (pop. est., 113,000) is the capital and chief city.

Government.—Surinam has full autonomy in internal affairs, with matters of common interest to members of the Netherlands Realm decided jointly. The government is headed by a Dutch-appointed governor (Archibald A. Currie was appointed acting governor in 1962). He is assisted by a 35-member Legislative Council elected for a five-year term, and a cabinet headed by a premier (Severinus D. Emanuels took office on July 5, 1958).

Education and Religion.—Number of schools (with enrollments, 1958): 165 primary and secondary (54,136);

36 mission (1,248). There is also a medical school, a law college, a technical school, and two teacher-training schools. Main religious groups: Muslims, Hindus, Roman Catholics, and Moravian Brethren.

Finance.—Estimated government revenue, 1961: 88.4 million Surinam guilders; expenditure, 81.1 million (the Surinam guilder equals about U.S.$0.53). Expenditure under the 10-year development plan (1956–65) totaled 21.3 million guilders in 1961.

Transportation and Communications.—Public railways total 83 miles; main roads, 620 miles. The last link of the East-West Road, traversing the entire width of the country, was completed in December 1962. International airlines serve Zanderij Airport, and internal air service is provided by Surinam Airways. Motor vehicles in 1961 totaled 15,932, and there were 5,450 telephones.

Economy.—Agriculture is the main occupation. Chief crops include rice (est. 1960–61 output, 177.9 million pounds), sugar, corn, coffee, and citrus fruits. Forests yield balata (168 metric tons in 1960) and timber. Manufactures include refined sugar (11,138 metric tons in 1960), alcohol (1.69 million liters), and molasses (6.59 million kilograms). Total exports, 1961: 76.6 million Surinam guilders; imports, 101.1 million. Surinam is one of the world's principal exporters of bauxite (3,405,000 metric tons in 1961).

SVALBARD. See NORWAY.

SWAZILAND. See BRITISH SOUTH AFRICAN TERRITORIES.

SWEDEN

Occupying the southern and eastern part of the Scandinavian peninsula, the European kingdom of Sweden borders on Norway on the north and west, and on Finland on the northeast. With an area of 173,622 square miles, it is slightly larger than California. More than one half of the land area is covered by forests, and only a total of 8,800,000 acres is tillable land.

Population.—As of Jan. 1, 1962, the population was estimated at 7,542,000. The major cities are Stockholm, the capital, with a population of 806,903 (Greater Stockholm, 1,167,211); Göteborg, 404,436; and Malmö, 233,370. Ten other cities have populations of over 50,000.

Government.—Sweden is a constitutional monarchy, with Gustaf VI Adolf (b. 1882, acceded 1950) as king. He exercises his powers through responsible ministers in the Council of State and presides at cabinet meetings. Dr. Tage Erlander, premier since 1946, heads a minority government of Social Democrats that took office on June 18, 1958. The Riksdag (Parliament) is bicameral, with both houses having equal power; elections to both are based on universal suffrage. The 151-member upper house (Första Kammaren) is elected indirectly for 8 years by county and city councils, and in 1962 contained 77 Social Democrats, 33 Liberals, 20 Center Party members (formerly Agrarians), 19 Conservatives, and 2 Communists. Elections to the 232-member lower house (Andra Kammaren) normally are held every 4 years. In the elections of Sept. 18, 1960, the Social Democrats won 114 seats; the Center Party, 34; the Liberals, 40; the Conservatives, 39; and the Communists, 5.

Education and Religion.—Education has been compulsory since 1842. School enrollments, 1960–61: elementary schools, 843,110; middle schools, 142,496; secondary schools, 55,366; adult folk high schools, 12,258. Enrollment at the four universities: Uppsala, 8,319; Göteborg, 3,212; Lund, 6,437; and Stockholm, 7,567.

The Evangelical Lutheran Church is the established church of Sweden. Uppsala is the metropolitan see, and its archbishop is titular head of the state church. Freedom of worship for other groups is permitted, and in 1961 there were 354,280 nonconformists.

Finance.—Government revenue, 1962 est.: 18,800 million kronor; expenditure, 17,200 million (1 krona equals U.S.$0.193). Revenues: sales tax, 2,700 million kronor; excise and customs taxes, 4,000 million; income and property taxes, 8,100 million. Expenditures: social welfare, 5,300 million kronor; defense, 3,200 million; education, 2,300 million. Capital investment fund: 1,700 million kronor. Total public debt: 21,625 million kronor on Jan. 1, 1962. Gold and foreign exchange reserves: 3,319 million kronor.

Transportation and Communications.—Merchant marine tonnage (1962), 3,980,000 (3,745,000 in 1961); roads and highways, 59,500 miles; railways, 9,625 miles. Air service by the Scandinavian Airlines System: 1,536,300 passengers in 1961. Other data (as of Jan. 1, 1962): motor vehicles, 1,450,000; motorcycles, 144,700; radio sets, 2,742,000; television sets, 1,030,000; telephones, 2,775,000.

Economic Indicators.—Gross national product: 7,489 billion kronor (up 9.2% from 1960). Index of industrial production (1935 = 100): 274 in 1961 and 284 in 1962. Cost-of-living index (1949 = 100): 167 in 1962 (163 in 1961). Number of unemployed workers: 8,500 in July 1962 (0.5% of labor force).

Manufactures and Minerals.—Chief industrial products (metric tons, 1961): wood pulp, 5,050,000 (1,375,000 tons exported); iron ore, 23,140,000 (19,800,000 tons exported); pig iron, 1,760,000; commercial iron and steel, 3,560,000; electric power, 38,380 million kw.-hr. (34,800 mi. kw.-hr. in 1960); shipbuilding, 757,000 gross tons; cement, 251,000 tons.

Agriculture.—Agriculture accounts for 8% of the gross national product with 13.3% of the population dependent on it. Chief crops (metric tons, 1961): wheat, 1,619,000 (820,000 in 1960); barley, 1,927,000 (850,000); rye and oats, 6,001,000 (1,425,000); potatoes, 1,570,000 (1,725,000); sugar beets, 1,870,000 (2,065,000). Dairy production (metric tons, 1961): milk, 3,997,000 (3,950,000 in 1960); butter, 71,000 (85,000); cheese, 62,700 (55,000); meat and pork, 356,000 (375,000).

Foreign Trade.—Total exports, 1961: 14.17 billion kronor (13.28 billion in 1960); imports, 15.11 billion kronor (14.89 billion in 1960). Principal exports (in million kronor in 1961): forest products, 4,200; iron ore, 1,050; machinery, 2,875; transport, 1,625; base metals and products, 1,775. Principal imports (in million kronor in 1961): base metals, 1,875; machinery, 3,025; fuel, 1,975; agricultural products, 2,000; textiles and clothing, 1,575. Exports, first half of 1962: 9,780 million kronor; imports, 10,259 million. Chief customers (with percentage of trade, 1961): European Economic Community countries, 40% of imports and 33% of exports; European Free Trade Association, 26% of imports and 36% of exports; United States, 11% of imports and 5% of exports.

Events, 1962.—Economic growth continued in both industrial production and exports. The level of steel production reached a higher figure than in 1960, and more ore was consumed as exports to Great Britain and West Germany declined. Although the export of forest products increased in 1962, the previous year showed a decline in timber cutting and in pulp, paper, and other products.

Part of the bright picture for 1962 was due to the successful negotiation of a new labor agreement (March 1962), which provided for an average increase of 2.75% in wages and longer vacations for workers. Membership in the Federation of Trades Unions and the Central Organization of Salaried Employees expanded to 1,879,261 persons. Cooperative societies increased their retail sales, while their control of agricultural production and farm product marketing continued. About 1,130,000 persons are members of the retail sales cooperatives, which have 663 societies. The first budget surplus in nine years reflected higher production, greater exports, and more prosperity. These trends were accompanied by improved agricultural harvests in both 1961 and 1962, with greater exports to Great Britain and West Germany.

The victory won by the Social Democrats in local elections in 1962 came as a surprise to everyone, including the Social Democrats. Prosperity and reduced taxes probably affected the electoral vote. Trends toward the use of indirect taxes and the lowering of income, corporation, and personal levies were reflected in the budget for 1962–63. The absence of great political issues caused some to question the need for four political parties, but cooperation between the three bourgeois parties was difficult to arrange.

A major event of the year was the retirement of Östen Undén, foreign minister since 1945, and his replacement by Torsten Nilsson. The major foreign policy question of 1962 was Sweden's membership in the European Economic Community, in which her neutral position would be at stake. In this connection, Sweden was concerned with the Soviet Union's demand for more specific terms as to defense cooperation with Finland and prior approval of Finland's entry into the EEC. The Swedish government strongly protested Soviet

and American nuclear testing. During the year, Sweden completed repayments on her Marshall Plan loans, thus clearing all obligations resulting from World War II and the postwar economic crisis. Sweden's participation in United Nations affairs continued as supplementary troops were sent to the Congo. The memory of Dag Hammarskjöld persisted after his national funeral at Uppsala in September 1961, and generous contributions were made to a commemorative fund.

The Royal Dramatic Theater visited the United States during the winter of 1961–62, and plans were made for subsequent visits by other tour groups. The Swedish film industry received many honors, including prizes for Ingmar Bergman's *Through a Glass Darkly* in both the United States and Europe. Bo Bergman, now 93, published a new book of poetry. The visit of ex-President Dwight D. Eisenhower in July 1962 was the occasion of a major celebration.

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SWEET POTATOES. See VEGETABLES.

SWIMMING. See SPORTS, GAMES, AND SHOWS.

SWITZERLAND

Switzerland is a mountainous country of central Europe, forming a republican confederation of 19 cantons and six half-cantons. Area: 15,941 square miles; population (mid-1962 est.), 5,610,000. Principal cities and populations (1960 census): Zurich, 440,170; Basel, 206,746; Geneva, 176,183; Bern (the capital), 163,172; and Lausanne, 126,328. The four national languages are German (spoken by about 74% of the population), French (21%), Italian (4%), and Romansh (1%); the first three are the official languages.

Government.—The bicameral Federal Assembly in 1962 comprised the Council of States (Ständerat) of 44 members (2 from each canton), and the National Council (Nationalrat) of 196 members elected every four years. Party seating in the National Council (following the elections of Oct. 25, 1959): Socialists, 51; Radical Democrats, 51; Catholic Conservatives, 47; and Peasants, Artisans, and Middle Class (Farmers), 23. The federal franchise is limited to male citizens over 21 years of age, but women have the right to vote in local elections in the cantons of Vaud, Neuchâtel, and Geneva. Executive power is exercised by a Federal Council of 7 members who are elected by the Federal Assembly for four-year terms. The head of the Federal Council is chosen annually by the Assembly, and acts as president of the confederation. Willy Spuehler succeeded Paul Chaudet as president on Jan. 1, 1963.

Education and Religion.—Illiteracy is virtually nonexistent, and more than 60% of school-age children attend school. School enrollments, 1959–60 school year: primary, 571,548; secondary, 121,693; and university, 21,251 (1960–61). There are also many commercial, trade, art, technical, and other specialized schools on the secondary level. Principal religions: Protestant (approximately 58% of the population); Roman Catholic (41%); and Hebrew (0.6%).

Finance.—Government revenue, 1961: 2,959.7 million francs (3,316.1 million in 1960); expenditure, 3,058.4 million (2,601.1 million). The Swiss franc equals U.S.$0.233. About 35% of the estimated 1962 expenditure (totaling 3,426 million francs) was for defense. Swiss gold and foreign exchange holdings: $2,760 million at the end of 1961 ($2,324 million a year earlier).

Transportation and Communications.—Transport networks (miles, 1959): railways, 3,180; main roads, 10,846. Switzerland has a navigable outlet to the North Sea via the Rhine waterway; the Swiss merchant marine aggregated 26 vessels and 139,693 gross registered tons at the end of 1960. Swissair, the national airline, carried 1,139,918 passengers in 1961; 36 foreign airlines also operated scheduled flights. Other data for 1960: passenger cars, 509,300; commercial vehicles, 60,600; radio receiver licenses, 1,445,000; television receiver licenses, 129,000; telephones, 1,658,715.

Economic Indicators.—Gross national product, 1961 est.: 40 billion francs (up 8% from 1960). Agricultural production index (1952-53–1956-57 = 100): 112 in 1960–61 (106 in 1959–60). Cost-of-living index (1953 = 100): 110 in 1961 (108 in 1960). Number of foreign workers: 548,312 in August 1961 (about 20% of the labor force), compared with 435,476 in August 1960.

Industry.—Chief manufactures and 1961 export values: chemicals, 1,669 million francs; watches and clocks, 1,313 million; and electrical equipment, 515 million. Other manufactures are aluminum and metal products, pharmaceuticals, plastics, textiles, cement (3.6 million metric tons produced in 1961), and paper (510,000 metric tons). Major industries include construction (23,988 dwelling units completed in 1961) and tourism (28 million overnight hotel occupancies in 1961, or 9% more than in 1960). Electric power production (1961): 22.2 billion kw.-hr. (up 17% from 1960).

Agriculture.—Agriculture is based on dairying and livestock, chiefly cattle (1,759,000 head in 1961). Estimated dairy output (metric tons, 1961): milk, 2,244,000; butter, 31,500; and cheese, 66,200. Chief crops and yields in the 1961–62 crop year (in thousands of metric tons): wheat, 311; barley, 80; rye, 44; oats, 44; beet sugar, 36; potatoes, 1,270; and grapes for wine, 80.

Foreign Trade.—Total exports, 1961: 8,822 million francs (up 9% from 1960); imports, 11,644 million (up 21%). Machinery accounted for 33% of the 1961 export value; chemicals, 20%; and watches, 15%. Principal imports include raw materials, fuels, machines, automobiles, and foods. Switzerland's chief trading partners are other European countries (particularly West Germany), which in 1961 supplied 79% of total Swiss imports and took 66% of Swiss exports; and the United States, which provided 10% of total imports and received 9% of the exports.

Events, 1962.—Swiss voters rejected a proposed constitutional amendment to ban nuclear weapons from Swiss territory. In a national referendum (limited to male suffrage) held on March 31 and April 1, the proposal was defeated by a vote of 537,387 to 286,858. The government had opposed the amendment on the grounds that there was no immediate question of equipping the Swiss Army with nuclear arms, and that it would be unwise to prohibit now a course of action which might have to be taken in the future. The ban was actively supported by pacifists, some Protestant clergymen, a few Social Democrats, a number of labor unions, and the Communist Party.

In another referendum, held on November 4, the electorate approved a constitutional amendment fixing the number of seats in the National Council at 200 (compared with the present 196 seats). The number of Council seats previously had varied according to the latest census populations.

The Swiss government, which had applied for association with the European Economic Community (Common Market) on Dec. 15, 1961, presented its case for tariff-free association to the Community's Council of Ministers in Brussels on Sept. 24, 1962. Switzerland did not seek full membership but agreed to accept most of the Common Market's regulations, excepting certain rules which conflicted with traditional Swiss neutrality. For example, Switzerland insisted on retaining her right to conclude independent trade arrangements with countries not belonging to the Common Market, including Communist nations.

The economy in 1962 again attained record levels in both production and domestic consumption. Sparked by unprecedented heavy consumer demand, retail sales at midyear were up 7 to 8% from a year earlier, and Swiss imports, particularly of luxury goods, also increased considerably. Exports by the important watch industry in the third quarter of 1962 were up 4% from the high level recorded in the comparable period of 1961. Impressive gains were also registered in machine production, other manufactures, construction, and tourism, which from January through August 1962 recorded 23.7 million overnight hotel occupancies, or 800,000 more than in the same period of the previous year. The principal economic problem was again a shortage of labor; there were only 199 unemployed persons in the country and 6,085 job vacancies at the end of September, while the number of foreign workers at the end of August had increased by 17% to 644,700.

W. R. F.

SYNTHETICS. See Chemistry; Plastics; Rubber; Textile Industry.

SYRIA

Located in western Asia on the Mediterranean Sea, the Syrian Arab Republic has an area of about 72,000 square miles and a population (1961 est.) of 4,930,000, excluding 125,000 Palestinian refugees. Principal cities and population (1960 est.) are: Damascus, the capital, 491,398; Aleppo, 483,083; Homs, 157,754, and Latakia, the principal port, 66,335. Arabic is the official language.

Government.—During Syria's first 12 years of independence (1946–58), a parliamentary, cabinet-form of government existed. From February 1958 to September 1961, Syria was merged with Egypt in the United Arab Republic (UAR), and was governed by an Executive Council made up mostly of UAR President Gamal Abdel Nasser's followers. Since Syria's withdrawal from the UAR on Sept. 28, 1961, serious efforts have been made to re-establish representative government. The government is headed by a president (Nazim el-Kudsi, elected Dec. 14, 1961) and a premier (Khaled el-Azm, installed Sept. 17, 1962, succeeding Ahmed Bashir el Azmeh). Pending the adoption of a new constitution, legislative functions are exercised by the 172-member Constituent Assembly, elected Dec. 1–2, 1961. See also below *Events, 1962*.

Religion and Education.—More than 75% of the population are Muslims of the Sunni sect; 12% are Muslims of other sects (Alaouites, Ismailis, Shi'ites, Druses, and others); and 12% are Christians, mainly Greek Orthodox, Armenian Orthodox, Greek Catholics, and Syriac Orthodox.

Education is free and compulsory for the first six years. In 1959–60 there were 3,261 primary schools with 423,958 pupils; 341 secondary and vocational schools with 75,816 pupils; 10 teacher-training schools with 1,599 students; and the Syrian University in Damascus with some 15,000 students. In addition there were some 500 private schools with about 125,000 pupils.

Finance.—The ordinary budget expenditure for July 1962–December 1963 totaled £S943.4 million (£S831.6 in the previous 18-month period); revenue was estimated at £S832.5 million. The development budget for the same period called for an expenditure of £S622 million (£S657 in previous 18-month period). The budget expenditure for the 11 autonomous government agencies was estimated at £S306.7 million (£S243.6 million); revenue, £S417.6 million.

On July 11, 1962, a liberalization of the exchange controls of February 1961 restored to Syrian currency a large measure of convertibility. On July 24 the Syrian pound was devalued from 3.57 to 3.82 to the U.S. dollar. In May 1962, Syria was granted a $41.6 million stabilization fund, contributed by the United States, West Germany, Italy, and the International Monetary Fund.

Transportation and Communications.—The planned extension of railroad lines from Latakia to Hasaka on the Iraq border did not materialize in 1962, and Syria's total railroad mileage remained under 600. There are 2,300 miles of first-class roads, about 1,500 miles of second-class macadamized roads, and 3,800 miles of dirt roads. In 1960, private cars numbered 14,100; trucks, 10,000; buses, 1,200; and taxis, 1,300. In 1959 there were 43,800 telephones. Civil aviation is well developed, with the principal airports at Damascus and Aleppo served by Syrian Airways and 21 foreign airlines. There is a government broadcasting system and a television station in Damascus.

Production.—Despite the accelerated rate of industrialization, Syria is still predominantly an agricultural country. Major crops are wheat (755,000 tons in 1961; 533,000 tons in 1960) and barley (330,000 tons in 1961; 150,000 tons in 1960). The principal export crop is cotton, which totaled 124,456 tons in 1961–62 (110,000 in 1960–61). Other crops include millet, corn, rice, lentils, sesame, tobacco, sugarcane, and sugar beets. After four years of drought and poor yields, agricultural yield of many crops in 1962 exceeded that of 1957—hitherto considered the best in 25 years. However, the expected increase in agricultural production due to the completion of the Rastan Dam on the Orontes River in 1961 has been only partially realized.

Foreign Trade.—Syria still suffers under a severe adverse balance of trade, although the situation in 1962 was somewhat better than in 1961. Total exports, 1961: £S352.5 million (£S367.3 million in 1960); imports, £S611.0 million (£S766.0). Chief exports, 1961: cotton, £S205.7 (£S174.7 in 1960); wool, £S17.5 (£S17.9). Major imports are machinery, petroleum products, and manufactured goods. The United States was the chief supplier in 1961 ($27 million), followed by West Germany, Great Britain, Italy, France, and the Netherlands.

Events, 1962.—The year 1962 was one of turmoil and trial, marked by the instability of the government. With remarkable astuteness, however, Syria's civilian and military leaders succeeded in setting up a series of provisional governments which functioned as parliamentary regimes. As the year drew to a close, the succession of more than a half-dozen coalition cabinets proved that neither the civil nor the military authorities intended or were able to impose an unpopular regime on their countrymen.

In his first public statement after taking office on Dec. 22, 1961, Premier Maarouf Dawalibi pledged on January 4 a domestic economy of "constructive socialism" and a foreign policy of nonalignment with either East or West. In February, Rashad Barmada, defense minister, led a mission to Czechoslovakia and the USSR "to seek economic assistance and supplies for Syria's armed forces." On February 15, Adnan Kuwatly, minister of economy, declared that in seeking loans to cover its budgetary deficit, Syria would not confine itself to any one country. On March 4, Premier Dawalibi disclosed the obtaining of a $16 million short-term loan from West Germany (see also above *Finance*).

On February 14 the Constituent Assembly passed a law canceling the nationalization laws of 1961, enacted when Syria was part of the United Arab Republic. However, it also approved a law imposing some government control over big business. On February 17 the law which had sequestered British, French, and Belgian property was voided.

Agreement was reached on March 9 with the Trans-Arabian Pipeline Company for the payment to Syria of $10 million for retroactive petroleum transit fees and for the increasing of the annual payment for the piping of oil to Banias from $1,250,000 to $3,000,000.

While these moves were taking place on the economic front, internal political unrest was assuming dangerous proportions. On March 28 the government was overthrown by a coup led by the heads of the army and air force. On April 1 a second revolt broke out in Aleppo, led by a group of the self-styled "free officers" who appealed to the UAR for military support. President Gamal Abdel Nasser declared, however, that the UAR would give aid to neither side, but offered to mediate. During the next few days an agreement was worked out in Homs by the military and civilian leaders which called for the departure from Syria of the leaders of the military coup, the return of President Kudsi to office, and the formation of a transitional government of experts to hold new elections and a referendum on the question of rejoining the UAR.

On April 13, President Kudsi assumed his office at the request of Gen. Abdel Karim Zahreddin, commander in chief of the armed forces, and on April 16 a new government was formed, with Ahmed Bashir el Azmeh as premier. One of the first moves of the new government was the renationalization of Khumassia, the powerful business concern which controlled a large section of Syria's economy, including textiles, cement, and detergents. On May 22 all foreign banks were nationalized, with the government obtaining 25–40% of the shares.

Relations with the UAR continued to remain unsettled. On May 6, Col. Abdel Hamid Serraj, former vice president of the UAR and a strong supporter of President Nasser, escaped from the Mezza prison hospital and fled to Egypt. On June 6, Premier Azmeh called for an Arab federal union in which Syria would retain its sovereignty; and on August 27, Syria appealed to the Council of the Arab League to condemn the UAR's interference in Syria's internal affairs.

Political instability continued. On September 14, Khaled el-Azm was named premier; on September 20 the Constituent Assembly was dissolved, and the Azm government began to rule by decree.

During 1962, Syria's relations with Iraq improved. On March 14, President Kudsi met Premier Kassem of Iraq for talks on "closer military and political cooperation." Syria's relations with Israel remained strained, with several border incidents occurring during the year (see also UNITED NATIONS). On September 9, Syria announced the resumption of full diplomatic relations with France, thus restoring the normal relations which were broken during the Suez invasion of 1956.

(See also MIDDLE EAST.)

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THEATER—Anna Quayle and Anthony Newley (left) lead chorus number in *Stop the World, I Want to Get Off.*

FRIEDMAN ABELES

TABLE TENNIS. See SPORTS, GAMES, AND SHOWS.

TAIWAN

The island of Taiwan (or Formosa) is a province of China and the present seat of the Republic of China (Nationalist). It lies about 110 miles off the southeast coast of mainland China, and has an area of 13,885 square miles, which includes the Penghu (Pescadores) group (64 islands situated about 30 miles off the west coast) and other islands. The civilian population, as of May 31, 1962, was estimated at 11,302,000 (including the Penghu, Quemoy, and Matsu islands). Principal cities (with 1961 estimated populations): Taipei, the capital (927,432); Kaohsiung, a major port (275,600); Tainan (229,500); and Taichung (207,000).

Government.—The Republic of China is governed by a president, the National Assembly, and five councils or yuans which separately exercise executive, legislative, judicial, control, and examination functions. The Assembly re-elected Chiang Kai-shek to a third 6-year term as president of the republic on March 21, 1960. The president of the Executive Yuan (Chen Cheng, appointed in 1958) acts as premier. The Kuomintang exercises virtual one-party rule under the leadership of Chiang Kai-shek.

Taiwan's provincial government is headed by a governor (Gen. Huang Chieh, since November 1962), who is assisted by a 21-member Provincial Council appointed by the central government. A 66-member Provisional Provincial Assembly is elected for a 3-year term.

The Nationalist Chinese armed forces (about 600,000 men) are equipped and trained with the help of the United States, and the U.S. Seventh Fleet has protected Taiwan since 1950. A mutual defense assistance pact between the Republic of China and the United States has been in effect since 1955.

Education.—About 55% of all school-age children attended school in 1959. Primary education is free and compulsory. Number of schools (with enrollments, 1961): 1,795 primary (1,772,135); 361 secondary, vocational, and technical (316,984); 27 colleges and universities (chief of which is National Taiwan University), 30,000.

Finance.—Government revenue, fiscal year 1962: NT$7,952 million; expenditure, NT$8,068 million (NT$40.03 equal U.S.$1). About 81% of expenditure was for national defense and administration. Central Bank gold and foreign exchange holdings: U.S.$147 million at the end of 1961 (U.S.$136 million a year earlier). United States economic and military aid to Taiwan since 1951 has totaled more than U.S.$1.1 billion.

Transportation and Communications.—Transport networks and mileage: public railways, 590; private railways, 1,718; roads, 9,743 (1955). The 191-mile Cross-Island Highway linking Taichung in the west with Lotung and Hualien in the east was opened in 1960. Merchant marine (estimated gross registered tons, 1961): 373,000. Two domestic air services and four international airlines serve Taiwan. Other data for 1960: passenger cars, 8,100; commercial vehicles, 10,900; telephones, 98,030; and radio receiver licenses, 445,000 (1959).

Economic Indicators.—National income, 1961: NT$53,700 million (NT$48,008 million in 1960). General index of industrial production (1958 = 100): 143 in 1961 (129 in 1960). Index of agricultural production (1952-53–1956-57 = 100): 120 in 1960–61 (114 in 1959–60). Cost-of-living index (1958 = 100): 141 in 1961 (131 in 1960).

Manufactures and Minerals.—Industry accounted for 28% of the net national product in 1960, and was planned to contribute 33% by the end of the third four-year plan (1961–64). Chief industrial products (in thousand metric tons, 1961): coal, 4,231 (up 6.8% from 1960); aluminum ingots, 9,017 (up 9.2%); plastics, 7,054 (up 106.4%); petroleum products, 1,175 (up 7.2%); cement, 1,504 (up 27.1%); cotton yarn, 49 (up 20%); cotton fabrics, 186 million meters (up 5%); and electric power, 4,084 million kw.-hr. (up 12.6%).

Agriculture and Fishing.—Agriculture's share of the net national product was scheduled to be reduced under the third four-year plan from 29% in 1961 to 27% by 1964. Taiwan's bumper harvest in 1961 was featured by a record rice crop of 2,009,200 metric tons (up 5.1% from 1960), and a high sugar output of 924,000 metric tons (up 19.3%). Other chief crops (metric tons, 1961): tea, 19,000 (up 9.6%); sweet potatoes, 3,223,000 (up 8.0%); pineapples, 180,000 (up 7.9%); bananas, 129,000 (up 13.0%); peanuts, 108,000 (up 5.7%); soybeans, 56,000 (up 7.1%); oranges, 54,000 (down 1.9%); and wheat, 45,000 (down 2.2%). Fish catch, 1961: 312,439 metric tons (up 20.4% from 1960).

Foreign Trade.—Total exports, 1961: U.S.$196.6 million (up 20% from 1960); imports (exclusive of foreign aid), U.S.$208.9 million (up 10%). Imports financed by the U.S. International Cooperation Administration totaled U.S.$113.4 million. Chief exports and 1961 values: sugar, U.S.$57.6 million; rice, U.S.$9.4 million; and tea, U.S.$8.9 million. Chief imports: machinery, metal products, vehicles, fuels, chemical fertilizers, and foodstuffs. Principal trading partners are Japan, which in 1961 took 30% of Taiwan's exports and supplied 32% of imports, and the United States, which received 24% of total exports, and supplied 38% of Taiwan's imports.

W. R. F.

UPI

WIDE WORLD

(*Left*) United States and Nationalist Chinese paratroopers participate in joint exercises over southern Taiwan in November. (*Right*) President Chiang Kai-shek reviews cadets of the Nationalist Army Academy on September 19.

The Year 1962 in Taiwan

Nationalist China continued its steady economic growth in 1962. The first rice crop of the year was a record harvest which yielded 1,042,000 metric tons, or 60,000 metric tons more than that in 1961. Industrial production also registered an increase in the first half of 1962. Taiwan's total exports in 1962 were expected to reach U.S.$240 million. Major industrial exports were estimated at U.S.$135 million, or a rise of U.S.$37 million from that of the preceding year. Taiwan's annual growth of over 8% in gross national product was the second highest in Asia—next only to Japan.

Taiwan's relatively stable economy, however, depended heavily on United States aid, which amounted to U.S.$105 million in fiscal year 1962. The large expenditure for maintaining over half a million troops continued to be a strain on the national treasury. In an attempt to balance its budget, the Nationalist government promulgated, on May 1, the Regulations for Special Defense Assessments, which imposed a 30–50% increase on a number of existing taxes. A provisional measure, the law was to expire on June 30, 1963.

During the mass exodus of Chinese from Communist China to the British colony of Hong Kong (q.v.) in May, the Nationalist government urged that Hong Kong authorities desist from sending back these refugees to the Chinese mainland. It offered to cooperate with all governments and relief organizations in solving the problem, and brought the question to the attention of the UN high commissioner for refugees. Taiwan also sent 1,000 metric tons of rice to Hong Kong for relief purposes. In spite of its own problem of overpopulation and fear of Communist infiltration, the Nationalist government took immediate steps to screen those who wished to resettle in Taiwan. (See also Refugees and Displaced Persons.)

As Communist China's economy suffered repeated setbacks and its relations with the Soviet Union continued to deteriorate, the Nationalists were led to believe that the time for overthrowing the Communist regime was near. In a speech on the occasion of National Youth Day on March 29, President Chiang Kai-shek called on the people in Taiwan to prepare for the "supreme task" of recovering the Chinese mainland. He said that the tyrannical policies of the Communist government had alienated the people and that the time for "smashing its iron curtain" had come, and therefore "we should not vacillate or hesitate" to deliver the Chinese people from tyranny.

Military operation against the mainland, however, could conceivably involve the United States in a war with Communist China. Under the mutual defense treaty of 1954, the United States agreed to defend Taiwan and the Pescadores against Communist invasion. During Assistant Secretary of State W. Averell Harriman's visit to Taiwan in March, the Nationalist government reportedly sought in vain to obtain United States approval for its plans to recover the Chinese mainland. In June, on the pretext that the Nationalists were planning an invasion of the mainland "with United States encouragement," Communist China proceeded to mass large numbers of troops and several hundred jet planes along the Fukien coast facing Taiwan. This concentration of force placed the Chinese Communists in a position to invade the Nationalist islands of Quemoy and Matsu with reasonable prospect of success. To forestall further attempts by Communist China to create a military crisis along the Taiwan Strait, the United States, at an ambassadorial meeting in Warsaw, informed Peking on June 26 that it would not support any attempt by the Nationalists to land their troops on the Chinese mainland. The position taken by the United States dashed once and for all Nationalist hopes that Washington could be persuaded to accept their plan of action. In September, Premier Chen Cheng resolutely announced that Nationalist China was determined to carry out its duty to recover the mainland "no matter what people in foreign countries might think."

On September 9, the Communist Chinese shot down a Nationalist Chinese U-2 plane in a reconnaissance mission over eastern China. The plane had been purchased by the Nationalists directly from the Lockheed Aircraft Corporation and was flown by a Chinese pilot. When Peking charged that the flight of the American-made plane was part of a "United States espionage program against socialist countries," the Nationalists declared that they had every right to fly over the mainland "since it is our own territory."

On April 4, during the visit of President Philibert Tsiranana of the Malagasy Republic to Taiwan, a treaty of friendship between the two countries was signed. The conclusion of a trade and economic agreement between Nationalist China and Paraguay on May 11 signified Taiwan's vigorous efforts to promote relations in Latin America. Retired Rear Adm. Alan G. Kirk, the new United States ambassador to Nationalist China, arrived in Taiwan on July 2.

Diplomatic relations between Laos and Nationalist China were formally established in May when pro-Western Premier Boun Oum of Laos visited Taiwan. But when the new coalition government of Laos was formed in September, it an-

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Julius Nyerere is sworn in as president of the Republic of Tanganyika by Chief Justice Sir Ralph Wyndham on December 9, the day the nation gained its independence from England.

nounced the establishment of formal ties with Communist China. As a result, the Nationalist government severed diplomatic relations with Laos on September 7 and ordered the immediate closing of the Chinese embassy in Vientiane.

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TALC. See MINERAL PRODUCTION.

TANGANYIKA

Situated on the Indian Ocean coast of east-central Africa, the former British-administered United Nations trusteeship of Tanganyika attained independence within the Commonwealth of Nations on Dec. 9, 1961, and became a republic on Dec. 9, 1962. The country's area of 361,800 square miles includes 20,650 square miles of lakes. The population at the 1957 census was 8,788,466 (mid-1962 est., 9,560,000), comprising chiefly Bantu and other African tribes, and including 90,500 Asians and 22,700 Europeans (mid-1961 est.). The predominant spoken language is Swahili. The capital and chief port is Dar es Salaam (1957 pop., 128,742).

Government.—With the proclamation of the Republic of Tanganyika on Dec. 9, 1962, the post of British crown representative and governor general (held by Sir Richard Turnbull) ceased to exist. On that date Julius K. Nyerere, formerly prime minister of the country from May 1, 1961, to Jan. 22, 1962, was installed as the first president of Tanganyika, following his election to the new office in the presidential election held in early November (see below, *Events, 1962*). He heads the Tanganyika African National Union (TANU), which had won 70 of the 71 elected seats in the National Assembly in legislative elections of Aug. 30–Sept. 1, 1960.

Education and Religion.—Although separate schools for Africans, Asians, and Europeans have been maintained by the government, a single system of education was introduced in 1961. School enrollment, 1962 est.: 500,000 (about one fifth of the school-age population). Enrollments by educational levels, 1960: primary, 404,681; secondary, 58,893; technical, 3,473; and teacher-training, 1,474. The University College in Dar es Salaam, a division of the University of East Africa, was opened in 1961. Most Tanganyikans are animists. Many Muslims live in coastal areas, and there are a number of Christian missions.

Finance.—Government revenue, 1963 fiscal year est.: £28,413,000 (£28,768,000 in fiscal year 1962); expenditure, £31,481,000 (£29,161,000). The development budget for fiscal year 1961 totaled £6,180,000. Exchequer loans from Great Britain amounted to £3.5 million in 1961.

Transportation and Communications.—Transport networks (miles, 1961): railways, 1,850; main roads, 9,725; district roads, 10,542; local roads, 8,500. The road system is to be improved through a £4 million roadbuilding program under the country's 3-year development plan (1961–64). Tanganyika has 51 airfields and landing strips maintained by the government; East African Airways Corporation provides internal and external services. Passenger cars, 24,800 (1960); commercial vehicles, 8,700 (1960); telephones, 16,238 (1961); radio receivers, 18,000 (1959).

Agriculture.—Agriculture and forestry account for nearly 60% of the gross domestic product (totaling £185.4 million in 1961). Chief crops and 1961 outputs, which decreased below 1960 levels because of severe floods and drought, were as follows (in metric tons): sisal, 198,000 (about two thirds of the world output); cotton, 33,000; coffee, 18,000; sugarcane, 28,700; tea, 4,300; and pyrethrum, 1,200. Exports of logs and sawn timber totaled 509,000 metric tons in 1961; wattle bark, 1,760 metric tons; and hides and skins, 156,300 cwts.

Manufactures and Minerals.—Manufacturing is on a small scale and is confined largely to consumer goods, chiefly food products, textiles, shoes, cigarettes, and meerschaum pipes. Mineral production provides about 5% of the gross domestic product, and was valued at £7.5 million in 1961 (up 7% from 1960). Three fourths of the total mineral value is supplied by diamonds (685,000 metric carats exported in 1961); the other chief mineral is gold (90,000 fine troy ounces exported). Electric power production, 1961: 164 million kw.-hr. (up 6% from 1960).

Foreign Trade.—Total exports, 1961: £50.6 million (£56.6 million in 1960); imports, £39.7 million (£37.8 million). Chief exports and 1961 values: sisal, £14.1 million; coffee, £6.5 million; cotton, £5.9 million; diamonds, £5.8 million. Principal imports are cement, cotton goods, machinery, heavy consumer goods, and foodstuffs. Trade is mainly with Great Britain, Japan, West Germany, the Netherlands, and the United States, which in 1961 supplied 26% of Tanganyika's imports and took 10% of total exports.

Events, 1962.—Tanganyika adopted a republican form of government on December 9, but remained a member of the Commonwealth of Nations despite the fact that it no longer recognized the queen as the sovereign of the country. The government declared that the change was made to secure a system of government more in keeping with Tanganyika's status as an independent African state. The new constitution provided for an executive president elected by universal suffrage and empowered to appoint the cabinet and dissolve the National Assembly. The term of the Assembly was extended from four to five years, and future legislative elections were to be held simultaneously with the presidential election.

Julius K. Nyerere was installed as the nation's first president in formal ceremonies at Dar es Salaam on December 9. He had been elected to the office in early November, receiving 1,123,553 votes to only 21,279 for his opponent, Zuberi Mtemvu, candidate of the opposition African National Congress party.

Previously, on January 22, Nyerere had shocked his countrymen by resigning as prime minister only six weeks after Tanganyika attained independence. He explained that he wished to devote his full energies to reorganizing the ruling Tanganyika African National Union in order that the party might act as a bridge between the government and the people. Although there were reports that radical leaders within TANU had opposed Nyerere's moderate policies, Nyerere himself declared that he had difficulty in persuading the members of the party's executive committee to accept his resignation.

The new cabinet, whose members were personally selected by Nyerere, was headed by Rashidi Kawawa, minister without portfolio in the outgoing cabinet and a former labor union leader. One of Prime Minister Kawawa's first official acts was to propose constitutional amendments enabling Tanganyika to become a republic within the Commonwealth; the proposal was approved by the National Assembly on June 28. Kawawa served as prime minister until December 9, when President Nyerere installed a 15-member cabinet that was virtually the same as its predecessor.

Tanganyika continued to experience economic difficulties as the result of crop failures caused by severe drought and flood conditions in 1961. To encourage economic development the government in early 1962 set up two development companies

with an aggregate initial capitalization of $5.6 million, to be made available for commercial investment.

W. R. F.

TANGERINES. See FRUITS.
TANGIER. See MOROCCO.

TARIFFS

The marked trend during the past decade toward the adoption of tariff classifications based on the Brussels Tariff Nomenclature by countries revising their tariffs continued during 1962. Countries which instituted tariff revisions during the year included Haiti, Libya, New Zealand, and the United Arab Republic, all of which adopted nomenclatures based on the Brussels model. In the United States, the enactment of the Tariff Classification Act of 1962 and the Trade Expansion Act of 1962 made the year the most significant in the field of tariffs since the early 1930's.

Tariff Classification Act of 1962.—The Customs Simplification Act of 1954, as amended, directed the U.S. Tariff Commission to study, revise, and consolidate United States laws prescribing the status of imported articles with a view to establishing schedules of tariff classifications that were logical in arrangement, to eliminate anomalies and illogical results in the classification of articles, and to simplify the determination of tariff classifications. The commission's study was published in November 1960, and reports supplemental to it were subsequently released.

On May 24, 1962, the Tariff Classification Act of 1962 was signed by the president. This law authorized the president to place the revised tariff schedules into effect as soon as he had taken the action necessary to bring the United States trade agreement schedules into conformity with the new tariff schedules. It was expected that the new tariff schedules, which were the first major revision of the United States tariff nomenclature since 1930, would be placed in effect sometime in 1963.

Trade Expansion Act of 1962.—In 1934 the president was authorized, under the Trade Agreements Act, to enter into trade agreements with other countries for the primary purpose of promoting United States exports, and, within certain limits, reducing duties on imports. Subsequently, the president's authority was extended—for varying periods and to varying degrees—on 11 occasions, the last of which expired on June 30, 1962.

The Trade Expansion Act of 1962 became law on Oct. 11, 1962. Like the earlier Trade Agreements Act, the Trade Expansion Act authorized the president to enter into trade agreements and to lower existing rates of duty. For the first time, however, the president was granted special authority to eliminate low rates of duty, and to eliminate certain other rates pursuant to agreements negotiated with the European Economic Community (EEC), or Common Market. The authority to enter into trade agreements was granted for five years, beginning July 1, 1962.

In general, the president was authorized to reduce the rate of duty on any article by 50% of the rate existing on July 1, 1962; in addition, duties of 5% or less could be reduced or eliminated, and, in trade agreements with the Common Market, duties on articles (except specified agricultural commodities) in any category for which the United States and the Common Market accounted for 80% or more of the world export value could be eliminated. In trade agreements with the Common Market, duties on specified agricultural products may be reduced, under certain conditions, by more than 50%. Finally, the president was authorized to reduce duties on tropical agricultural or forestry commodities by more than 50%, or to eliminate them, if the articles were not produced in significant quantities in the United States. Prior to his making the reductions under this latter authority, however, the Common Market must have made a commitment that the commodities would be granted nondiscriminatory import treatment and that their access into the Common Market would be comparable to the access those commodities had to the United States market. (See also INTERNATIONAL TRADE.)

General Agreement on Tariffs and Trade.—The fifth major round of tariff negotiations conducted within the framework of the General Agreement on Tariffs and Trade (GATT) was concluded in July 1962. The negotiations, which began in September 1960, were of four distinct types: (1) Renegotiations by GATT members with the member states of the EEC relating to certain tariff concessions previously made by the EEC but which were expected to be altered in establishing a common external tariff for the Common Market; (2) renegotiations by GATT members of concessions previously made to one another; (3) negotiations by GATT members for new or additional concessions; and (4) negotiations by GATT members with countries that desired to accede to the General Agreement. The fifth round of negotiations was the longest and one of the most complex in the history of the General Agreement. Excluding the renegotiations enumerated under the first two points above, the participating countries granted a total of more than 4,000 tariff concessions; the value of the trade covered by the concessions was estimated at nearly $5 billion.

Regional Arrangements.—The principal regional arrangements in 1962 were the European Economic Community (EEC), the European Free Trade Association (EFTA), the Latin American Free Trade Association (LAFTA), and the Central American Common Market.

In 1962 the member states of the EEC (France, Germany, Italy, and the Benelux countries) reduced the rates of duty applicable to commodities traded between one another. By October, rates on industrial commodities traded between member states were 50% below those existing on Jan. 1, 1957. Rates of duty on certain agricultural products traded within the EEC were also reduced during 1962; by October the cumulative reduction on these commodities was about 35%. During 1962 the member states of the EEC also further adjusted the rates of duty in their individual tariffs applicable to imports from nonmember countries toward those of the common external tariff for the entire EEC. Agricultural commodities were the items principally affected by the adjustments.

Members of the EFTA were Austria, Denmark, Norway, Portugal, Sweden, Switzerland, and the United Kingdom. Finland was, in effect, an associate member. Member countries of the EFTA, unlike those of the EEC, were to retain their individual tariffs on imports from countries outside the association. Member states of the EFTA were required to reduce, and ultimately to eliminate, duties on industrial commodities traded within the area of the association, however. By October 1962, EFTA members (including Finland) had reduced their duties on industrial commodities by 40% of the rates that were applied in early 1960. Additional reductions planned for late 1962 were scheduled to reduce the levels of duty applied by most member countries on industrial commodities to 50% of the 1960 rates. (See also EUROPE.)

The Latin American Free Trade Association which became effective in 1961, was composed of the following countries: Argentina, Brazil, Chile, Colombia, Ecuador, Mexico, Paraguay, Peru, and Uruguay. The Montevideo Treaty, which established the LAFTA, provided, among other things, for the gradual abolition of restrictions on existing trade among the participating states. The first step in abolishing these restrictions took place early in 1962 when all but one member country (Ecuador) engaged in a first round of mutual reductions of tariffs and other import charges on hundreds of products. Negotiations for additional reductions were held in the latter part of 1962. Substantially all duties and charges on commodities traded between member countries were to be eliminated by June 1973. The member countries of LAFTA, like those of EFTA, were free to retain their individual tariffs on imports from nonmember countries.

The five members of the Central American Common Market (Costa Rica, El Salvador, Guatemala, Honduras,

and Nicaragua) were parties to various agreements and treaties designed to facilitate trade between their countries and to integrate their economies. Most commodities traded within the area were to be free of duty within five years, and a common external tariff for the five countries was to be established. Measures designed to accomplish these ends continued to be implemented during 1962. (See also INTER-AMERICAN AFFAIRS.)

Member countries of the Equatorial Customs Union—Central African Republic, Chad, the Republic of Congo (Brazzaville), Gabon, and the Federal Republic of Cameroun—also introduced a common external tariff, and other African countries made proposals to establish a common market.

BEN DORFMAN,
Chairman, U.S. Tariff Commission.

TAXATION

As record highs in tax collections were being recorded in 1962, the federal government made provisions to stimulate industry by granting tax credits for modernization and by liberalizing depreciation allowances, to defer taxes on retirement funds for the self-employed, and to end some transportation and communications taxes.

Federal Tax Laws.—On Oct. 16, 1962, President Kennedy signed into law the Revenue Act of 1962. Its chief feature was a new 7% credit against tax for purchase of machinery and equipment. This credit was intended as an incentive to modernization and economic growth, and was expected to produce annual tax savings of over $1 billion. Other provisions of the new law established tougher tests for expense account deductions, ended or limited the preferential treatment of certain types of foreign income of American citizens and corporations, and established much stricter rules for reporting the payment of interest, dividends, and patronage dividends (P.L. 87–834).

A tax bill enabling self-employed professional and business men to set aside tax-deductible amounts for future use as retirement funds became law on Oct. 10, 1962 (P.L. 87–792). A self-employed person would be able to set aside each year, beginning with 1963, up to 10% of his net earned income, but not more than $2,500, and deduct half that amount. The income earned by the funds would be tax-free until they were drawn on retirement, when the amounts previously deducted and the income earned tax-free by the fund would become taxable.

Ceilings on medical expense deductions were doubled for 1962 and afterward. A married person filing a joint return had been limited to a maximum deduction of $10,000, and a single person to $5,000. These limits were raised to $20,000 and $10,000, respectively (P.L. 87–863).

Tax Rates.—Corporate and excise tax rates scheduled to drop on July 1, 1962, were extended for another year, with the following exceptions:

(1) The 10% transportation tax ended for bus and rail travel, and dropped to 5% for air travel, for transportation which began after Nov. 15, 1962; the tax on the domestic leg of international flights not stopping more than six hours in the United States was eliminated.

(2) The 10% communications tax on private lines or leased wires between fixed points used by a trade or business was scheduled to end on Jan. 1, 1963 (P.L. 87–508).

Liberalized Depreciation.—Recognizing the vast changes in machinery and equipment since the publication of depreciation rates in *Internal Revenue Bulletin F* in 1942, the Treasury modernized and simplified the entire depreciation schedule in *Depreciation Guidelines and Rules* (Revenue Procedure 62–21, July 1962). The hundreds of separate items listed in old *Bulletin F* were replaced by some 75 broad classes of assets in the new *Guidelines*, thereby simplifying considerably the process of determining the correct "useful business life" over which to spread depreciation deductions.

Supreme Court Decisions.—While the cost of traveling to and from a resort area for a medically necessary stay is deductible, the cost of meals and lodging while at the resort does not qualify as a medical expense. The legal fees paid by a husband to his wife's attorney for tax advice to her on a divorce and property settlement are not deductible by the husband, but he can deduct the legal fees paid to his own attorney for tax advice. (See also LAW.)

Other Court Decisions.—A businessman was allowed to deduct the costs of meals he ate while away on one-day business trips, over the Treasury's objection that meals and lodging should be deductible only if the business traveler is away from home at least overnight.

The president of a business group, who was required to attend meetings in various parts of the country, had his wife accompany him to help him fulfill his social and business obligations. His deduction of her expenses was turned down because he never asked his organization to reimburse him for them and because his wife attended mostly meetings at resort locations.

While a teacher may not deduct the cost of courses required to qualify her for a higher position, she may deduct the cost of courses needed for a salary increment in her present job. The depreciation on an automobile used regularly to visit a doctor's office is not deductible as a medical expense, although the cost of oil and gasoline is.

The cost of an accident and health insurance policy qualifies as a deductible medical expense, even though part of the insurance coverage is for regular cash payments during periods of disability, regardless of actual medical expenses incurred.

Treasury Rulings.—A medical expense deduction will be allowed for the amount by which the cost of a medically necessary home improvement, such as a stairway elevator for a heart patient, exceeds any value it adds to the home; thus, if a $1,500 improvement adds $500 of value to a home, $1,000 will qualify as a medical expense. Although a parent's visit to a child who is away from home for medical reasons is only partly for therapeutic reasons and partly for morale purposes, the entire cost of the trip is deductible as a medical expense.

Individuals could for the first time get their income tax refunds in United States E Bonds by so indicating on their 1962 returns. An employee who does some of his work at home is entitled to deduct as a business expense an allocable portion of his home expenses, such as rent, electricity, and gas, but only if he is required as a condition of his employment to provide his own space and facilities for regularly performing part of his duties. Proposed Treasury regulations setting forth extremely detailed record-keeping requirements for expense accounts under the 1962 Revenue Act drew a storm of protest from businessmen. The Treasury acknowledged the validity of these complaints by easing the requirements in the final version of the regulations.

Government Revenue Collections.—Federal tax collections for the fiscal year 1962 surged to a new record peak of $99,423,453,000, compared with $94,401,086,000 for fiscal 1961. Corporate income tax collections fell for the second consecutive year, but the drop was more than offset by higher excise and individual income tax revenues.

State tax collections continued their unbroken rise, reaching a total of $20,562,000,000 for the fiscal year 1962, as against $19,057,000,000 for the fiscal year 1961. Nearly all categories of state taxes produced higher revenues, with individual income tax collections showing the highest percentage of increase, 15.9%, and general sales and gross receipts tax collections next in line with a 12.4% increase.

STATE TAX COLLECTIONS, BY TYPE OF TAX[1]
(Fiscal years; amounts in millions)[2]

Tax source	1962 (prelim.)	1961	1960	1942
Total collections	$20,562	$19,057	$18,036	$3,903
General sales or gross receipts	5,068	4,510	4,302	632
Motor fuels	3,687	3,431	3,335	940
Alcoholic beverages	741	688	650	257
Tobacco products	1,077	1,001	923	130
Insurance	591	585	532	113
Public utilities	419	401	365	100
Motor vehicles licenses	1,559	1,517	1,468	431
Corporations licenses	460	446	426	93
Alcoholic beverages licenses	92	86	84	56
Hunting and fishing licenses	120	118	112	24
Individual income[3]	2,730	2,355	2,209	249
Corporation net income[3]	1,306	1,266	1,180	269
Property	642	631	607	264
Death and gift	521	501	420	110
Severance	450	451	420	62
Other	1,101	1,070	1,003	172

[1] Because of rounding, detail does not always add to total. [2] Amounts for 1960–62 are 50-state totals. [3] Individual income tax figures include corporation net income tax amounts for New Mexico in each fiscal year shown. (Source: U.S. Department of Commerce.)

The average per capita state tax was $112.86 for fiscal 1962, against $106.03 in fiscal 1961. Hawaii had the highest per capita state tax burden, $201.38, and Delaware was next with $199.06. Nebraska had the lowest, $66.22, followed by New Jersey with $69.07.

Local tax revenues for fiscal 1961 reached a record $19,606,000,000. The major portion, $17,175,000,000, came from property taxes, and $1,432,000,000 from sales and gross receipts taxes. (See also CENSUS DATA, U.S.)

Tax Developments in Other Countries.—Argentina imposed a 20% surcharge on taxable income for 1962–64, but individuals earning less than 50,000 pesos were exempt. Belgium completely revised its tax structure: individual rates went up to 55% in the top income bracket, with percentage reductions scaled to the number of dependents; corporate profits were taxed at a flat rate of 30%, plus an additional 5% on undistributed profits above $100,000 a year.

Chile imposed a 4% surcharge in addition to the regular tax on commercial, industrial, and professional income, while Costa Rica raised consumption taxes on beer, soft drinks, and cigarettes.

The Dominican Republic revised its tax system to include an income tax on wages and salaries, at rates ranging from 7 pesos in the lowest income bracket to 1,750 pesos in the 48,000-peso bracket. It also reduced the effective rates for all inheritance and gift tax brackets. Ecuador changed its income tax law to impose progressive tax rates on the upper income brackets. El Salvador replaced its single schedule of income tax rates for individuals with three separate rate schedules, applicable to individual income from work, capital, and mixed sources. The new rates were generally higher than the old, reaching a maximum of 76.5% on income over 195,000 colones.

Great Britain, for the first time in its history, imposed a tax on capital gains, although limiting this new tax to gains on sale of land held for three years or less and on stocks and bonds held for six months or less. The sales tax on television sets, radios, phonographs, records, cosmetics, and cars was cut to 25%; and the 27.5% sales tax on electrical appliances, cameras, and toys to 25%. India raised company taxes from 45% to 50%, increased personal income tax rates, and widened the incidence of its capital gains tax.

Italy replaced its former 20% tax on incomes of over 4 million lire from labor and capital with a sliding scale of rates reaching 24% on incomes over 100 million lire, and raised the 23% rate on income from capital to 26%. Mexico added a progressive surcharge ranging from 3% to 15% on net income of 180,000 or more pesos taxable under two or more schedules, and raised the rates on income from salary and wages.

Norway raised from 20,000 to 22,000 crowns the point at which personal income taxes become progressive. Portugal levied new sales taxes ranging from 10% on refrigerators, washing machines, and vacuum cleaners to 20% on higher-priced radio and television sets, furs, and jewelry. Taiwan imposed temporary surtaxes on all of its taxes, including a 30% surcharge on individual income tax.

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TAYLOR, Maxwell Davenport

U. S. army officer: b. Keytesville, Mo., Aug. 26, 1901.

After graduating from the U.S. Military Academy in 1922, Maxwell D. Taylor was assigned to several engineering units and to the 10th Field Artillery. He taught French and Spanish at West Point (1927–32) and in the late 1930's studied Japanese in Tokyo. During World War II, he helped organize the Army's first paratroops, took part in airborne invasions in the Mediterranean and northern Europe, and in 1945 led the 101st Airborne Division into central Germany.

After the war, Taylor was superintendent of the U.S. Military Academy (1945–49), chief of staff for American forces in Europe, commander of the American Military Government in Berlin (1949–51), and deputy chief of staff for operations at the Pentagon. In 1953 he became commanding general of the Eighth Army in Korea and then U.S. Army commander in the Far East. From 1955 to 1959 he served as chief of staff of the U.S. Army.

On June 30, 1959, General Taylor retired and the following year published the book *The Uncertain Trumpet*, which was critical of Army organization and the Pentagon's emphasis on massive nuclear retaliation as opposed to conventional forces for limited actions. He served as chairman of the board of a Canadian utility in Mexico until it was nationalized (1959–60), then became president of the new Lincoln Center for the Performing Arts in New York City. After the failure of the Cuban invasion in April 1961, President Kennedy asked General Taylor to evaluate the role of intelligence services. On July 1, 1961, Taylor was recalled to active duty as military representative of the president. In October he headed a mission to reassess the position of the United States in Southeast Asia.

General Taylor examined the military assistance situations in Cambodia, Thailand, and South Vietnam in September 1962. He supported the administration's military policies on several occasions, and on October 1 replaced Gen. Lyman L. Lemnitzer as chairman of the Joint Chiefs of Staff. As such, he figured importantly in the top-level deliberations during the Cuban crisis in October.

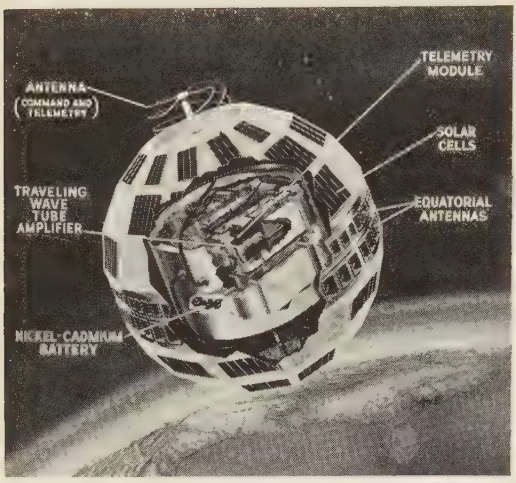
TEA

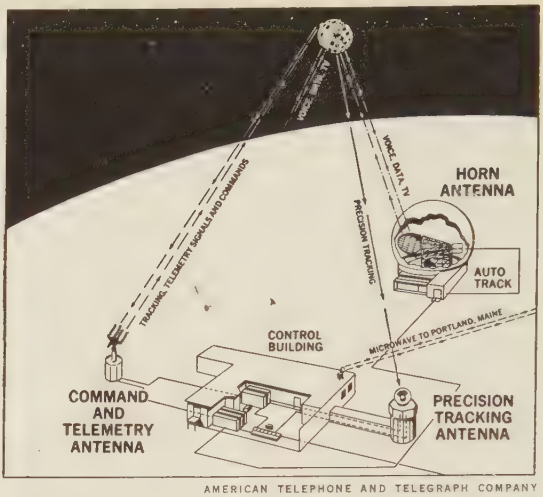
World production of tea in 1962 was forecast by the Foreign Agricultural Service of the U.S. Department of Agriculture at 2,255 million pounds, 2.5% more than the 1961 estimate of 2,120 million pounds. Thus, the rising trend of production during the past decade continued.

Tea production in Asia in 1962 was estimated at 2,119 million pounds, 2.3% more than in 1961. India, Ceylon, Indonesia, and Japan all showed increases. Indian production (about 35% of the world total in 1962) was forecast at 795 million pounds, bettering the previous record of 771.1 million established in 1961. Ceylon's output, helped by favorable weather and improved methods, was estimated at 475 million pounds, also a new record. Indonesia's 1962 estate tea crop was aided by adequate rainfall in the early months of the year and may have been about 98 million pounds. The 1961 crop was curtailed by drought and was only 90.4 million pounds. Japan's production, about 183.4 million pounds, increased 2.2% over 1961.

Production in Africa in 1962 was estimated at 118.2 million pounds, 5.1 million more than in 1961. Tea production is steadily rising in Africa due to increased acreage, new processing equipment, and the encouragement of native production, especially in Tanganyika. Record crops were forecast for the Federation of Rhodesia and Nyasaland, Mozambique, and Tanganyika, and a near-record output was forecast for Kenya.

South American production was expected to continue its upward trend with Argentina, the largest producer in the





AMERICAN TELEPHONE AND TELEGRAPH COMPANY

Drawings show the operation of the Telstar communications satellite (*left*) and its ground station at Andover, Me. (*right*).

area, harvesting a crop of around 13 million pounds in 1962. Argentina's average annual production for the 1950–54 period was less than 1 million pounds.

Per capita consumption of tea in the United States in 1962 was estimated at 0.63 pounds, compared with 0.6 pounds in 1959, 1960, and 1961.

TEA PRODUCTION IN PRINCIPAL COUNTRIES
(1,000 pounds)

	1950–54 average	1961	1962 forecast
India	624,604	771,120	795,000
Ceylon	331,822	455,200	475,000
China	170,504	348,000	340,000
Japan	117,805	179,437	183,400
Indonesia[1]	89,571	90,389	98,000
Pakistan	52,896	58,070	56,000
Taiwan	24,974	41,954	43,500
Rhodesia-Nyasaland	16,188	33,497	35,000
Kenya	15,094	27,869	30,000
Mozambique	7,902	22,487	23,500
Argentina	946	12,000	13,000
World	1,485,838	2,119,969	2,254,700

[1] Does not include smallholders' production for home use.

C. J. Enzler,
Information Specialist, Office of Information, U.S. Department of Agriculture.

TEETH. See Dentistry.
TELEGRAPHY. See Index entry.

TELEPHONE

A new era in international communications began in 1962 with the orbiting of Telstar, the Bell System's experimental earth satellite. Telstar proved the practicability of transmitting telephone calls, television signals, photographs, facsimile, data, and telegraph messages via active relay satellites.

Telstar was launched from Cape Canaveral, Fla., on July 10 by the National Aeronautics and Space Administration (NASA). The American Telephone and Telegraph Company provided the satellite and the ground stations in the United States, conducted the experiments, and paid the costs. NASA furnished the launch vehicle, launching facilities, and telemetry services. It was the first time that a private company built a satellite at its own expense and paid the cost of launching with its own funds.

The Bell System's ground station at Andover, Me., is the principal sending and receiving point in the United States for signals relayed via Telstar. In Europe, ground stations are at Goonhilly Downs, England, and Pleumeur-Bodou, France. Transatlantic television programs, channeled through these ground stations, have been transmitted to United States commercial networks and the 16-nation European Broadcasting Union (Eurovision).

As a result of a NASA request for special assistance in the United States space exploration program, the Bell System founded Bellcomm, Inc., in March 1962. Jointly owned by the American Telephone and Telegraph Company and Western Electric Company, it is performing systems engineering studies for the Gemini and Apollo projects and other space missions.

During 1962 the Project Mercury communications network of tracking and ground instrumentation stations performed successfully in the three orbital flights of manned spacecraft. This global system was engineered and installed by an industrial team headed by Western Electric. (See also Radio and Television; Space Flight.)

Defense.—As prime contractor to the Air Force for the rearward communications system for the Ballistic Missile Early Warning System (BMEWS), Western Electric completed installations at Thule, Greenland, and Clear, Alaska, and continued work on routes from Fylingdales, England, to Colorado Springs, Colo.

Work was completed on the eastern third of a deep-buried, blast-resistant telephone cable system for the United States. Extension to the west coast is scheduled to be completed in 1964.

Early in 1962 the Strategic Air Command accepted the first operational complex of the Titan I intercontinental ballistic missile. The underground based Titan I is guided by a radio command system developed by the Bell Telephone Laboratories and produced by Western Electric. (See also Missiles.)

World Telephones.—At the beginning of 1962 there were about 150 million telephones in the world, 8.3 million more than in January 1961. The United States had over 77 million of these, and each of 18 other countries had 1 million or more telephones in service.

United States Service.—In 1962 approximately 97% of the telephones in the United States were dial-operated, and over 32 million customers could dial their own long-distance calls. Users could reach about 98% of the world's telephones. Four fifths of the nation's telephones are owned and operated by the Bell System; the rest are owned by slightly over 3,000 other telephone companies. Total investment in United States telephone and plant equipment reached more than $32 billion by 1962. The Bell System spent about $3 billion on new construction during the year.

Transoceanic Telephone Cables.—An undersea cable system, with ultimate capacity for 80 voice channels, was placed in service in January 1962 between the United

TELEPHONES BY MAJOR COUNTRIES, JAN. 1, 1962
(Countries with 1 million or more telephones)

Country	Telephones	Per 100 population	Percent increase over 1961
Argentina	1,360,205	6.40	5.0
Australia	2,322,900	21.92	4.8
Belgium	1,211,449	13.13	6.0
Brazil	1,046,621	1.42	2.3
Canada	6,020,000	32.66	5.1
Czechoslovakia	1,114,049	8.06	9.7
Denmark	1,132,259	24.28	5.6
France	4,648,896	10.07	6.7
Germany (East)	1,366,199	8.00	5.4
Germany (West)	6,508,664	11.50	8.6
Italy	4,235,215	8.53	9.7
Japan[1]	6,345,266	6.73	14.8
Netherlands	1,740,110	14.85	7.9
Spain	1,949,156	6.37	8.8
Sweden	2,904,173	38.51	5.2
Switzerland	1,761,946	31.90	6.2
United Kingdom[1]	8,609,000	16.25	4.1
United States	77,422,000	41.78	4.1
USSR	5,119,061	2.33	19.0

[1] As of March 31, 1962.

States and Bermuda. This system is a single coaxial cable equipped for two-way transmission.

Future systems will use a single cable and a two-way repeater, and will have a capacity of 128 simultaneous, two-way conversations. During the next few years, a third transatlantic cable is scheduled, and new cable systems will be built to link Florida with Jamaica, Panama, and South America, and California with Hawaii and Japan.

New Developments.—The Bell System announced that its first commercial electronic central office (ECO) will be in service at Succasunna, N.J., by mid-1965. Among its new customer services will be abbreviated dialing, automatic transfer of incoming calls, addition of a third party to an existing call, and a signal to indicate a call is waiting on a busy line. The successful testing of a trial ECO in Morris, Ill., was completed in March 1962.

The entire teletypewriter exchange (TWX) network in the United States was switched from manual to dial operation in August, reducing by more than one half the time required to complete TWX calls.

During the year, Wide Area Telephone Service (WATS) was extended to include about 5,000 business customers. WATS provides unlimited long-distance calling within a selected area for a fixed monthly charge.

In June, public air-ground telephone service was extended on a developmental basis to provide coverage in the northeast quadrant of the United States. The service is available in a 400-mile-wide corridor, centered over Pittsburgh and extending from the Mississippi River to the Atlantic Ocean.

(See also ELECTRICAL INDUSTRIES; ELECTRONICS; FEDERAL COMMUNICATIONS COMMISSION; PUBLIC UTILITIES.)

M. P. COSGROVE,
Public Relations Manager,
American Telephone and Telegraph Company.

TELEVISION. See RADIO AND TELEVISION.

TELSTAR SATELLITE. See RADIO AND TELEVISION; SPACE FLIGHT; TELEPHONE.

TENNESSEE

A South Central state of the United States, Tennessee ranks 34th among the states in area (land, 41,762 square miles; inland water, 482) and 17th in population (3,634,000 on July 1, 1962, a 1.9% increase from the 1960 census figure of 3,567,089). Urban places with populations above 15,000 in 1960:

Bristol	17,582	Johnson City	31,187
Chattanooga	130,009	Kingsport	26,314
Clarksville	22,021	Knoxville	111,827
Cleveland	16,196	Memphis	497,524
Columbia	17,624	Morristown	21,267
Donelson (uninc.)	17,195	Murfreesboro	18,991
East Ridge	19,570	Nashville (*capital*)	170,874
Inglewood (uninc.)	26,527	Oak Ridge	27,169
Jackson	34,376	Woodmont-Green Hills-Glendale (uninc.)	23,161

Government.—Chief executive and judicial officers in 1962 included Buford Ellington (Democrat), governor, serving a four-year term; William D. Baird, lieutenant governor; Joe C. Carr, secretary of state; Ramon T. Davis, treasurer; William R. Snodgrass, comptroller; George F. McCanless, attorney general; Joe Morgan, commissioner of education; and Alan M. Prewitt, chief justice of the 5-member Supreme Court.

The Tennessee General Assembly, which convenes in odd-numbered years, comprised 27 Democrats and 6 Republicans in the Senate in 1962 and 80 Democrats and 19 Republicans in the House of Representatives.

Legislation, 1962.—Following the momentous March 26 decision of the U.S. Supreme Court holding that a group of Tennesseans had the right to seek redress in the federal courts for the failure of the legislature to reapportion legislative seats since 1901, Governor Ellington called the legislature into special session on May 29 to enact a new apportionment law. The act passed on June 6 increased urban representation slightly, but was adjudged unfair on June 22 by a three-man federal panel, which gave the next legislature until June 3, 1963, to correct the inequities. (See also REAPPORTIONMENT AND REDISTRICTING.)

The special session also submitted to the voters in the November election the question of calling a constitutional convention to meet in 1965 to consider changes in constitutional provisions regarding reapportionment, the governor's veto, the terms of office of legislators, and the limit placed on the length of legislative sessions. Under this plan the delegates would be elected in 1964 on the basis of the 1901 apportionment rather than the new law passed in 1962, and the major cities of the state therefore brought suit in an unsuccessful attempt to keep the convention issue off the November ballot. The calling of the convention was approved by the voters, but legal efforts aimed at preventing the holding of the convention continued.

Finance.—In the 1961 fiscal year, revenue of $565,604,306 included $312,712,870 from state taxes and $130,494,564 in federal funds. Chief tax yields were the 3% general sales tax ($106,769,331) and taxes on individual and corporate incomes ($5,983,643) and motor fuels ($3,632,440). Spending of $543,613,501 included $152,119,456 for education, $74,821,246 for health, welfare, and safety, and $126,702,470 for highways.

Education.—In the fall of 1962, public elementary schools staffed by 19,966 teachers enrolled 555,183 pupils; secondary schools with 10,273 teachers enrolled 282,610; and (fall of 1961) parochial schools with 685 teachers enrolled 20,225. College enrollment (fall of 1961) totaled 64,579.

Estimated public school spending in the 1961–62 school year totaled $219.35 million, including current expenditures of $179 million ($231 per pupil) and capital outlays of $38 million. Revenue of $227 million was drawn chiefly from state funds ($111 million) and local districts ($67 million). Teachers' salaries averaged $4,013 (high school, $4,298; elementary, $3,863). Actual spending for higher education (1961 fiscal year) amounted to $42,168,000.

Public Assistance.—In the 1962 fiscal year, public assistance payments to a monthly average of 150,908 persons totaled $51,128,581. This amount included $25,232,055 for the aged and $18,576,125 for dependent children.

Transportation and Communications.—With 695 miles of highway construction and reconstruction completed in 1961, *highways and roads* on Dec. 31, 1961, totaled 75,314 miles (71,912 surfaced). These served 1,425,882 *motor vehicles* (as registered during 1961), including 1,160,807 automobiles. Operating in the state were (1961) 27 *railroads* (using 3,442 line miles of track); (1962) 10 regularly scheduled *airlines;* and 34 commercial and municipal *airports and airfields.*

Communications media included (1962) 118 AM and 18 FM *radio stations;* 1 UHF and 16 VHF *television stations;* 30 daily *newspapers* (circulation, 1,250,000) and 142 other newspapers (275,000); and (January 1) 299,800 business and 858,900 residential *telephones.*

Labor Force.—In June 1962, nonagricultural employment totaled 953,800, compared with 934,800 a year earlier and an average of 932,000 for the full year 1961. Of nonfarm employees, 34% were in manufacturing, 20.4% in trade, and 13.2% in service industries. Covered unemployment during 1961 averaged 45,300, compared with 37,000 for 1960.

LEADING TENNESSEE MANUFACTURES, 1960

Industry group	Total employees	Total payroll (in thousands)	Adjusted value added by mfr.[1] (in thousands)
Chemicals and products	39,263	$242,685	$620,545
Food and kindred products	30,802	128,937	311,516
Apparel and related products	46,083	109,098	181,825
Textile mill products	31,004	99,031	167,775
Paper and allied products	9,288	48,503	139,093
Stone, clay, glass products	12,087	54,813	123,363
Electrical machinery	12,753	54,568	123,030
Printing and publishing	12,978	63,779	118,368
Primary metals	11,168	63,432	117,674

[1] For definition, see footnote 1 in the article *Industrial Production.*
(Source: *1960 Annual Survey of Manufactures.*)

Manufacturing.—Covered manufacturing establishments employed an average of 308,852 workers in 1961 and provided a payroll of $1,334,392,996. In 1960 all manufacturing employees numbered 306,579 (including 241,474 in production), received $1,270,525,000 in wages and salaries, and added $2,566,568,000 in adjusted value by manufacture.

Mining.—In 1961, Tennessee ranked 26th among the states in the value of its mineral output, with 0.81% of the national total. It was first in output of pyrites and zinc, and second in phosphate rock. Employment in mineral industries declined 8% during the year.

TENNESSEE MINERAL PRODUCTION, 1961
(In short tons, except as noted)

Mineral	Quantity	Value
Cement:		
Portland (376-lb. bbl.)	8,357,000	$ 26,964,000
Masonry (280-lb. bbl.)	1,018,000	2,753,000
Clays[1]	1,040,000	4,190,000
Coal	5,860,000	20,681,000
Copper (recoverable content of ores)	12,272	7,363,000
Ferroalloys	118,251	18,844,000[2]
Phosphate rock (long tons)	2,235,000	18,675,000
Sand and gravel	6,232,000	8,046,000
Stone	23,940,000	35,906,000
Zinc (recoverable content of ores)	81,734	18,799,000
Other minerals	...	7,337,000
Total	...	$147,262,000[3]

[1] Excludes certain clays, value of which is included in "Other minerals." [2] Values for processed materials are not included in the total. [3] Total adjusted to eliminate duplications in value of clay and limestone, and excludes values for processed minerals. (Source: U.S. Bureau of Mines.)

Agriculture.—Cash farm income for the first nine months of 1962 (excluding government payments) totaled $293,127,000, compared with $284,429,000 for the corresponding period of 1961. For the full year 1961, income comprised $269,423,000 from livestock, $275,226,000 from crops, and $25,681,000 in government payments. Principal income sources in 1961 were cotton lint, $93,050,000; tobacco, $90,453,000; cattle, $89,594,000.

The state's 158,000 farms in 1959 had an acreage of 16,081,000 (4,116,000 in harvested cropland). Livestock on farms on Jan. 1, 1962, included 1,991,000 cattle, 1,269,000 hogs, and 6,462,000 chickens. An average of 188,000 family and 48,000 hired workers engaged in farming in 1961.

TENNESSEE CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Corn for grain (1,000 bu.)	48,215	45,408	39,401
Cotton lint (1,000 bales)	567	554	560
Cottonseed (1,000 tons)	230	231	234
Soybeans (1,000 bu.)	5,154	10,186	10,418
Strawberries (1,000 lb.)	24,325	26,600	10,560
Tobacco (1,000 lb.)	133,279	145,215	146,575

(Source: U.S. Department of Agriculture.)

Events, 1962.—In the November 6 elections, former Gov. Frank G. Clement, again eligible after being out of office for one term, was elected governor by a clear majority over Republican Hubert Patty and retired Navy Capt. William R. Anderson, an independent Democrat, who had attained fame in 1958 by commanding the nuclear submarine *Nautilus* on its voyage under the polar icecap. Clement had defeated Chattanooga Mayor P. R. Olgiati and Memphis Commissioner William Farris in the Democratic primary in August.

In the legislative election, on the basis of the new apportionment law (see above, *Legislation, 1962*), the Republicans won 21 of the 99 House seats, compared with 19 in 1960, but elected only the same number of senators (6) as in the preceding election.

In a congressional race in the 5th District (Davidson County), incumbent Democrat J. Carlton Loser was badly defeated by his primary election opponent, Richard H. Fulton, as a result of charges of fraudulent use of absentee ballots in that primary. On November 17, a Nashville Councilman and five others were indicted for fraud in connection with the episode. There were also charges of fraud in the use of absentee ballots in Polk County. Republican William Brock won the traditionally Democratic seat in the 3d District. In June, Nashville and Davidson County voters approved the creation of a metropolitan government.

Chattanooga became the last of the four major cities of the state to begin desegregation of its public schools. Following the federal court's rejection in 1961 of its proposed grade-a-year plan, the city adopted a program of integrating the first three grades in the fall of 1962 and all 12 grades by 1968. Hamilton County adopted a similar plan voluntarily.

Federal courts ordered a speeding up of integration programs in Knoxville and Memphis. Considerable progress was made in desegregating schools in several other cities and counties, especially in Lebanon (Wilson County), Jackson (Madison County), and Waverly (Humphreys County). Vanderbilt University, despite an adverse vote of the student body, opened its undergraduate schools to Negroes.

In January, a "tent city" for Negroes allegedly evicted for trying to register and vote was set up in Haywood County, similar to one established earlier in Fayette County. In July, a consent decree was issued by a federal court enjoining landowners from using intimidation for the purpose of interfering with any person's right to vote. The U.S. Civil Rights Commission held a hearing in June in Memphis, which was selected in recognition of its good civil rights record. Twenty-nine eating places in that city had been desegregated in February without incident. Some arrests occurred for "sit-in" demonstrations in Knoxville and Nashville.

The trial of Teamster Union President James R. Hoffa, for violation of the Taft-Hartley Act by allegedly receiving kickbacks of $1,000,000 from a trucking firm, began in Nashville in October. The case ended in a mistrial in December because of a hung jury; charges of jury tampering were being investigated at year's end.

Economically, the upturn of business activity which characterized the last two quarters of 1961 continued throughout 1962. Nonagricultural employment, especially in manufacturing, steadily increased, and unemployment declined correspondingly. Retail sales, especially of automobiles, showed notable gains, as did construction activity, cotton textile manufacturing, and soft coal production. The campaign to attract new industries to Tennessee continued to bear fruit.

"Legislation" and "Events" by:
STANLEY J. FOLMSBEE,
Professor of History, University of Tennessee.

TENNESSEE VALLEY AUTHORITY. See Index entry.
TENNIS. See SPORTS, GAMES, AND SHOWS.
TERRESTRIAL MAGNETISM AND ELECTRICITY. See Index entry.

TEXAS

A Southwestern state of the United States, Texas ranks second among the states in area (land, 262,840 square miles; inland water, 4,499) and 5th in population (10,116,000 on July 1, 1962, a 5.6% increase from the 1960 census figure of

9,579,677). Urban places with populations above 25,000 in 1960:

Abilene	90,368	Kingsville	25,297
Amarillo	137,969	Laredo	60,678
Arlington	44,775	Longview	40,050
Austin (*capital*)	186,545	Lubbock	128,691
Baytown	28,159	McAllen	32,728
Beaumont	119,175	Mesquite	27,526
Big Springs	31,230	Midland	62,625
Brownsville	48,040	Odessa	80,338
Bryan	27,542	Orange	25,605
Corpus Christi	167,690	Pasadena	58,737
Dallas	679,684	Port Arthur	66,676
Denton	26,844	San Angelo	58,815
El Paso	276,687	San Antonio	587,718
Fort Worth	356,268	Temple	30,419
Galveston	67,175	Texarkana	30,218
Garland	38,501	Texas City	32,065
Grand Prairie	30,386	Tyler	51,230
Harlingen	41,207	Victoria	33,047
Houston	938,219	Waco	97,808
Irving	45,985	Wichita Falls	101,724

Government.—Chief executive and judicial officers in 1962 included Price Daniel (Democrat), governor, serving a two-year term; P. Frank Lake, secretary of state; Jesse James, treasurer; C. H. Cavness, auditor; Will Wilson, attorney general; J. W. Edgar, commissioner of education; and Robert W. Calvert, chief justice of the 9-member Supreme Court, the highest civil judicial court.

The Texas Legislature, which convenes in odd-numbered years, comprised 31 Democrats in the Senate in 1962 and 148 Democrats and 2 Republicans in the House of Representatives.

Finance.—In the 1962 fiscal year, revenue of $2,207,778,793 included $964,241,236 from state taxes and $326,025,809 in county, federal, and other aid funds. Chief tax yields were the 2% limited retail sales tax ($148,660,600) and taxes on gross receipts and production ($212,481,782), motor fuels ($210,642,714), and cigarettes and tobacco ($94,686,951). Spending of $2,120,758,383 included $531,686,608 for education, $224,921,226 for health, sanitation, and public welfare, and $372,190,346 for highways.

Education.—In the fall of 1962, public elementary schools staffed by 52,963 teachers enrolled 1,759,074 pupils; secondary schools with 36,758 teachers enrolled 532,205; and (fall 1961) parochial schools with 4,692 teachers enrolled 137,293. College enrollment (fall 1961) totaled 196,206 in 95 institutions, including 35 junior colleges and 60 senior colleges and universities.

Estimated public school spending in the 1961–62 school year totaled $925.85 million, including current expenditures of $753 million ($381 per pupil) and capital outlays of $120 million. Revenue of $1,026 million was drawn chiefly from state funds ($501 million) and local districts ($370 million). Teachers' salaries averaged $5,205 (high school, $5,330; elementary, $5,125). Actual spending for higher education amounted to $147,685,000.

Public Assistance.—In the 1962 fiscal year, public assistance payments to a monthly average of 316,678 persons totaled $171,489,766. This amount included $144,054,257 for the aged and $18,242,155 for dependent children.

Transportation and Communications.—With 4,028 miles of highway construction and reconstruction completed during 1961, *highways and roads* on Jan. 1, 1962, totaled 198,828 miles (71,597 surfaced). These served 5,097,433 *motor vehicles* (as registered March 31, 1962), including 3,637,946 automobiles. Operating in the state were (1961) 53 *railroads* (using 14,800 line miles of track); (1960) 11 regularly scheduled *airlines;* and (1961) 210 general *airports and airfields.*

Communications media included (1962) 275 AM and 45 FM *radio stations;* 1 UHF and 47 VHF *television stations;* (1961) 117 daily *newspapers* (circulation, 2,907,386) and 561 other newspapers (976,298); and (Jan. 1, 1962) 1,105,900 business and 2,546,400 residential *telephones.*

Labor Force.—The state's labor force on July 15, 1962, included 363,500 agricultural workers. Nonagricultural employment, totaled 3,115,100, compared with 3,070,400 a year earlier and an average of 3,086,100 for the 12 intervening months. Of nonfarm employees, 26.1% were in trade, 19.1% in service industries, and 16.6% in manufacturing. Unemployment on July 15, 1962, stood at 180,000, compared with 217,200 a year earlier.

Manufacturing.—Covered manufacturing engaged an average of 470,884 workers in 1962. In 1960 all manufacturing employees numbered 484,262, including 344,622 in production; salaries and wages totaled $2,453,419,000; and adjusted value added by manufacture amounted to $5,775,336,000.

LEADING TEXAS MANUFACTURES, 1960

Industry group	Total employees	Total payroll	Adjusted value added by mfr.[1] (in thousands)
Chemicals and products	40,022	$276,800	$1,343,343
Food and kindred products	78,327	316,992	805,896
Petroleum and coal products	39,029	270,727	696,529
Transportation equipment	51,227	319,154	545,152
Nonelectrical machinery	39,984	217,692	437,516
Primary metals	25,523	143,538	335,736
Fabricated metals	28,699	142,217	256,640
Stone, clay, glass products	22,807	100,001	240,309
Printing and publishing	27,347	129,153	235,908
Electrical machinery	17,412	93,773	196,809

[1] For definition, see footnote 1 in the article *Industrial Production.* (Source: *1960 Annual Survey of Manufactures.*)

Mining.—In 1961, Texas ranked first among the states in the value of mineral output, with 23.30% of the national total. Of the total value, mineral fuels provided over 93%. Texas was first in output of asphalt, graphite, magnesium chloride, natural gas, natural gas liquids, petroleum, and sulfur (Frasch); second in bromine, clays, helium, salt, sodium sulfate, and stone; third in cement; and fourth in gypsum, talc, soapstone, and pyrophyllite.

TEXAS MINERAL PRODUCTION, 1961
(In short tons, except as noted)

Mineral	Quantity	Value
Cement:		
Portland (376-lb. bbl.)	25,101,000	$ 80,808,000
Masonry (280-lb. bbl.)	851,000	2,529,000
Clays[1]	3,786,000	5,737,000
Gypsum	1,074,000	3,846,000
Helium (1,000 cu. ft.)	173,066	3,196,000
Lime	880,000	9,736,000
Natural gas (1,000 cu. ft.)	5,963,605,000	733,523,000
Natural gasoline (1,000 gal.)	3,111,427	214,279,000
Petroleum (bbl.)	938,017,000[2]	2,787,925,000[2]
Petroleum gases (1,000 gal.)	4,768,222	185,558,000
Salt, common	4,695,000	17,682,000
Sand and gravel	27,398,000	30,691,000
Stone	38,316,000	45,874,000
Sulfur, Frasch (long tons)	2,730,000	62,720,000
Other minerals	...	51,449,000
Total	...	$4,224,909,000[3]

[1] Excludes certain clays, value of which is included in "Other minerals." [2] Preliminary. [3] Total adjusted to eliminate duplication in the value of clays and stone. (Source: U.S. Bureau of Mines.)

Agriculture.—Cash farm income for the first nine months of 1962 (excluding government payments) totaled $1,582,278,000, compared with $1,444,812,000 for the corresponding period of 1961. For the full year 1961 income comprised $1,053,751,000 from livestock, $1,342,694,000 from crops, and $133,870,000 in government payments. Principal income sources in 1961 were cattle, $646,209,000; cotton lint, $644,270,000; sorghum grain, $206,630,000; wholesale milk, $134,937,000; and wheat, $125,325,000.

The state's 227,000 farms in 1959 had an acreage of 143,218,000 (22,236,000 in harvested cropland). Livestock on farms on Jan. 1, 1962, included 9,660,000 cattle, 996,000 hogs, 5,832,000 sheep, and 15,874,000 chickens, and (1961) 123,-

TEXAS CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Carrots (1,000 cwt.)	3,786[1]	4,312	4,290
Corn for grain (1,000 bu.)	35,558	31,890	32,612
Cotton lint (1,000 bales)	4,050	4,786	4,680
Cottonseed (1,000 tons)	1,698	2,039	1,981
Flaxseed (1,000 bu.)	485	1,610	188
Grapefruit (1,000 boxes)	2,900	2,700	200
Oranges (1,000 boxes)	1,740	2,300	80
Peanuts (1,000 lb.)	162,238	224,960	224,750
Pecans (1,000 lb.)	31,470	20,000	12,000
Rice (1,000 bags)	13,456	11,861	15,801
Sorghum grain (1,000 bu.)	160,532	229,635	201,006
Wheat (1,000 bu.)	38,874	84,870	43,696

[1] Full-time winter average: 3,088; short-time fall average (1955–60): 698. (Source: U.S. Department of Agriculture.)

WIDE WORLD

John Connally and his wife, Nellie, rejoice as returns on November 6 show Connally ahead in Texas gubernatorial race.

043,000 broilers. An average of 250,000 family and 194,000 hired workers engaged in farming during 1961.

Events, 1962.—State political developments during the year centered around the gubernatorial race. The first primary on May 5 found a six-man field contesting for the Democratic nomination. Opposing Gov. Price Daniel, who sought a fourth term, were John B. Connally, Jr., former secretary of the Navy and close associate of Vice President Johnson; Don Yarborough, a Houston attorney with liberal and labor support; Will Wilson, state attorney general; Marshall Formby, Plainview radio-station owner; and former Maj. Gen. Edwin A. Walker, candidate of the extreme right.

In the balloting, Connally led the field by polling about 30 percent of the total vote. In what most observers regarded as a mild upset, Yarborough (not related to U.S. Sen. Ralph Yarborough) edged out Governor Daniel for second place and the right to oppose Connally in a runoff. Also in the May primary, Jack Cox, erstwhile Democrat, scored an easy victory over Roy Whittenburg to gain the Republican nomination for governor.

The runoff contest between Connally and Yarborough on June 2 was surprisingly close. Connally won with about 51 percent of a total vote that exceeded 1.1 million. An influential factor in Yarborough's strong race was believed to have been his effective use of Connally's refusal to engage in pre-election debates.

The fall campaign between Connally and Cox was extremely hard-fought and occasionally marked by bitter exchanges. In the November election, Cox failed in his bid to become the first Republican governor of Texas since Reconstruction days, but he did gain about 45 percent of the total vote. Despite a spirited campaign effort, Texas Republicans failed to win a single statewide office, and their goal of a two-party state was yet to be achieved.

Bruce Alger of Dallas, the only incumbent Republican representative from Texas, won reelection in the 5th District and was joined in the House by another Republican, Ed Foreman, who defeated Democratic Rep. J. T. Rutherford in the 16th District. Republican strength was particularly notable in Dallas, where six of the party's seven members of the state Legislature were elected.

Two unrelated scandals made headline news during the year. The first was the nationally celebrated case of Billy Sol Estes, West Texas promoter, whose $22 million financial empire collapsed in April when a federal grand jury indicted him on 57 acts of fraud. Estes' complex financial maneuverings resulted in charges of illegal transfer of federal cotton acreage allotments, attempts to gain a monopoly in the liquid fertilizer market in West Texas, and illegality in securing contracts for federal grain storage. Estes was also accused of defrauding 12 finance companies by issuing mortgages on nonexistent fertilizer storage tanks, this in order to build up his grain stores. Some Department of Agriculture officials and independent business concerns also were involved in the Estes case.

On November 7, a state jury in Tyler found Estes guilty on a charge of swindling and sentenced him to eight years in state prison. (He remained free on bond pending an appeal.) He also was scheduled to stand trial on a variety of federal charges in the spring of 1963.

The second scandal, involving independent oil operators and state officials, resulted from discovery of the practice of slant-well drilling in East Texas oilfields. Oil from an adjacent producing well would be siphoned off after drilling in at an angle, sometimes in excess of 50 degrees. Texas law calls for no more than a 3-degree deviation except in certain special cases. Numerous trials on charges growing out of a state investigation in the fall were expected during 1963.

Economic activity in the state rose moderately during the year, but production of crude petroleum remained at severely restricted levels. The typical number of allowable producing days was only eight per month, continuing a pattern set in 1960 which has found Texas making the major adjustment of petroleum supply to nationwide market demand. In December, the basis for production regulation was changed from days-per-month to percentage-of-total-allowable. While a minor step, this provided slightly greater flexibility in setting production.

On September 28, President Kennedy signed a bill establishing Padre Island National Seashore Park, an 80.5-mile strip of beach off the lower Texas Gulf coast.

"Events" by: JOHN E. HODGES,
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TEXTILE INDUSTRY

United States consumption of cotton, wool, silk, and the man-made fibers in 1961 totaled 6,509 million pounds, 1% above the 1960 total. The annual rate of consumption of these fibers during the first half of 1962 was 7,186 million pounds, 10% more than in 1961. The 1962 annual rate of raw cotton consumption, based on data for the first half of the year, was 4,438 million pounds, 8% more than the actual 1961 consumption. Wool usage in 1962, on the same basis, was 436 million pounds, 6½% greater than in 1961, while silk consumption, 6 million pounds, continued at the same low rate as in recent years.

Man-made fiber consumption during the January–June 1962 period was at an annual rate of 2,306 million pounds, 16% above the actual 1961 figure. The following figures are the 1961 actual and the 1962 annual rate of consumption, respectively, both in millions of pounds, and the percentage change from 1961 to 1962: rayon and acetate yarn for "textile" uses, 405 and 452 (+12%); rayon yarn for tires and related uses, 223 and 236 (+6%); rayon and acetate staple + tow, 499 and 556 (+11%); noncellulosic man-made fiber, 706 and 872 (+24%); and textile glass fiber, 147 and 190 (+29%).

Cotton retained its position as the most important textile fiber in pounds consumed, accounting for 62% of the total fiber used in the first half of 1962, as compared with 63% in the full year 1961. Consumption of raw wool represented 6% of the total in 1962, the same as in 1961; and man-made fibers, 32%, which compares with 31% in 1961.

SELECTED U.S. TEXTILE STATISTICS

	Year 1959	Year 1960	Year 1961	1st half 1962
Fiber Consumption:	(Millions of pounds)			
Raw Cotton	4,336	4,196	4,113	2,219
Raw Wool, total[1]	431	407	410	218
Apparel class	263	244	263	146
Carpet class	168	163	147	72
Raw silk	6	6	6	3
Man-made fibers[2]	1,994	1,818	1,980	1,153
Rayon + acetate yarn	723	625	628	344
Rayon + acetate staple	530	431	499	278
Noncellulosic fibers[3]	590	614	706	436
Textile glass fiber	151	148	147	95
Total fibers	6,767	6,427	6,509	3,593
Tire Cord and Fabric:[4]				
Cotton	4	3	3	2
Nylon	124	139	149	92
Rayon	297	240	213	110
Total tire cord and fabric	425	382	365	204
Broad Woven Fabric Output:[5]	(Millions of linear yards)			
Cotton fabrics	9,603	9,365	9,168	4,860
Man-made fiber fabrics[6]	2,500	2,404	2,408	1,333
Woolen and worsted fabrics[7]	311	286	287	158
Total broad woven goods	12,414	12,055	11,863	6,321

[1] Scoured basis. [2] U.S. producers' domestic shipments plus imports for consumption. [3] Includes acrylic, modacrylic, nylon, nytril (dinitrile), olefin (polyethylene and polypropylene), spandex, vinal (polyvinyl alcohol), vinyon (polyvinyl acetate), and TFE-fluorocarbon fiber. [4] Excluding chafer fabric. [5] Except tire fabric. [6] Including a nominal yardage of silk fabrics. [7] Excluding carpets, rugs and felts.

Broad Woven Goods Production.—Production of broad woven goods in the United States during the first half of 1962 was at an annual rate of 12,642 million linear yards, 7% greater than 1961. The annual rate of cotton goods output was 9,720 million yards, up 6% from 1961.

The 1962 rate of man-made fiber production (including a small yardage of silk goods), at 2,666 million linear yards, was 11% above the 1961 level; woolen and worsted fabric production was 316 million yards, 10% above the 1961 actual production.

Tire Cord and Fabric Production.—Based on data for the first half year, the 1962 annual rate of tire cord and fabric production was 408 million pounds, or 12% more than in 1961. Nylon continued to increase in importance, comprising 45% of the 1962 production (41% in 1961).

Prices.—Compared with 1961, most textile fiber prices rose slightly in the first nine months of 1962. For example, the average price of 1-inch middling raw cotton for that period was 33.7 cents a pound, or 1.4 cents above the 1961 annual average, while the 1962 nine-month average price of raw wool (scoured basis at Boston) was $1.23 a pound, 5 cents higher than the 1961 average.

Employment and Weekly Earnings.—Employment in United States knitting and weaving mills, as well as in the manufacture of apparel and other finished textile products, averaged 1,884,000 persons during the first half of 1962, slightly above the 1,860,000 average of 1961 but below the 1960 employment of 1,921,000 persons.

The average weekly gross earnings of textile mill product employees during the first half of 1962 was $68.11, compared with $65.04 in 1961 and $63.60 in 1960. For the apparel cutting and related trades, the average weekly wages for the first half of 1962 were $60.28 ($57.70 in 1961 and $56.45 in 1960).

Imports and Exports.—The United States traditionally has been a net exporter of textile fibers and manufactures. The large export balance of raw cotton, cotton textiles, noncellulosic man-made fibers, and man-made fiber textile products is usually offset, but to a lesser degree, by substantial imports of raw wool, wool textiles, and man-made fiber staple. An export balance of $461 million was realized in 1960, and of $403 million in 1961. In the first six months of 1962, an import balance again appeared, at an annual rate of $86 million. This total is composed of projected imports of $1,366 million and exports of $1,280 million.

Per-Capita Fiber Consumption.—Civilian per-capita consumption of cotton, wool, and the man-made fibers in the United States was 35.8 pounds in 1961, one-half pound less than in 1960. Wool usage decreased by 0.1 pound to reach a level of 2.9 pounds per person in 1961. Cotton consumption was 22.2 pounds, 1.2 pounds less than in 1960.

Man-made fiber consumption, on the other hand, increased 0.8 pounds to 10.7 pounds per capita in 1961. These per-capita data are based on the mill consumption of the fibers, minus exports and plus imports of fabricated products, divided by the civilian population.

Flax and Linen.—Since very little flax is grown in the United States for textile fiber purposes, practically all of the raw flax and linen fabrics and most linen finished goods are imported. In 1961, imports of raw flax and flax yarns totaled 8.1 million pounds, compared with 6.6 million pounds in 1960. Imports of linen and chiefly-linen fabrics totaled 17 million pounds in 1961, compared with 17.4 million pounds in 1960. Imports of the principal linen manufactures in 1961 included 1,753 thousand dozen handkerchiefs (down 12% from 1960), 190 thousand dozen towels (down 10%), and 434 thousand dozen napkins (down 3%).

Canadian Textile Developments.—Increased output by the Canadian textile manufacturing industry was recorded in 1961. Shipments of cotton fabrics, 356 million yards, were 45 million yards, or 14%, higher than in 1960; wool fabric (excluding military cloth) production was 21 million yards, 6% higher than in 1960; and man-made fiber fabric shipments were 105 million yards, 12% higher than in 1960.

The output of rayon and acetate yarn and staple in 1961, however, was 73.2 million pounds, 2.1 million pounds lower than in 1960. Noncellulosic fiber production was 43.6 million pounds in 1961, or 6.4 million pounds higher than in 1960.

Employment in the Canadian textile industry in 1961 totaled 73,300 persons: 14,900 in the man-made fiber yarn and fabric industries, 11,900 in wool, 18,100 in cotton, 19,300 in knit goods, and 9,100 in other segments of the industry.

After a steady decline through 1957, the Canadian mills' share of the domestic fabric market increased to 54% in 1960 and to 59% in 1961. Within these 1960 and 1961 totals respectively, Canadian-made cotton fabrics increased from 48% to 50% of that market, wool from 56% to 59%, and the man-made fiber fabrics from 69% to 73%.

(For further information see the Index entry, *Textile Industry.*)

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THAILAND

Thailand (formerly Siam) is a kingdom in Southeast Asia. It has an area of approximately 198,500 square miles, consisting largely of forest. The population is 27.2 million (mid-1961 est.), including more than 3 million Chinese, and is increasing at a rate of 3% per year. The metropolitan area of Bangkok, the capital and largest city, has a population of 2,370,000. The language is Thai.

Government.—Thailand is a kingdom, and the present monarch is Bhumibol Adulyadej (phonetic spelling, Phumiphon Adundet), who has ruled since 1950. Field Marshal Sarit Thanarat is the nation's strongman, with almost unlimited power. The constitution of 1932 was abrogated in 1958, and a new constitution was in preparation in 1962. There is a provisional 12-man cabinet and a 240-member interim legislative assembly. Thailand is a signatory of the Southeast Asia Treaty Organization (SEATO).

Education and Religion.—School enrollment, 1960: preschool, 38,830; primary, 3,935,152; secondary, 301,960; higher (including universities), 49,956; special, 65,693. The annual increase in teachers is 2–3%; in students, 6–10%. Expenditures on education account for 16.5% of the national budget (in 1962, 1,468,425,000 bahts). A new national education act was put into effect on April 1, 1961. About 95% of the population is Buddhist.

Finance.—Government revenue, 1961: 7,773 million bahts (6,778 million in 1960; 1 baht equals U.S.$0.48); expenditure, 7,748 million (6,720 million). Gold and foreign exchange holdings: $421.3 million as of January 1962. Money supply: $535.5 million as of January 1962 (up 12% from 1960).

Transportation and Communications.—Transport networks: railway trackage, 2,096 miles (1962); railway passengers, 39,707,000, freight, 4,109,000 tons (1961); state highways, 4,500 miles (1962); provincial highways, 1,020 miles (1962). A well developed inland waterway system exists, and there is an airline with 12 aircraft. Passenger cars: 40,700 (1959); commercial vehicles, 47,000 (1959); telephones, 42,683 (1960); radio receivers, 163,000 (1960); television sets, 100,000 (1962).

Economic Indicators.—Gross national product: $2.53 billion (1961). Index of agricultural production (1952–57 = 100): 112 in 1959–60. Cost of living index (1958 = 100): 106 in June 1962 (102 in 1961).

Manufactures and Minerals.—Thailand has little manufacturing. There is a rich mineral potential, but production is small. Chief products (metric tons, 1961): lignite, 100,000; cement, 646,800; electric power, 441.6 million kw.-hr. The Thai Board of Investment has proved active in promoting industrialization and mineral exploitation.

Agriculture.—Agriculture engages 84% of the labor force. Chief crops (metric tons, 1961): crude rice, 7.9 million; corn, 700,000; kenaf (a fiber plant), 200,000; rubber, 15,400. Other products are sugarcane, kapok, and teakwood.

Foreign Trade.—Total exports, 1961: 10,011 million bahts (8,614 million in 1960); imports, 10,191 million (9,560 million). Principal exports (in million bahts, 1961): rice, 3,613 (2,581 in 1960); rubber, 2,130 (2,579). Other exports: corn products, tapioca, kenaf, tin, and teak. Chief customers (with percentage of total Thai exports received, 1961): Japan (13%); Malaya (13%); Indonesia (10%); Singapore (9%); Hong Kong (9%); United States (7%). Principal suppliers (with percentage of total imports provided, 1961): Japan (29%); United States (15%); United Kingdom (9%); West Germany (7%); Singapore (6%).

Events, 1962.—The Communist build-up in Laos began to prove a real threat to the security of Thailand in the spring. In March, United States military advisers began training Thai army units in counter-guerrilla warfare in anticipation of a possible Communist drive against Thailand in the future. In early May, pro-Communist Pathet Lao troops drove 2,000 royal Laotian troops from northern Laos into Thailand. On May 12, President Kennedy ordered a carrier task force of the Seventh Fleet into the Gulf of Siam as a precautionary measure; the task force carried an 1,800-man Marine combat battalion. On May 15, on Thailand's request, the president ordered a full deployment of 5,000 troops—including 1,000 already there on SEATO maneuvers, the Marine battalion, and a 1,200-man Army battle group—into Thailand. Several other members of SEATO also gave military assistance. In the absence of further aggressive moves by the Pathet Lao forces, the Marines were withdrawn in July and August, and 2,300 Army infantrymen departed in late November and early December.

U.S. Marines pile their equipment on dock in Bangkok Harbor, May 17, as they arrive to bolster Thailand defenses. The last contingent of Marines was withdrawn on August 4.

WIDE WORLD

The president's actions in the spring were taken in accordance with United States commitments to the security of Thailand. However, Thailand's resentment of later American military aid to Cambodia resulted in strained relations between Thailand and the United States. In September there were suggestions in Bangkok that the Thai government would begin to follow a Thailand-first foreign policy and would cultivate closer relations with the Afro-Asian nations.

Thai-Cambodian relations were volatile during 1962. Diplomatic relations, having been broken in the fall of 1961, remained severed. Resentment over American military aid to Cambodia was aggravated by the role of the United States in the dispute over the ownership of the Temple of Preah Vihear, a 12th century Brahmin temple on the Thai-Cambodian border. In 1959, Cambodia brought the question to the International Court of Justice, where Cambodia's case was presented by former U.S. Secretary of State Dean Acheson. In June 1962 the court ruled 9 to 3 that the temple belonged to Cambodia. The decision was accepted with great reluctance by the Thai government. In reaction against United States support of Cambodia on this issue, Thailand boycotted all SEATO meetings from June 19 to July 18.

The first direct rail connection between Thailand and Malaya was opened on April 22. It represented the first project of the Association of Southeast Asia (composed of Thailand, Malaya, and the Philippines), whose purpose is to coordinate more closely the economic programs of the member states.

The leader of Thailand's Buddhist hierarchy, Somdej Pra Ariyawongsakhatayana, died on June 17 at the age of 74.

On October 27, tropical storm Harriet swept the southern provinces of Thailand, killing 769 persons and severely injuring 252. The missing were estimated at 142 and damages at nearly $19 million.

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THANT, U

Burmese diplomat; secretary general of the United Nations: b. Pantanaw, Burma, Jan. 22, 1909.

Having served since Nov. 3, 1961, as acting secretary general of the United Nations to fill the unexpired term of the late Dag Hammarskjöld, U Thant was appointed secretary general on Nov. 30, 1962, for a term of office expiring in 1966.

Educated at the University College, Rangoon, Thant became a teacher and eventually headmaster of the National High School in Pantanaw. In 1947 he entered government service in the press department, and in the following year he became head of radio broadcasting. He was the trusted adviser to premiers U Nu and U Ba Swe at several international conferences.

In 1957 he was appointed permanent representative of Burma to the United Nations, and as such he headed his country's delegation at the 12th to 16th sessions of the General Assembly. In 1961 he served as chairman of the

UN Congo Counciliation Commission, and of the UN Capital Development Fund Committee.

On assuming the office of acting secretary general in November 1961, Thant proceeded to tackle the pressing Congo situation. He found no easy solution, however, to the problem which resulted in the death of his predecessor. In July 1962, Thant suggested using economic pressure to compel the secessionists of Katanga Province to accept the authority of the Congolese central government. By this time the United Nations Congo forces were costing some $10 million monthly. It was through Thant's plan to employ military force that the province was eventually brought under the control of Léopoldville in January 1963. (See also CONGO, REPUBLIC OF THE.)

As a result of the financial burdens incurred by the Congo operation, the United Nations was on the verge of bankruptcy when Thant took office. At his suggestion, the UN General Assembly authorized the issuance of $200 million in 25-year bonds and averted a serious financial crisis.

Thant also played an important part in the successful Dutch-Indonesian negotiations concerning West New Guinea. Agreement between the two parties was signed in his presence on Aug. 15, 1962. (See also INDONESIA; NETHERLANDS; WEST NEW GUINEA.)

In 1962, Thant made three official visits abroad. In May he made a trip to Denmark, Sweden, and Switzerland; in July he visited the United Kingdom, Norway, Switzerland, Ireland, France, and Finland; and in August and September he went to the Soviet Union, Poland, Czechoslovakia, and Austria. While in the Soviet Union, he conferred with Premier Khrushchev in Yalta.

At the height of the Cuban crisis in October, Thant attempted to break the impasse by suggesting a two-to-three-week suspension of operations by both sides. After the Soviet Union had agreed to remove offensive weapons from the island and to allow international verification of removal operations, Thant went to Havana (October 30–31) at the invitation of the Cuban government. He reported later that he had been reliably informed that the missiles were being dismantled. (See also CUBA.)

In May, Thant suffered a personal tragedy when his only son died in an accident in Rangoon.

(See also UNITED NATIONS.)

UPI

U Thant, elected United Nations secretary general on November 30, poses with his wife (center) and daughter, Mrs. Tyn Myint. He had been acting secretary general 13 months.

THEATER

The year 1962 was most conspicuous for the double record of *My Fair Lady*. On September 29, when its New York run finally ended with the staggering total of 2,717 performances, it had become the longest-running musical in Broadway's history. In London, also, it established a record; for on January 10, with 1,544 performances at the Drury Lane, it outdistanced *Oklahoma!* as the all-time record holder for American musicals in England.

For the English, however, the real record was made on July 3 when, after a generation of active debate and over 100 years of discussion, the plans for the National Theatre were finally approved by the House of Commons. Though the withdrawal early in the year of the Royal Shakespeare Theatre Company from the planning group threatened for a time to jeopardize the National Theatre, the naming on August 9 of Sir Laurence Olivier as artistic director seemed, even to its most hostile critics, to certify a 1965—possibly even a target-date 1964—opening of the two authorized buildings, an opera house and a theater-in-the-round auditorium.

Festivals.—The accelerating worldwide movement away from individual productions and toward festival or repertory productions of groups of plays became strikingly evident in 1962. Paris, for instance, drew from 23 countries 112 productions of drama, dance, and opera to its Theater of the Nations festival. Opening on March 27, World Theater Day, the festival in its three months of activity presented an extraordinarily wide range of productions: from the Greek National Theater's *The Phoenicians* of Euripides to the New York Living Theatre's production of Jack Gelber's controversial *The Apple;* from the Dublin Theatre Festival's production of *The Voice of Shem* (an adaptation of Joyce's *Finnegans Wake*) to the Maly Theater of Moscow's production of Tolstoy's *The Power of Darkness.*

Festival activity was, however, to be seen everywhere. In Spoleto, at Italy's Festival of Two Worlds, the premiere of Tennessee Williams' new play, *The Milk Train Doesn't Stop Here Anymore,* was both a critical and a popular success. And in Greece, at the Festival of Epidaurus, for the eighth successive season, 14,000 persons were in attendance for the opening production—in 1962 a breathtakingly effective version of Euripides' *Bacchae.* Here, in a 2,300-year-old theater world-famous for its perfect acoustics, on ten consecutive weekends the Greek classics were vividly alive.

The British Isles' two principal festivals—those in Dublin, where Eugene O'Neill's *Long Day's Journey into Night* was of most interest, and in Edinburgh, where *Curtmantle,* Christopher Fry's first new play in eight years, opened to decidedly mixed reviews—were joined by a third, this one in England itself. Under the artistic direction of Sir Laurence Olivier, the newly built arena theater of the Chichester Festival opened a season that drew on such seldom-performed plays as John Ford's *The Broken Heart* and the Duke of Buckingham's adaptation of Beaumont and Fletcher's *The Chances.*

Shakespeare.—The principal festival business is, of course, that devoted to Shakespeare. And Shakespeare festivals could be found all over the English-speaking world. (At the Montreal Festival, in fact, a French-Canadian *Richard II* proved the hit of the summer.)

In the parent Shakespeare festival, that at Stratford-on-Avon, England, an excellent *Measure for Measure* under John Blatchley's direction balanced out a weak *Macbeth* and a mediocre *Cymbeline;* while in London's Regent's Park Shake-

speare Festival, a lovely *Midsummer Night's Dream* proved the principal attraction of its 30th season.

The most satisfying Shakespeare festival, however, was neither parent nor London offspring, but rather the brilliant one which played nightly to the 2,249 spectators who jammed the new Delacorte Theater in New York's Central Park. Charging no admission, Joseph Papp's precariously financed festival earned uniform critical praise for Gerald Freedman's fine production of *The Tempest*, a production dominated by Paul Stevens' imposing Prospero; an elegent *Merchant of Venice*, described by Arthur Gelb of the New York *Times* as "stylish, opulent, and beautifully acted"; and an altogether memorable production of *King Lear* under Mr. Papp's direction, unorthodox yet satisfying in Frank Silvera's crusty, human Lear who rises in the course of the play from senile fool to eloquent, low-keyed, tragic wise man.

Of the eight other Shakespeare festivals in North America, that in Stratford, Ontario, was artistically most successful. Perhaps for economic reasons (it had begun the season with an indebtedness of nearly $500,000), it offered—in addition to an elemental *Macbeth*, a graceful *Tempest*, and a lively *taming of the Shrew*—popular and well-attended versions of Rostand's *Cyrano de Bergerac* and Gilbert and Sullivan's *The Gondoliers*.

At Stratford, Conn., on the other hand, only two full-length plays were attempted: a good *Henry IV, Part I*, intelligently directed by Douglas Seale; and a disorganized, careless production of *Richard II*—evidence, many theater historians felt, of the artistic confusion which lies behind the prosperous but fumbling company.

Theater Trends.—Though there was no significant increase in the 150 professional summer stock companies in the United States, both professional and amateur community theaters were booming, the newest one an ambitious venture backed by the University of Michigan—the first professional theater company in America entirely sponsored by university funds. Bus and truck touring companies also were on the increase, many of them bringing the "road"—for the first time in years—to small towns and to university theaters. Jean de Rigault's Le Tréteau de Paris, for instance, played coast-to-coast a French-language double bill of Sartre's *No Exit* and Ionesco's *The Bald Soprano*, all of the performances in college theaters.

The big theaters, on the other hand, seemed very nearly doomed, only the McVickers Theater in Chicago bucking the trend by serving for the first time since 1914 as a legitimate house. Offering a variety of solutions to the building problem, a foundation-backed set of models for eight "ideal" theaters was displayed in New York's Museum of Contemporary Crafts. Designed by such men as Jo Mielziner and Frederick J. Kiesler, some of the models offered facilities for multiple use or allowed the director maximum flexibility of staging.

None of the "ideal" theaters seems likely to materialize in the near future. Yet something of the demand for theater can be seen reflected in 1962's vastly expanded distribution of paperback editions of plays and in the growing sales of long-playing records of full-length dramatic productions. One way in which this huge potential audience may be satisfied was suggested in the extraordinarily successful CBS television broadcast on June 21 of Joseph Papp's production of *The Merchant of Venice*, which, uninterrupted by commercials, was seen by an estimated audience of 1,600,000 persons. Another television solution was explored on March 28 in a closed-circuit experiment: A regular performance of Paddy Chayefsky's *Gideon* was picked up from the back rows of the Plymouth Theater in New York and simultaneously viewed by a Rochester audience of 2,500 customers who, assembled in a theater, watched the performance on a 20-by-15-foot screen.

London.—If festivals boomed, the road revived, and television experiments seemed to pay off, the theater languished both in New York and in London. London's "experimental" Arts Theater seemed doomed to lose its lease, in spite of the fiercely debated "Theater of Cruelty" productions—the best of them David Rudkin's *Afore Night Come*—brought to it by its enterprising artistic director, Peter Hall. And in the regular London season, only Arnold Wesker's *Chips with Everything*, an allegorical account of life in a Royal Air Force recruit station, seemed to be of more than passing interest.

Broadway.—Some indication of the nature of the Broadway scene can be suggested by a set of very simple statistics. On June 1, of the entire group of plays to open between January 1 and the end of May, only five productions—four musicals and a single drama—had survived. Among these, Richard Rodgers' *No Strings* was visually and musically exciting, but it suffered from an empty book; *A Funny Thing Happened on the Way to the Forum*, the best of the lot, really was funny, but it depended almost entirely on the performance of Zero Mostel; and the others—*I Can Get It for You Wholesale*, *Bravo Giovanni*, and the comedy-drama *A Thousand Clowns*—were, though entertaining, in no way really memorable.

There had, of course, been interesting things to see. The City Center had imported the Old

Highlights of the 1961–62 Broadway season. (*Left*) Anthony Quinn and Margaret Leighton in *Tchin-Tchin*. (*Center*) Sid Caesar, who played seven roles in *Little Me*. (*Right*) Jason Robards, Jr., and Barry Gordon in the comedy *A Thousand Clowns*.

(CENTER) FRIEDMAN-ABELES

(*Left*) Diahann Carroll and Richard Kiley starred in the musical hit *No Strings*. (*Right*) The English comedy revue *Beyond the Fringe* featured Dudley Moore, Peter Cook, Jonathan Miller, and Allan Bennett in satirical sketches.

Vic's blazingly brilliant *Romeo and Juliet*, which, under Franco Zeffirelli's direction, glowed with youth and vitality. The Royal Dramatic Theater of Sweden, stopping off for a week on the way to the Seattle World's Fair, showed how powerful Eugene O'Neill's *Long Day's Journey into Night* could be in a Swedish-language production, and showed as well how exciting 60-year-old Inga Tidblad, the star of the group, could be playing the 25-year-old heroine of Strindberg's *Miss Julie*. But a host of adaptations—*The Aspern Papers, A Passage to India, A Gift of Time, Something About a Soldier*—proved, like *The Affair* in the autumn, that complex novels are sometimes more interesting than well-made plays adapted from them.

Autumn also had its share of disappointments, particularly in the work of established playwrights and composers. Irving Berlin's *Mr. President* was unimpressive; S. N. Behrman's *Lord Pengo* was bland; Garson Kanin's *Come on Strong* seemed to most critics simply awkward; and Sidney Kingsley's *Night Life* was embarrassing.

For compensation, however, there was the fine acting of Margaret Leighton in *Tchin-Tchin;* the biting satire of Alan Bennett, Peter Cook, Jonathan Miller, and Dudley Moore in *Beyond the Fringe;* a lovely dance-drama—*The Beautiful Bait* —delicately performed by the extraordinarily talented children of the Foo Hsing Theater of Nationalist China; and one solid hit, Edward Albee's fierce, exhausting account of two couples' dawn-to-dusk drunken dismemberment of one another, *Who's Afraid of Virginia Woolf?* The D'Oyly Carte Gilbert and Sullivan company at New York's City Center left nothing to be desired; Orson Wells' *Moby Dick*, despite its brief run, was jammed with theatrical excitement; Bert Lahr in S. J. Perelman's *The Beauty Part* was—in five parts—extravagantly Bert Lahr. Preview performances of *Oliver!*, the long-awaited English musical, brought the year to a lilting close, although the official opening of the show was postponed (because of the New York newspaper strike, and therefore the absence of reviews) until Jan. 6, 1963.

Off-Broadway.—Though not quite so lively as in earlier years, off-Broadway productions included the illuminating *Brecht on Brecht;* Arthur Kopit's *Oh Dad, Poor Dad, Mamma's Hung You in the Closet and I'm Feelin' So Sad*, an ingenious comedy-drama which baffled some critics and excited others; a first-rate *Rosmersholm* as the third production of David Ross' Ibsen cycle; a return engagement of Dylan Thomas' lyrical celebration of life in Wales, *Under Milk Wood;* and—perhaps the most significant dramatic event of the year—Thornton Wilder's *Plays for Bleecker Street*. These short plays, the first two sections of his cycle *The Seven Ages of Man* and the fourth section of *The Seven Deadly Sins*, reminded those who were fortunate enough to see them that a very great dramatist is alive in our time.

(For a list of major theater prizes, see PRIZES AND AWARDS; for other references to the theater, see the Index entry *Theater.*)

BROADWAY OPENINGS AND CLOSINGS IN 1962

(Where only the opening date is given, the production was continuing at the end of the year.)

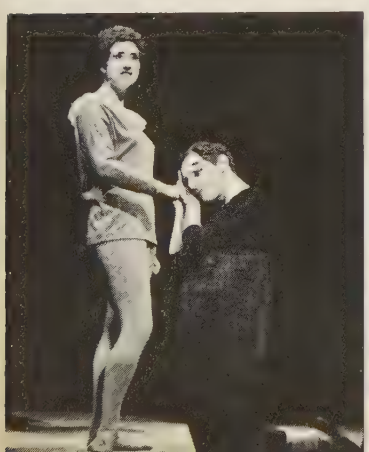
BROADWAY OPENINGS

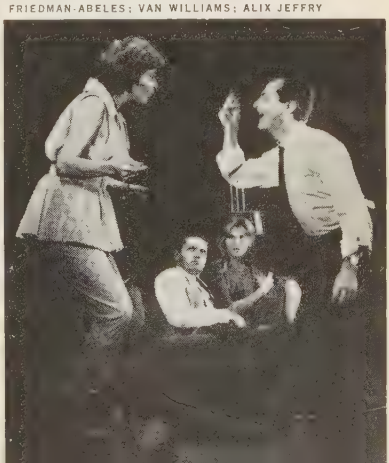
The Affair, a play by Ronald Miller, based on the novel by C. P. Snow; with Brewster Mason, Donald Moffat, Keith Baxter, and Brenda Vaccaro; September 20–December 29.

All American, a musical based on Robert Lewis Taylor's novel *Professor Fodorski;* with book by Mel Brooks, music by Charles Strouse, and lyrics by Les Adams; with Ray Bolger, Eileen Herlie, and Fritz Weaver; March 19–May 26.

(*Left*) Imported from England, the musical *Stop the World, I Want to Get Off* starred Anna Quayle and Anthony Newley. (*Center*) Brian Davies, Preshy Marker, and Zero Mostel had top roles in the comedy hit *A Funny Thing Happened on the Way to the Forum*. (*Right*) Uta Hagen, Arthur Hill, Melinda Dillon, and George Grizzard in *Who's Afraid of Virginia Woolf*.

FRIEDMAN-ABELES; VAN WILLIAMS; ALIX JEFFRY





The Aspern Papers, a play by Michael Redgrave, based on the novel by Henry James; with Wendy Hiller, Françoise Rosay, and Maurice Evans; February 7–April 28.
The Beauty Part, a comedy by S. J. Perelman; with Bert Lahr, Alice Ghostley, and Charlotte Rae; December 26.
Beyond the Fringe, a revue written and acted by Alan Bennett, Peter Cook, Jonathan Miller, and Dudley Moore; October 27.
Bravo Giovanni, a musical based on Howard Shaw's novel *The Crime of Giovanni Venturi;* with book by A. J. Russell, lyrics by Ronny Graham, and music by Milton Schafer; with Cesare Siepi, George S. Irving, Michele Lee, David Opatoshu, and Maria Karnilova; May 19–September 15.
Brigadoon, a revival of the musical, with book and lyrics by Allen Jay Lerner, and music by Frederick Loewe; with Sally Ann Howes, Peter Palmer, Farley Granger, and Edward Villela; May 30–June 10 (a limited engagement).
Calculated Risk, a play by Joseph Hayes, based on the play *Any Other Business,* by George Ross and Campbell Singer; with Joseph Cotten and Patricia Medina; October 31.
Can-Can, a revival of the musical, with book by Abe Burrows, and music and lyrics by Cole Porter; with Genevieve, George Gaynes, and Mara Lynn; May 16–27 (a limited engagement).
The Captains and the Kings, a play by Leo Lieberman; with Dana Andrews, Charlie Ruggles, Conrad Nagel, Lee Grant, and Peter Graves; January 2–6.
Come On Strong, a comedy by Garson Kanin; with Carroll Baker and Van Johnson; October 4–November 3.
The D'Oyly Carte Opera Company, presenting revivals of Gilbert and Sullivan's *The Mikado, The Gondoliers, The Pirates of Penzance, Trial by Jury, H.M.S. Pinafore,* and *Iolanthe;* November 13–December 9 (a limited engagement).
The Egg, a comedy by Félicien Marceau, translated by Robert Schlitt; with Dick Shawn; January 8–13.
A Family Affair, a musical, with book by James Goldman and William Goldman, lyrics by John Kander and James Goldman, and music by Mr. Kander; with Shelley Berman, Eileen Heckart, Bibi Osterwald, Morris Carnovsky, Rita Gardner, and Larry Kent; January 27–March 25.
Fiorello!, a revival of the musical, with book by Jerome Weidman and George Abbott, music by Jerry Bock, and lyrics by Sheldon Harnick; with Sorrell Booke, Art Lund, Lola Fisher, Barbara Williams, and Doby Goodman; June 13–24 (a limited engagement).
The Foo Hsing Theater (of Taiwan), in traditional Chinese dramas: *The Beautiful Bait,* November 12–17, December 24–January 2, 1963; (this company also presented *The White Snake,* Jan. 2–5, 1963, both limited engagements).
The Fun Couple, a comedy by Neil Jansen and John Haase, adapted from Mr. Haase's novel; with Bradford Dillman and Jane Fonda; October 26–27.
A Funny Thing Happened on the Way to the Forum, a musical based on the plays of Plautus; with book by Burt Shevelove and Larry Gelbart, and music and lyrics by Stephen Sondheim; with Zero Mostel, David Burns, Ruth Kobart, Brian Davies, Jack Gilford, and John Carradine; May 8.
General Seager, a play by Ira Levin; with George C. Scott and Ann Harding; February 28–March 1.
Giants, Sons of Giants, a play by Joseph Kramm; with Nancy Kelly, Claude Dauphin, and Paul McGrath; January 6–13.
A Gift of Time, a play by Garson Kanin; based on Lael Tucker Wertenbaker's book, *Death of a Man;* with Olivia de Havilland and Henry Fonda; February 22–May 12.
Great Day in the Morning, a play by Alice Cannon; with Colleen Dewhurst, Frances Sternhagen, Clifton James, Thomas Carlin, and Elisabeth Fraser; March 28–April 7.
Harold, a comedy by Herman Raucher; with Anthony Perkins, Nathaniel Frey, Rochelle Oliver, and Sudie Bond; November 29–December 15.
I Can Get It for You Wholesale, a musical adapted by Jerome Weidman from his novel; with music and lyrics by Harold Rome; with Lillian Roth, Elliott Gould, Marilyn Cooper, Sheree North, Bambi Linn, and Harold Lang; March 22–December 8.
In the Counting House, a play by Leslie Weiner; with Sydney Chaplin, Howard Da Silva, Barbara Murray, and Kay Medford; December 13–15.
Isle of Children, a play by Robert L. Joseph; with Patty Duke, Noel Willman, and Norma Crane, March 16–24.
Little Me, a musical based on the novel by Patrick Dennis; with book by Neil Simon, lyrics by Carolyn Leigh, and music by Cy Coleman; with Sid Caesar, Virginia Martin, Nancy Andrews, and Swen Swenson; November 17.
Lord Pengo, a comedy by S. N. Behrman, based on his *New Yorker* series, "The Days of Duveen"; with Charles Boyer and Agnes Moorehead; November 19.
Mr. President, a musical, with book by Howard Lindsay and Russel Crouse, music and lyrics by Irving Berlin; with Robert Ryan and Nanette Fabray; October 20.
Moby Dick, Orson Welles' dramatization of Herman Melville's novel; with Rod Steiger; November 28–December 8.
The Moon Besieged, a play by Seyril Schochen; with Charles Tyner, Ted van Griethuysen, Kathryn Hays, and Elizabeth Lawrence; December 5–6.
Never Too Late, a comedy by Sumner Arthur Long; with Paul Ford, Maureen O'Sullivan, and Orson Bean; November 27.
New Faces of 1962, a revue, with music and lyrics mostly by June Carroll, Arthur Siegel, David Rogers, Mark Bucci, Jack Holmes, and Ronny Graham, and sketches mostly by Mr. Graham, Paul Lynde, Jean Shepherd, Richard Maury, Joey Carter, and R. G. Brown; with Mr. Carter, Mr. Brown, Marian Mercer, Patti Karr, and Sylvia Lord; February 1–24.
Night Life, a play by Sidney Kingsley; with Neville Brand, Carol Lawrence, Walter Abel, Carmen Mathews, Salome Jens, and Jack Kelley; October 23–December 15.
No Strings, a musical, with book by Samuel Taylor, and music and lyrics by Richard Rodgers; with Diahann Carroll, Richard Kiley, Noëlle Adam, Polly Rowles, and Bernice Massi; March 15.
Nowhere to Go but Up, a musical, with book and lyrics by James Lipton, music by Sol Berkowitz; with Tom Bosley, Martin Balsam, and Bruce Gordon; November 10–17.
Old Vic, the London company, presenting, in repertory, productions of William Shakespeare's *Macbeth* and *Romeo and Juliet* and George Bernard Shaw's *Saint Joan;* February 6–March 18 (a limited engagement).
A Passage to India, a play by Santha Rama Rau, adapted from the novel by E. M. Forster; with Anne Meacham, Eric Portman, Gladys Cooper, and Zia Mohyeddin; January 31–May 5.
The Perfect Setup, a play by Jack Sher; with Angie Dickinson, Gene Barry, and Jan Sterling; October 24–27.
Romulus, a comedy by Friedrich Duerenmatt, adapted by Gore Vidal; with Cyril Ritchard, Cathleen Nesbitt, and Howard Da Silva; January 10–March 10.
The Royal Dramatic Theater of Sweden, presenting, in Swedish, a limited engagement of plays in repertory, including August Strindberg's *The Father* and *Miss Julie* and Eugene O'Neill's *Long Day's Journey into Night;* May 14–19.
Seidman and Son, a comedy by Elick Moll, based on his novel; with Sam Levene, Frances Chaney, Stewart Moss, and Nancy Wickwire; October 15.
Something About a Soldier, a play by Ernest Kinoy, adapted from the novel by Mark Harris; with Sal Mineo, Kevin McCarthy, and Ralph Meeker; January 4–13.
Step on a Crack, a play by Bernard Evslin; with Donald Madden, Gary Merrill, Margaret Hayes, Maggie McNamara, and Pauline Flanagan; October 17 (closed after one performance).
Stop the World—I Want to Get Off, a musical, with book, music, and lyrics by Leslie Bricusse and Anthony Newley; with Mr. Newley and Anna Quayle; October 3.
Tchin-Tchin, a play by Sidney Michaels, based on the play by François Billetdoux; with Margaret Leighton and Anthony Quinn; October 25.
A Thousand Clowns, a comedy by Herb Gardner; with Jason Robards, Jr., Sandy Dennis, William Daniels, Barry Gordon, Gene Saks, and A. Larry Haines; April 5.
Tiger Tiger Burning Bright, a play by Peter Feibleman, based on his novel *A Place Without Twilight;* with Claudia McNeill, Alvin Ailey, Bobby Dean Hooks, and Al Freeman, Jr.; December 22.
Venus at Large, a comedy by Henry Denker; with David Wayne, Joyce Jameson, William Prince, and Ernest Truex; April 12–14.
Who's Afraid of Virginia Woolf?, a play by Edward Albee; with Uta Hagen, Arthur Hill, and George Grizzard; October 13.

Broadway Closings of Presentations From Previous Years

The Caretaker, February 24 (from Oct. 4, 1961).
Come Blow Your Horn, October 6 (Feb. 22, 1961).
The Complaisant Lover, January 28 (Nov. 1, 1961).
Do Re Mi, January 13 (Dec. 26, 1960).
First Love, January 13 (Dec. 25, 1961).
The Gay Life, February 24 (Nov. 18, 1961).
Gideon, June 2 (Nov. 9, 1961).
Kean, January 20 (Nov. 2, 1961).
My Fair Lady, September 29 (March 15, 1956).
The Night of the Iguana, September 29 (Dec. 28, 1961).
Purlie Victorious, May 12 (Sept. 28, 1961).
Ross, May 12 (Dec. 26, 1961).
Sail Away, February 24 (Oct. 3, 1961).
A Shot in the Dark, September 22 (Oct. 18, 1961).
Subways Are for Sleeping, June 23 (Dec. 27, 1961).
Sunday in New York, May 12 (Nov. 29, 1961).
Take Her, She's Mine, December 8 (Dec. 21, 1961).
The Unsinkable Molly Brown, February 10 (Nov. 3, 1960).
Write Me a Murder, April 14 (Oct. 26, 1961).

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THERMONUCLEAR RESEARCH. See Atomic Energy.

TIBET

Independent until 1950, when it was invaded by Communist China's armed forces, Tibet is nominally an autonomous region of the Chinese People's Republic. It comprises a lofty plateau among massive mountain barriers in central Asia. It has an estimated area of 580,000 square miles and a population (1953 census) of 1,273,969. Lhasa (est. pop., 25,000) is the capital. Tibetan is the principal language, and Lamaist Buddhism the principal religion.

Government.—The administration is under the Preparatory Committee for the Tibetan Autonomous Region. The panchen lama (Erdani Chuji-Geltseng) is the acting chairman of the committee, but real authority over Tibetan affairs is exercised by Gen. Chang Kuo-hua, representative of the Peking government. After the Tibetan revolt of March 1959 was ruthlessly suppressed by the Chinese Communists, the dalai lama (Ling-ehr Lamatanchu), ruler of the theocratic government and largely feudal society which had existed in Tibet, fled the country to live in exile in India.

Economy.—Most Tibetans are peasants, nomads, handicraftsmen, or Lamaist priests. Crops include barley, fruits, wheat, and vegetables. Livestock yield wool, felt, yak's hair and hides, butter, cheese, and dried meat. External trade has been diverted largely to China; trade with India, Tibet's traditional chief trading partner, was curtailed drastically after the 1959 rebellion. On June 2, 1962, India refused to renew its Tibetan trade pact with China, and China closed its trade agency in Kamlimpong, India. Roads have been built to link Lhasa with Shigatse, Gyangtse, and Yatung (near India), and to connect Gartok in western Tibet with the Sinkiang-Uigur Autonomous Region of China. In 1962 a road linking Lhasa with Katmandu, Nepal, was under construction, as was a railroad extending for 1,600 miles from Lhasa to Sinkiang-Uigur. Lhasa is also linked to China by an air service.

Events, 1962.—Armed conflict broke out again in October on Tibet's southern and western frontiers, as Communist China and India fought over disputed border regions in Ladakh and the North East Frontier Agency (see CHINA; INDIA).

The number of Tibetan refugees fleeing to India, Bhutan, and Nepal fell off drastically in 1962 from the levels of previous years. Since the abortive anti-Communist revolts of 1959 and 1960, an estimated 70,000 persons have fled Tibet as a result of Chinese Communist repression and persecution. In 1962 the number dwindled to a few thousand, apparently because most of the Tibetans wishing to escape had already done so, and also because the Chinese rulers had relaxed their rigid control to some degree.

Sporadic incidents of revolt continued in Tibet, however. It was reported that rebellious Khamba tribesmen fought a pitched battle with Chinese troops in eastern Tibet on January 5, and that about 90 Chinese and 150 Khambas were killed.

The dalai lama, who lives in exile at Dharmsala, India, appealed again on March 9 to China to halt the "persecution and oppression" of his people. He also appealed for contributions from other countries for the rehabilitation of Tibetan refugees.

The issue of Tibet was raised again in the UN General Assembly on October 3 when Malaya accused Communist China of genocide and the denial of fundamental human rights in Tibet.

J. L. L.

TIMOR. See PORTUGUESE TERRITORIES.

TIN

In 1961 the United States mined a negligible quantity of tin and therefore depended on imports for its principal supply. According to data compiled by the U.S. Bureau of Mines, however, tin imports declined 9%. Imports of tin concentrates dropped drastically from 14,026 long tons in 1960 to 8,917 tons in 1961, whereas tin-metal imports rose slightly from 39,538 tons to 39,898 tons. (Data on smelter production in 1961 were withheld to avoid disclosing confidential data regarding the output of individual companies.) Consumption of tin in the United States decreased by 3% from 80,360 long tons (51,530 tons of primary and 29,030 tons of secondary) in 1960 to 78,250 tons (49,699 tons of primary and 28,551 tons of secondary) in 1961.

World consumption of tin was greater than production in 1961; and to meet the demand, stocks had to be withdrawn. The United States required 47% of world tin consumption in 1961 for making tinplate, the same as in 1960. The first International Tin Agreement was terminated and the second agreement went into effect on July 1, 1961. It was formally signed by 6 producing countries and 14 consuming countries (accession of Korea as a consuming party was approved).

The flow of tin from the Republic of the Congo (Léopoldville) continued to be retarded by civil strife. Nigeria began smelting tin and exported metallic tin to the United States for the first time. Free world tin exports to the USSR and its European satellites were resumed.

In the first nine months of 1962, United States tin consumption was 60,080 long tons (41,410 primary and 18,670 secondary).

(See MINERAL PRODUCTION for table showing output of major producing countries; and for further references, see the Index entry, *Tin.*)

TIROL. See AUSTRIA; ITALY.

TIROS SATELLITES. See METEOROLOGY AND CLIMATOLOGY; SPACE FLIGHT.

TITANIUM. See MINERAL PRODUCTION.

TITO (Josip Broz). See biographical sketch under YUGOSLAVIA.

TOBACCO

World production of tobacco increased again in 1962, in part because of a rise of 200 million pounds in United States output. The world total was estimated by the Foreign Agricultural Service of the U.S. Department of Agriculture at about 9.1 billion pounds (excluding China, for which figures were unavailable), compared with about 8.7 billion in 1961. Besides the United States, countries in which 1962 production increased considerably over that of 1961 included India, Pakistan, Japan, Greece, Italy, Yugoslavia, and the Federation of Rhodesia and Nyasaland. These gains were somewhat offset by smaller production in the USSR, Mexico, Brazil, Argentina, and Indonesia.

Tibetan refugees help build a mountain road in the northeastern area of India during Chinese invasion in October.

WIDE WORLD

Tobacco was harvested in 1962 from about 9,541,000 acres, compared with about 9,288,000 in 1961 and an average of 9,305,000 in 1955–59. Acreage increased notably in the United States, Europe, and Asia, while declining in Africa and several countries in Central America.

United States exports of unmanufactured tobacco in calendar year 1962 were estimated at about 520 million pounds export weight, equivalent to about 585 million pounds farm-sales weight. This was about 4% above the 1961 total of approximately 500 million pounds and was the largest in seven years. United States tobacco exports in the 1951–60 period averaged 489 million pounds. While rising world consumption of cigarettes favors long-term United States exports, discrimination against United States tobacco by the European Economic Community could seriously curtail exports to this vitally important market.

For the eighth consecutive year, cigarette output in the United States reached a new high, totaling about 539 billion, compared with 528.3 billion in 1961. Cigarette consumption, including that by military forces overseas, was about 512 billion, 9 billion more than in 1961. Consumption of cigars and cigarillos by United States smokers was estimated at 7,180 million in 1962, about 140 million more than in 1961. United States consumers spent about $6.9 billion for cigarettes in 1962, not including expenditures by overseas personnel.

TOBACCO PRODUCTION IN MAJOR COUNTRIES

(1,000 pounds, farm-sales weight)

	Average 1955–59	1961 prelim.	1962 prelim.
Brazil	306,009	333,895	314,334
Canada	165,770	211,210	203,900
China, Communist	1,687,600	...	...
France	120,416	76,112	77,580
Greece	199,945	162,287	216,687
India	596,366	659,000	670,000
Indonesia	153,267	179,675	163,515
Italy	168,220	53,351	97,620
Japan	315,506	278,516	313,260
Pakistan	238,568	189,459	199,000
Rhodesia-Nyasaland	193,406	263,472	286,380
Turkey	261,081	224,900	231,500
USSR	438,715	385,000	375,000
United States	1,913,787	2,060,992	2,261,243
World	8,510,880	8,671,197	9,100,924

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TOBAGO. See Trinidad and Tobago.

TOGO

One of the smallest countries of Africa (est. area, 22,000 square miles), the Republic of Togo (formerly French Togoland) is situated on the Gulf of Guinea. It has the shape of a narrow rectangle, extending northward some 330 miles from its 31-mile coastline. The population of 1,500,000 (Jan. 1, 1962, est.) includes mainly Ewe, Mina, and other tribes in the south, some Hamitic groups in the north, and 1,077 Frenchmen. The capital and chief port is Lomé (1958 est., 65,000).

Government.—This former United Nations trust territory became independent on April 27, 1960. The constitution of 1961 provides for a presidential-type government and a unicameral legislature, the Chamber of Deputies, which consists of 51 members elected by universal suffrage for a five-year term. In elections on April 9, 1961, Sylvanus Olympio, who had served as premier since 1958, was elected president, and his National Unity Party won all the legislative seats without opposition. President Olympio was assassinated on Jan. 13, 1963, in a coup d'état by military insurgents who took over the government.

Education and Religion.—School enrollment, 1960: 88,000 (about one fifth of the total school-age population), including 85,800 primary pupils. An additional 140 secondary-school graduates attended French universities. Most of the population are animists. There are 30,000 Muslims in the north and some 200,000 Christians.

Finance.—Government ordinary revenue, 1962 est.: 3.3 billion francs CFA (3.0 billion in 1961); ordinary expenditure, 3.5 billion (3.3 billion). There are 246.85 francs CFA to the U.S. dollar.

Transportation and Communications.—Three short railways radiating from Lomé aggregate 275 miles. All-weather roads total about 800 miles (77 miles paved). Three French airlines serve the Lomé airport. In 1960, telephones numbered 1,776 (mostly in Lomé); radio receivers, 15,000.

Production.—Agriculture engages most of the working population, and accounts for more than half of the gross national product. Chief subsistence crops are yams, cassava, millet, sorghum, corn, beans, and rice. Chief cash crops (metric tons exported, 1961): palm kernels, 11,140; cocoa beans, 11,534; green coffee, 10,230; cottonseed, 3,244; cotton fiber, 2,433; copra, 4,818; and peanuts, 3,596. Industry is confined largely to food processing, weaving, pottery, and woodworking. Fishing and forestry are of minor importance. Exploitation of phosphate deposits totaling an estimated 50 million tons was begun by a French company in 1961.

Foreign Trade.—Total exports, 1961: 4,615 million francs CFA (up 28% from 1960); imports, 6,476 million (up less than 1%). Chief exports (in million francs CFA, 1961): cacao, 1,289; green coffee, 1,245. In 1961, France took about 57% of exports and supplied 46% of imports.

Events, 1962.—Togo on January 8 officially accused Ghana of supporting the assassination plot against Togolese officials that had been uncovered in December 1961. The government arrested and interned 64 persons allegedly involved in the plot, and as several of them were leaders of the principal opposition group, this party was dissolved by presidential decree. A third attempt to assassinate President Sylvanus Olympio (following two previous attempts in 1961) was foiled in mid-January, and a fourth attempt, in August, also failed.

A fifth assassination attempt, on Jan. 13, 1963, resulted in the death of President Olympio and occurred during a successful coup d'état by military insurgents in Lomé. The president was shot in front of the United States embassy, where he apparently had gone to seek refuge. The assassination of President Olympio removed a major political opponent of President Nkrumah of Ghana, for Olympio had stoutly opposed Nkrumah's efforts to incorporate Togo into Ghana. The late president was generally regarded as being moderate and pro-Western in his policies. During a visit to the United States from March 19 to 30, 1962, he had secured from President Kennedy a pledge to continue United States economic aid to Togo.

W. R. F.

TOGOLAND, British. See Ghana.
TOGOLAND, French. See Togo.
TOMATOES. See Vegetables.

TONGA

Situated east of Fiji in the southwestern Pacific, Tonga is a self-governing kingdom under the protection of Great Britain. It comprises some 150 islands and is also called the Friendly Islands. Its total area is 270 square miles, and the population (Dec. 31, 1961, est.) is 66,000, of which about half live on the island of Tongatabu. Nukualofa (est., 10,000) is the capital and principal town. The Tongans are Polynesians and Christians, principally Wesleyan. Tongan is the principal language.

The islands are headed by a hereditary monarch (Queen Salote Tupou; b. 1900; acceded 1918), who is assisted by a premier (Prince Tungi, the heir apparent), a privy council, a cabinet, and a 22-member Legislative Assembly of 22 members, 7 of whom are elected for three-year terms by universal suffrage. British responsibilities, chiefly in the area of external affairs, are exercised by a resident commissioner (E. J. Coode), under the direction of the governor of Fiji. Tonga has its own currency (the Tonga pound equals U.S.$2.24), and its own postage stamps. School enrollment, 1960: primary, 15,348; secondary, 4,121; and teacher-training, 66.

Subsistence agriculture is the basis of the economy. Exports in 1961 were valued at £1,140,000; imports, £1,060,000. The principal exports were 17,400 metric tons of copra and 9,480,000 pounds of bananas. Trade is conducted principally with Great Britain and other members of the Commonwealth of Nations. The road network on Tongatabu totals 60 miles, and on the island

of Vavau, 18 miles. In 1961 there were 653 telephones. Tonga is connected with Fiji by an air service.

TORNADOES. See METEOROLOGY AND CLIMATOLOGY and the Index entry, *Tornadoes.*

TORONTO

The capital of Ontario and second-largest city in Canada, Toronto is situated on the north shore of Lake Ontario. It is one of the country's two largest centers of commerce, finance, and industry, as well as an important port on the St. Lawrence waterways system. The city proper has an area of 35 square miles, a population of 672,407 (1961 census), and a general assessment value of $1,888,214,899 (1962). Metropolitan Toronto covers an area of 245 square miles and has a population of 1,618,787 (1961 census) and a general assessment value of $4,067,737,909 (1962).

There is a dual system of government, with municipal functions divided between the local governments (of the city proper and its 12 suburbs) and an overall Municipality of Metropolitan Toronto. A revision of this system has been widely discussed.

Metropolitan government consists of a Council of 24 representatives, who elect their own chairman (William R. Allan in 1962), composed as follows: the heads of council of each of the 12 suburban municipalities; and, from Toronto proper, the mayor, the two controllers, and the aldermen who received the most votes at the last election in each of the nine city wards. The Metropolitan Corporation is responsible for issuing debentures and determines what local permanent financing should be done by the 13 municipalities. Aside from the Metropolitan Police Commission, most metropolitan departments are duplicated in, or share functions with, corresponding local departments. Public transportation in the metropolitan area is provided by the Toronto Transit Commission; it operates surface, underground, and ferry services, which carried 267,482,653 revenue-paying passengers in 1961.

The Toronto City Council is composed of the mayor (Nathan Phillips in 1962), four members of the Board of Control (elected by the voters at large), and 18 aldermen (two from each of the nine city wards). The Council was elected for a two-year term in December 1960.

During 1962, construction continued on the Bloor-Danforth-University subway, which would add 10 miles to the city's underground transportation when completed in 1967. The University section was scheduled to be opened in early 1963. Road traffic was helped by the opening of another section of the Gardiner Expressway, and further expressway construction was approved.

In 1961 the total value of building construction reached $108,065,000. Work was begun on the new city hall, which was scheduled to cost $26.5 million, plus architects' fees, and to be completed in 1964. The architect Viljo Revel, of Helsinki, Finland, won an international competition in which there were 530 entries.

The University of Toronto continued its expansion program with four new buildings under construction, to house the schools of pharmacy and music, Massey College of Graduate Studies, and additional chemistry facilities. In early 1962, York University was given a grant of 465 acres for a main campus by the provincial government. The Royal Ontario Museum celebrated its 50th anniversary in 1962 with special displays.

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TOURISM

The annual survey of foreign travel conducted by the Office of Business Economics, U.S. Department of Commerce, indicates that United States residents spent $2.6 billion for foreign travel in 1961, about the same as in 1960. Of this amount, all except about $400 million went to foreign countries either as fare payments to foreign transoceanic carriers or as payments for expenses within the foreign countries.

EXPENDITURES BY U.S. RESIDENTS FOR TRAVEL IN FOREIGN COUNTRIES[1]
(In millions of dollars)

Area	1958	1959	1960	1961
Canada	323	365	380	425
Mexico	319	350	365	370
Europe and Mediterranean	560	604	704	630
West Indies and Central America	156	174	166	160
South America	37	41	45	48
Other overseas areas	65	76	85	114
Total	1,460	1,610	1,745	1,747

[1] Excludes travel by military personnel and other government employees stationed abroad, their dependents and United States citizens residing abroad, but includes shore expenditures of cruise passengers. (Source: Office of Business Economics, U.S. Department of Commerce.)

Travel to U.S. from Abroad.—The number of overseas visitors to the United States in 1961 (numbering 624,000, exclusive of Canadians and Mexicans) was about 20,000 higher than in 1960. Visitors from foreign countries spent $902 million and paid an additional $112 million to United States carriers for transportation to and from the United States. The increase over 1960, slightly over 1%, left the excess of United States payments for foreign travel at approximately $1.1 billion.

Major Developments in U.S. Travel. *Exemptions.*—A person arriving in the United States as a temporary visitor, including a minor, may bring in, free of duty and internal revenue tax, articles not exceeding $100 in value for use as bona fide gifts. This allowance includes not more than one wine gallon of alcoholic beverages and not more than 100 cigars. This exemption is allowable only if the nonresident remains in the United States for at least 72 hours, and may not be used more than once within a six-month period. The gift exemption is in addition to alcoholic beverages, cigars, cigarettes, and smoking tobacco, valued at not more than $10, allowed as personal effects.

Tax.—The 10% tax on rail and bus transportation was eliminated and the tax on air travel was reduced from 10% to 5%, effective on Nov. 15, 1962.

U.S. Travel Service.—The overseas organization is built around nine travel information offices located in London, Paris, Frankfurt, Rome, São Paulo, Bogota, Mexico City, Sydney, and Tokyo. The offices are staffed by one or two travel service officials, plus supporting local staffs.

RUTH T. BLOND,
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U.S. Department of Commerce.

TOWN PLANNING. See CITY PLANNING.
TRACK AND FIELD. See SPORTS, GAMES, AND SHOWS.
TRADE. See INTERNATIONAL TRADE and the section on *Foreign Trade* in articles on countries.
TRAFFIC. See Index entry.
TRANQUILIZING DRUGS. See Index entry.
TRANSIT SATELLITES. See SPACE FLIGHT.
TRANSPORTATION. See Index entry.
TRAVEL. See TOURISM.

TREASURY DEPARTMENT, U.S.

Net receipts of the federal government during the fiscal year ended June 30, 1962, amounted to $81,360,367,259, compared with $77,659,424,905 in the fiscal year ended June 30, 1961. Net expenditures were $87,667,980,122, as against $81,515,167,453 in the 1961 fiscal year. The budget deficit was $6,307,612,863 in the fiscal year 1962, and $3,855,742,548 in fiscal 1961.

Budget expenditures in the fiscal year 1962

were $6.2 billion higher than in 1961. Of this amount, $4.3 billion or, 70%, was for defense and for international and space programs. Budget receipts rose by $3.7 billion between 1961 and 1962. Increases of $4.5 billion in individual income tax receipts and $659 million in excise tax collections were partially offset by declines of $469 million in corporation income taxes and $890 million in miscellaneous receipts. (See also TAXATION.) In 1961 over $500 million in miscellaneous receipts was accounted for by an advance loan repayment by the Federal Republic of Germany.

Table 1—BUDGET RECEIPTS AND EXPENDITURES FISCAL YEARS 1962 AND 1961

(In millions)

Description	1962	1961
Receipts by source		
Individual income taxes	$50,620	$46,153
Corporation income taxes	21,296	21,765
Excise taxes	9,669	9,141
Miscellaneous receipts	3,192	4,082
All other receipts	3,205	2,924
Less: refunds	5,987	5,752
Subtotal	$81,993	$78,313
Deduct interfund transactions	633	654
Net budget receipts	$81,360	$77,659
Expenditures by major agency		
Military, international, and space agencies:		
Department of Defense:		
Military functions	$46,826	$43,227
Military assistance	1,357	1,449
Foreign assistance—economic	1,773	1,805
Export-Import Bank of Washington	101	37
International financial institutions and Peace Corps	183	74
Department of State	299	258
U.S. Information Agency	146	121
Atomic Energy Commission	2,806	2,713
National Aeronautics and Space Administration	1,257	744
Subtotal	$54,748	$50,428
Civilian agencies:		
Legislative branch and the judiciary	$ 210	$ 185
Executive Office of the President	28	69
Other funds appropriated to the president	33	3
Department of Agriculture:		
CCC, and Special Export Program	4,247	3,407
Other	2,420	2,523
Department of Commerce	594	498
Department of Defense—civil	999	972
Department of Health, Education, and Welfare	4,215	3,685
Department of Interior	908	801
Department of Justice	294	284
Department of Labor	613	831
Post Office Department	787	914
Treasury Department:		
Interest on the public debt	9,140	8,957
Other	1,054	996
General Services Administration	444	387
Housing and Home Finance Agency	735	502
Federal Aviation Agency	699	638
Veterans Administration	5,392	5,401
Other independent agencies	669	638
District of Columbia	72	50
Subtotal	$33,553	$31,741
Allowance for contingencies	...	...
Total	$88,301	$82,169
Deduct interfund transactions	633	654
Total budget expenditures	$87,668	$81,515
Budget deficit	$6,308	$3,856

Note: Figures are rounded to nearest million and do not necessarily add to totals.

Public Debt.—Total public debt and guaranteed obligations of the federal government on June 30, 1962, amounted to $298,645,041,645, compared with $289,211,154,060 a year earlier. Interest payments on the public debt amounted to $9,140,153,832 in the 1962 fiscal year, as against $8,957,241,615 during the previous fiscal year. The computed average interest rate on the interest-bearing debt was 3.240% on June 30, 1962, and 3.072% the year before. The per capita debt was $1,600.38 at the end of the 1962 fiscal year, and $1,574.80 at the end of fiscal 1961.

Federal Government Receipts from and Payments to the Public.—The flow of money between the public and the federal government (Table 2) is sometimes called "the consolidated cash budget." To derive the total receipts and payments, transactions of the trust funds are consolidated with budget transactions. Transactions between them, such as interest paid by the Treasury to trust funds, are eliminated, along with certain other noncash transactions. For example, interest which accrues on savings bonds is counted as a budget expenditure at the time of accrual. Since the interest is not paid in cash until the bond is redeemed, the consolidation eliminates the interest accruals and includes the interest paid on redeemed bonds.

The figures in Table 2 are not the same as those for Treasury cash deposits and withdrawals as presented in the *Daily Treasury Statement*. For example, transactions from various agency accounts with commercial banks are not included in Treasury cash deposits and withdrawals, but are reflected in Table 2.

Table 2—FEDERAL GOVERNMENT CASH RECEIPTS FROM AND PAYMENTS TO THE PUBLIC, FISCAL YEARS 1962 AND 1961

(In millions)

Description	1962	1961
Receipts from the public:		
Budget receipts	$ 81,360	$77,578
Trust fund receipts	24,336	23,792
Less:		
Intragovernmental transactions	3,786	4,170
Receipts from exercise of monetary authority	58	55
Total receipts from the public	$101,853	$97,144
Payments to the public:		
Budget expenditures	$ 87,668	$81,503
Trust fund expenditures	24,118	23,182
Government-sponsored enterprise expenditures (net)	1,083	—239
Less:		
Intragovernmental transactions	3,786	4,170
Accrued interest and other noncash adjustments (net)	1,492	985
Total payments to the public	$107,591	$99,291
Excess of payments to the public	$ 5,738	$ 2,147

Savings Bonds.—Sales of Series E and H savings bonds during the first 10 months of 1962 amounted to $3,656 million, compared with $3,838 million in the same period of 1961. Interest accumulated on E bonds amounted to $1,136 million, as against $1,066 million during the first 10 months of 1961. Interest on H bonds is paid to the holders semiannually. Redemptions of both matured and unmatured E and H bonds during the 10 month period of 1962 totaled $3,993 million, including interest payments of $652 million. During the same period of 1961, redemptions were $3,810 million, including E bond interest of $600 million. Series E and H bonds outstanding on Oct. 31, 1962, amounted to $45,284 million, compared with $44,232 million a year earlier.

About 50% of the $34.3 billion of Series E bonds which reached maturity after May 1951 were still being held by the owners, who had earned some $3 billion in additional interest during the extension of maturity. Including the additional interest, extended E bonds still held were valued at approximately $18.8 billion on Oct. 31, 1961. Series H bonds began maturing in June 1962; and by the end of October, $164.3 million had come due. Holders of 93% of the bonds accepted extensions and continued to receive the 3¾% interest. The value of all series of savings bonds outstanding on Oct. 31, 1962, was $47.8 billion.

Coins and Currency.—The Bureau of the Mint produced 3,460,524,142 domestic coins with a face value of $143,311,430 during the 1962 fiscal year. United States monetary stocks of gold and silver bullion in custody of mint depositories at the close of the 1962 fiscal year were valued at approximately $18.3 billion. The Bureau of Engraving and Printing delivered 1,556,424,000 pieces of new currency during the fiscal year 1962, having a face value of $7,770,752,000.

Money in Circulation.—Coins and currency in circulation outside the Treasury Department on Sept. 30, 1962, amounted to $33,893,116,904, or $180.88 per capita.

TREASURY INFORMATION SERVICE.

TREATIES. See INTERNATIONAL LAW and the Index entry, *Treaties, International.*

TRINIDAD AND TOBAGO

Formerly a British colony and a member of the West Indies federation, the Caribbean islands

of Trinidad (area, 1,864 square miles) and Tobago (116 square miles) became an independent state within the Commonwealth of Nations on Aug. 31, 1962. Trinidad is situated 10 miles off the northeast coast of Venezuela; Tobago lies 21 miles to the northeast of Trinidad. The state has a total area of 1,980 square miles, or slightly less than that of Delaware. The total population (1960 census) is 827,957 (Trinidad, 794,624; Tobago, 33,333), comprising principally persons of African ancestry (about 43% of the population) and East Indian descent (about 36%). The capital and chief port of the new state is Port of Spain (1960 pop., 93,954), on Trinidad.

The national flag of Trinidad and Tobago comprises a black diagonal stripe bordered in white and inscribed on a field of red.

Government.—The head of state is the governor general (Sir Solomon Hochoy, who took office on Aug. 31, 1962). Executive power is vested in a prime minister (Eric Williams), who presides over a 12-member cabinet. Legislative power is exercised by a bicameral Parliament consisting of a 30-member House of Representatives elected by universal suffrage and a 24-member Senate appointed by the governor general. In the elections of Dec. 4, 1961, the People's National Movement won 20 seats and the Democratic Labour Party won 10 seats in the House of Representatives.

Finance.—Government revenue for 1961 was estimated at BWI$146,270,490; expenditure from consolidated funds, BWI$173,170,482, and from other sources, BWI$10.2 million. The British West Indian dollar (BWI$) equals U.S.$0.59.

Education.—Over three fourths of the school-age population attends school. In 1961 there were 437 primary schools (with 182,588 pupils); 8 intermediate schools (7,291 pupils); and 35 secondary schools (13,907 students).

Transportation and Communications.—Roads aggregate 2,525 miles. The government operates 109 miles of railways. Piarco Airport, 17 miles from Port of Spain, is an international airport served by British West Indian Airways and 10 other airlines. Telephones in 1960 totaled 30,845; licensed radio receivers, 58,000; licensed vehicles, 38,000.

Production.—Production of petroleum is the mainstay of the economy. At the end of 1961 there were 5,915 oil wells, of which 3,249 were in production. Crude oil output totaled 45,817,000 barrels in 1961, and imports of crude oil totaled 62,847,000 barrels. In 1961, production of natural gas totaled 831.6 million cubic meters (up 8%); cement, 98,000 metric tons (down 44%); and electricity, 499 million kw.-hr. (up 7%). Sugar is the principal agricultural product (245,600 metric tons in 1961).

Foreign Trade.—Total exports, 1961: BWI$593,933,477; imports, BWI$575,788,673. Principal exports: crude oil and petroleum products, BWI$493,917,711; sugar, BWI$42,376,168. Exports are sent mainly to Great Britain, the United States, and the Netherlands. Imports come mainly from Great Britain, Venezuela, and the United States.

Events, 1962.—Following the decision of Jamaica to withdraw from the West Indies federation, the ruling People's National Movement declared on January 14 that it would seek immediate independence for Trinidad and Tobago, and rejected proposals that the territory join a new federation. Eric Williams, leader of the People's National Movement, declared that his party's victory in the elections of Dec. 4, 1961, was a popular repudiation of federation. (See also WEST INDIES FEDERATION.)

Details of the constitutional structure of the new state were worked out at a conference held in London from May 28 to June 8, in which leaders of all of Trinidad's political parties participated. After 165 years of British rule, Trinidad and Tobago became independent on August 31. The new state immediately joined the Commonwealth of Nations. On September 18 it was admitted to membership in the United Nations.

In his book issued on independence day, *History of the People of Trinidad and Tobago*, Prime Minister Williams was highly critical of the previous arrangements for leasing to the United States the naval base at Chaguarmas, on the northwest tip of Trinidad. It was expected that the government would use the base as a bargaining point in future negotiations with the United States for financial aid.

J. L. L.

TRISTAN DA CUNHA. See SAINT HELENA.
TROPICAL MEDICINE. See Index entry.
TRUCIAL OMAN. See ARABIA.
TRUCK CROPS. See VEGETABLES.
TRUCK TRANSPORTATION. See MOTOR TRANSPORTATION.
TRUST TERRITORY OF THE PACIFIC ISLANDS. See PACIFIC ISLANDS.
TRUSTEESHIP (UN). See Index entry.
TUBERCULOSIS. See Index entry.
TUNGSTEN. See MINERAL PRODUCTION.

TUNISIA

Tunisia is a republic on the Mediterranean coast of north-central Africa, having an area of 48,332 square miles. The population has increased by 13% from 1952 to 1960, and totaled an estimated 4,254,000 as of July 1, 1961. Most of the population comprises Arabic-speaking Muslims. Europeans include about 110,000 French and 45,000 Italians; there are also some 63,000 native Jews. Nearly all of the estimated 180,000 Algerian refugees temporarily in the country returned to Algeria in 1962. The official language is Arabic. The capital is Tunis (1960 est., 680,000). Other chief cities and populations (1956 est.): Sfax (65,635); Sousse (48,172); and Bizerte, 46,681.

Government.—Tunisia attained independence from France on March 20, 1956, and deposed the absolute monarchy of the bey of Tunis on July 25, 1957, when Habib Bourguiba, leader of the Neo-Destour Party, was installed as president. The constitution of June 1, 1959, provides for a strong executive, a unicameral legislature, and an independent judiciary. The National Assembly consists of 90 members elected by universal suffrage for five years. In the elections of Nov. 8, 1959, Bourguiba, the sole candidate, was elected president to a five-year term, and the Neo-Destour won all the seats in the Assembly.

Education and Religion.—About 31% of all school-age children attended school in 1960. School enrollment, 1960: primary, 393,812; secondary, 44,686; technical, 14,126; teacher-training, 1,435; higher, 2,626. An additional 1,500 students attended institutions of higher learning abroad. On Sept. 17, 1962, the International Development Association loaned Tunisia $5 million to help construct six secondary and technical schools; the project is part of Tunisia's 10-year, $210 million educational expansion program that was adopted in 1962. The constitution proclaims Tunisia a Muslim state, but freedom of worship is guaranteed. President Bourguiba has sought to loosen the hold of certain traditional Muslim practices (such as the month-long daylight fast of Ramadan) which have hampered economic development.

Finance.—The ordinary budget for the fiscal year ended March 31, 1962, was balanced at an estimated 55.8 million dinars (up 5% from fiscal year 1961); the supplementary budget for government monopolies, 15.1 million (up 3.5%); and the capital expenditure budget for economic development, 32.6 million (of which 39.2% was derived from foreign aid). United States aid committed to Tunisia by the Agency for International Development totaled $140.6 million in loans and grants by the end of 1961. Public debt: $184 million at the end of 1960 ($203 million as of March 31, 1959). Gold and foreign exchange reserves: $78.8 million at the end of 1961 ($97.0 million a year earlier).

Transportation and Communications.—Transport networks (miles, 1962): railways, 3,650; paved highways, 4,625; other roads, 5,025. Ten national and foreign airlines provide local and international services. A new runway to handle jet aircraft was under construction in 1962 at El Aouina Airport, near Tunis. The country's main ports are Tunis, Bizerte, Sousse, and Sfax. Other data for 1960: passenger cars, 44,000; commercial vehicles, 23,500; telephones, 41,550; radio receiver licenses, 170,000.

Agriculture.—Agriculture accounts for 32% of the national income (279 billion dinars in 1961) and engages 70% of the male labor force. The more important agricultural products are wheat, olive oil, and wine, which together provide about 40% of annual export value. A severe drought in 1961 reduced the grain harvest by about 50% from the previous year, and caused substantial reductions in other crop yields and in the number of livestock. As a result, output of wheat in the 1961–62 crop

year fell to an estimated 207,000 metric tons (from 439,000 metric tons in 1960–61); barley, to 87,000 metric tons (from 146,000 metric tons); olive oil, 38,000 (137,000); citrus fruit, 77,000 (95,000); and wine (prelim.), 134,000 (140,000). Other crops include vegetables, flaxseed, esparto grass, dates, and cork.

Manufactures and Minerals.—Manufacturing, centered largely around Tunis, contributes 12% of the national income but provides few products for export; mining accounts for only 5% of the national income and supplies about 30% of the annual export value. Chief manufactures: cement (329,000 metric tons in 1961), superphosphates (72,000 metric tons), building materials, agricultural products, shoes, textiles, leather, beverages, rugs, carpets, and embroideries. Chief minerals and 1961 outputs (in metric tons): phosphates, 1,950,000 (down 11% from 1960); iron ore, 904,000 (down 12%); lead, 18,400 (down 7%); and zinc, 3,300 (down 15%). Electric power production (1961): 282 million kw.-hr. (up 3%).

Foreign Trade.—Total exports, 1961: 46.5 million dinars (down 8% from 1960); imports, 90.6 million (up 13%). Due to the severe drought in 1961, Tunisia's grain exports declined from $12.4 million in the previous year to only $3.9 million, and imports of wheat increased from $11.2 million in 1960 to $30.2 million in 1961. Chief exports and 1961 values (in million dinars): phosphates, 9.96; olive oil, 9.59; wine, 7.74. Imports are mainly petroleum products, sugar and other foodstuffs, machinery, and other manufactures. France purchased 55% of Tunisia's 1961 exports, and provided 54% of imports; Italy took 9% of total exports, and the United States supplied 15% of imports.

Events, 1962.—Rising opposition to the government of President Habib Bourguiba culminated in two assassination attempts against his life in mid-December that were foiled by the police. More than 100 persons were arrested after details of the second plot were discovered on December 21, but a few hours before the assassination attempt was to take place. The plotters reportedly included a few disgruntled army officers, some dissident landowners, and many supporters of the late Salah ben Youssef, Bourguiba's principal political opponent who had been murdered under mysterious circumstances while living in exile (in West Germany) in 1961. The plotters apparently had aimed only at eliminating Bourguiba and had not devised plans for a coup d'état. Official spokesmen indicated that "misguided elements" directed by a foreign government (possibly Algeria or the United Arab Republic) were behind the plots. Many details were not disclosed, however, and the Tunisian government played down the possible significance of the assassination attempts.

Opposition to the government has increased because of dissatisfaction on the part of Muslim leaders with the government's religious reforms, some popular resentment against the recent construction of three costly palaces for the president's use, and Tunisia's recent economic difficulties. The country's per capita annual income is only $80, approximately 400,000 persons were unemployed in late 1962, and the economy has continued to suffer from the effect of three successive years of disastrous droughts. President Bourguiba, in a national address on November 2, acknowledged that the current poor olive harvest had necessitated the importing of vegetable oils from the United States for domestic use, in order to maintain substantial olive oil exports that pay for needed industrial equipment. Despite his government's economic troubles and the existence of increased opposition to his rule, however, Bourguiba apparently has retained the support of a majority of Tunisians.

Vast economic improvement was the objective of an ambitious three-year development plan (1961–64) promulgated by the government on May 30. The plan aims to increase the gross national product by 6% annually, and is the first stage of a 10-year program intended to make the country economically self-sufficient by 1971. Total expenditure under the three-year plan is $785 million, of which $334 million is for agriculture and irrigation, $201 million for communications and electric power development, $167 million for industry, and $83 million for education. Of the total cost, Tunisia is to provide $428 million from its own resources; the United States on July 28 committed $180 million in loans by the Agency for International Development to support the program; and other foreign sources are expected to provide the remaining $177 million. Major industrial projects include the construction of plants to manufacture cellulose, nitrate fertilizer, superphosphates, and steel, and to refine petroleum.

Tunisia and France settled their dispute over the Bizerte naval base—a conflict which had led to sharp fighting between French and Tunisian forces in the Bizerte area on July 19–20, 1961. The two countries resumed diplomatic relations on July 20, 1962, a year to the day after ties were broken, and President Bourguiba, on July 25, announced that France had agreed to evacuate unconditionally the Bizerte base. No date was set for final evacuation, but a Tunisian spokesman later said that French forces would complete or "almost" complete their withdrawal from the base "by the end of 1963." France began to transfer to Tunisia the installations in the southern part of the Bizerte base on June 28, 1962. The settlement of the dispute greatly improved Tunisia's relations with France and tended to strengthen her ties with the West.

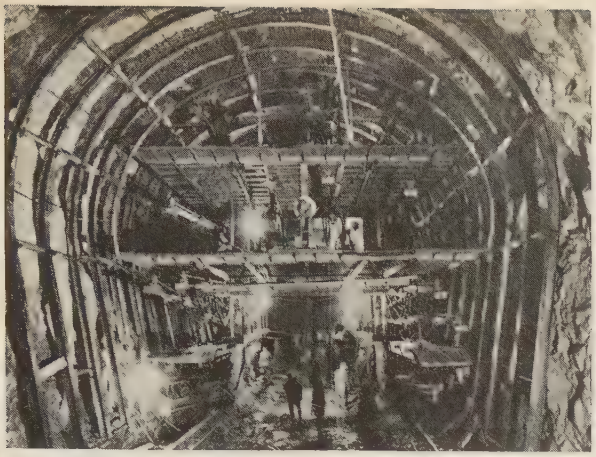
Mongi Slim, Tunisia's representative to the United Nations who had served as president of the General Assembly during its 16th session in 1961–62, was appointed foreign minister on August 15. He succeeded Sadok Mokaddem, who was named ambassador to France.

W. R. F.

TUNNELS

Tunnel construction advanced in various parts of the world during 1962, particularly in the United States and Europe. Major tubes were completed and techniques improved in both hard-rock tunneling and trench-type construction. Tunnels between countries, once considered strategically risky, are becoming commonplace and seem to represent a kind of international cooperation in this age of worldwide tension.

United States. *Vehicular Tunnels.*—The trench method of tunnel construction, probably the most important development in this field in the last half-century, helped to speed work on three major highway tunnels in the United States. The most impressive project, the Chesapeake Bay Bridge-Tunnel, advanced steadily during 1962 despite a spring storm which caused some delays. The 17.5-mile highway link between Virginia and Delaware's Delmarva Peninsula involves some of the most extensive and expensive marine construction techniques ever undertaken. Two tunnels, each about a mile long, will run under the main navigation channels, thereby avoiding the necessity for building high-level bridges. Both are trench-type tunnels. Steel tubes prefabricated on dry land are floated to the site above a trench dredged in the bay bottom. Concrete, poured between the double walls of the tubes, sinks the 268-foot-long sections into place. Divers fasten them to the previous section. Once each tube is joined, a temporary bulkhead sealing its end is removed and the section becomes part of the tunnel. Finally, the trench is filled in to cover the tunnel. Neither of the tunnels connects with the mainland. Both tubes surface at each end on man-made islands built far out in the bay. The islands serve as transition points where the tunnels meet the bridge and trestle sections. Huge rocks protect the sand



AFP FROM PICTORIAL PARADE; ITALIAN STATE TOURIST OFFICE

French and Italian workers met under Mont Blanc on August 14 as boring for the Mont Blanc Tunnel was completed. The tunnel was expected to be opened to traffic in 1964. (*Left*) General view of the tunnel. (*Right*) Entrance from Italian side.

islands' shores from wave action. (See also BRIDGES.)

Traffic moved during 1962 through another tunnel built by the trench method under the Elizabeth River in Virginia. This 4,200-foot-long tube is the second underwater vehicular link between Norfolk and Portsmouth. Twelve 33-foot-diameter tube sections were required. The largest, over 300 feet long, contained nearly 600 tons of steel, in addition to concrete ballast. Total cost of the tube was $22 million.

In California, a second tube between Oakland and Alameda neared completion during 1962. The two-lane highway tunnel parallels an existing tube completed 35 years ago. The trench method also was used on this $16.6 million project.

Voters in the San Francisco area approved a $792 million bond issue to finance a rapid transit system that includes a four-mile-long tunnel under San Francisco Bay. The new tunnel will carry fully automated, high-speed electric trains between Oakland and San Francisco. The $133 million tunnel will be the first construction start on the overall scheme, set for completion about 1970.

Water Tunnels.—Excavation began in 1962 on two vertical shafts over 900 feet deep, marking the beginning of a spectacular tunnel between Brooklyn and Staten Island under New York Bay. This 10-foot-diameter, 25,000-foot-long, hard-rock bore will deliver 300 million gallons of water a day to Staten Island (the city's Borough of Richmond), which is expected to develop rapidly on completion of the Narrows Bridge. Presently, the island borough's only links with the rest of the city are by ferry to Manhattan and Brooklyn. Deep hard-rock water tunnels are not new to the city. Two feeder tunnels run the length of the city, and a third is planned. Also, the longest tunnel in the world, the 85-mile Delaware Aqueduct, was built to bring upstate water to New York City.

Europe.—On Aug. 14, 1962, French and Italian tunnelers more than a mile underground celebrated the holing through of Mont Blanc Tunnel, the world's longest vehicular tunnel, which runs 7.25 miles under Mont Blanc in the Alps. To be completed by 1964, the Mont Blanc Tunnel will be the first all-weather highway connection through the Alps between Italy and France. Most Alpine roads are closed much of the year by snow. Mont Blanc tunnelers encountered great difficulties, particularly on the Italian side. Poor-quality rock and heavy inflows of water hampered progress, ruined much equipment, and took a dozen lives.

On April 5, 1962, Alpine tunnelers holed through the 3.6-mile-long Grand St. Bernard Tunnel high in the Pennine Alps, between Switzerland and Italy. This highway tunnel makes obsolete the highway through the famous Grand St. Bernard Pass. Although the tunnel is 2,000 feet lower than the pass, snow will still be a problem on roads leading to the bore at 6,200 feet elevation. About 10 miles of approach roads will be covered with heavy concrete roofs to keep them open in winter.

The Dutch had two vehicular tunnels under way in Amsterdam during 1962, both under the Het IJ, a stretch of water connecting the IJsselmeer (formerly part of the Zuider Zee) with the Nordzee Canal. Both are relatively short, trench-type tunnels. One is called the IJ Tunnel, the other Coentunnel.

Africa.—A huge river development project in South Africa, just getting under way in 1962, will include the Fish River Tunnel. This 51-mile-long water tunnel is a key phase of the $650 million, 30-year Orange River Project.

Proposed Tunnels.—Many tunnels remained on the proposed list during 1962. Most prominent among them is the tunnel being considered under the English Channel. No decision was reached on whether to build a tunnel or bridge, but the tunnel proposal seems more likely to be accepted, if, in fact, any crossing is ever built. The estimated cost of the tunnel is considerably lower than that of a bridge, and private interests are said to be ready to finance the tunnel. Government assistance is considered inevitable if a bridge is to be built, and this opens up a whole new area of negotiation.

France and Spain agreed in June 1962 to build a highway tunnel through the Pyrenees Mountains. The 1.88-mile bore will reduce highway mileage between Paris and Madrid by about 25 percent and take two years to build.

WILLIAM W. JACOBUS, JR.,
Assistant Editor, "Engineering News-Record."

TURKEY

The Republic of Turkey comprises Anatolia (Asia Minor) and Eastern Thrace (European Turkey); its area is 296,185 square miles, and its population (1961 est.) is 28,602,000. The country's capital is Ankara (1960 pop., 646,151); other principal cities include Istanbul (formerly Constantinople; 1,459,528); Izmir (formerly Smyrna; 370,923); Adana (230,024); Bursa (153,574); and Eskişehir (153,190). The vast majority of the population are Muslims (99%) and speak Turkish as their native language (90.4%). Most Turkish Muslims belong to the Sunni sect, although there is a large Shi'ite minority. The non-Muslim groups (Greek and Armenian Christians, and Jews) total 214,000 and are concentrated in Istanbul and Izmir. Ethnic minorities include the Kurds (at least 1.5 million), largely in the eastern provinces, and Arabs (346,000) in the south.

Government.—Turkey is a republic, and all citizens over 21 years are entitled to vote for the bicameral Grand National Assembly, which consists of a 187-seat Senate (150 elected members, of whom 50 are elected every two years) and an Assembly of 450 members elected every four years on the basis of proportional representation from each of the 67 provinces. As a result of the last general election (Oct. 15, 1961), and subsequent changes, Senate seating was as follows: Justice Party (led by Ragip Gümüşpala), 64; Republican People's Party (led by Ismet Inönü), 35; New Turkey Party (led by Ekrem Alican), 27; Republican Peasants Nation Party (led by Osman Bölükbaşi), 7; others, 2; independent, 50; vacancies, 3. The Senate includes 15 persons appointed by the president and the 22 members of the Committee of National Unity, who hold lifetime seats. Assembly seating was as follows: Re-

publican People's Party, 171; Justice Party, 150; New Turkey Party, 63; Republican Peasants Nation Party, 32; independents, 31; vacancies, 3.

The president is Cemal Gürsel, elected for a 7-year term in 1961. The prime minister is Ismet Inönü, who has headed a coalition cabinet since 1961. The cabinet is responsible only to the lower house.

Under the new constitution effective on July 20, 1961, the president must be elected by a joint session of the two houses from among their members. The prime minister, who must likewise hold a seat in one of the houses, is named by the president.

Finance.—The monetary unit is the Turkish lira (T£), which was officially valued at U.S.$0.1111 on Aug. 20, 1960. The budget for 1962 was estimated at T£10.1 billion (up 16% from 1960), of which 25.3% (24.4% in 1961) was allocated for national defense and 13.4% (14.9% in 1961) for education. In May 1962 the public internal debt totaled T£9.6 billion, and the foreign debt, T£5.5 billion. The Central Bank's gold and foreign exchange assets totaled T£1,990 million as of Sept. 22, 1962, and its gold and foreign exchange liabilities, T£1,329 million.

From the origin of the Truman Doctrine in 1947 through June 1962, United States military aid to Turkey has approximated $2.4 billion, and economic aid, $1.7 billion. In 1961, Turkey closed its adverse balance of payments ($217 million) by receipt of private capital ($26 million); Agency for International Development aid ($124 million); commercial credit ($68 million); and other loans and credits granted by international agencies and foreign nations ($78 million).

Education.—Virtually all schools are operated by the national Ministry of Education, principal exceptions being Robert College (American), in Istanbul, and other foreign and minority schools. School enrollment, 1960–61 school year: 2.6 million (down 0.1 million from 1959). In 1960, 40.3% of the population 7 years of age or older was reported to be literate. School authorities are concerned about the slow increase in literacy and the estimated 5 million children of school age not in school. As of early 1962, over 15,000 villages had no school facilities. There are six universities under varying degrees of state control (Istanbul, Ankara, Istanbul Technical, the Aegean University in Izmir, the Middle East Technical in Ankara, and Atatürk University in Erzurum).

Transportation and Communications.—At the end of 1960, Turkey's highway network consisted of 23,794 miles of all-weather roads, serving a total of about 115,000 commercial and passenger vehicles. There were 4,885 miles of railroad, mostly single track and entirely state owned and operated. The Turkish State Airways, Inc., flew 88 million passenger-miles in 1960 and operated 34 aircraft. The Turkish merchant marine (of 18 gross tons and over) totaled 834,000 tons at the end of 1960. Turkey's three radio stations (Istanbul, Ankara, and Izmir) are government-operated. In 1962 there were 1,503,816 licensed radio receivers and 189,284 telephones in use.

Economic Conditions.—In 1961–62, money remained in short supply as public confidence failed to reassert itself after the 1960 military coup. Bank credit in 1962 increased only 4.4% over 1961 (2.3% over 1960), and savings deposits rose to a new record high. Prices fell off by 2% during the year, reaching their lowest level since 1956. The release of United States counterpart funds equivalent to T£1.0 billion created low-interest money for industry to a limited extent.

The general stagnation in the market and the rapid population increase created a serious unemployment problem. In August 1962, unemployment was an estimated 1.5 million persons, or about 11% of the labor force. In addition, there was considerable underemployment in certain industries.

Details of a five-year development plan were announced in August 1962. It called for an investment of over T£9 billion, with heavy emphasis on industrial projects and agricultural development.

The 1960 gross national product was estimated at T£44.9 billion (up 0.7% from 1960), of which agriculture accounted for 43.9%, and industry for 10.5%. Per capita income at 1948 prices was T£567 (T£1,540 in current prices), a drop from T£590 estimated for 1959.

Agriculture.—Of the total land area in 1960, about 36% was in meadows and pasture, 30% in cultivated crops (including 10% in fallow), 3% in orchard and vineyard, 14% in forest, and 17% in unproductive area. Principal crops and 1961 output (in thousands of metric tons) were: wheat, 7,000; barley, 2,970; sugar beets, 2,860; grapes, 2,775; potatoes, 1,409; onions, 406; olives, 424 (1960); cotton, 200; tobacco, 110; and hazelnuts, 32. Other important crops include a variety of nuts, fruits, and vegetables. Chief animal products and 1960 outputs (in metric tons): meat, 162,002 (produced at city slaughter houses); wool, 47,366; mohair, 9,796; and silk cocoons, 2,444.

Mining.—Turkey's mineral production for 1961, which was about the same as for 1960, was as follows: bituminous coal, 6.4 million metric tons; subbituminous coal and lignite, 3.7 million; copper, 19,992; chromite, 524,364; iron ore, 764,484; petroleum, 414,264; and sulfur, 15,648. The monthly production rate for crude oil in mid-1961 was 41,577 metric tons, up 11,000 tons from the 1960 average. A discovery of rich uranium deposits in the Province of Manisa was reported in mid-1962.

Industrial Production.—Production of major industrial products in 1961 (in metric tons) was as follows: pig iron, 187,512; steel mill products, 303,648; cement, 2,028,000; coke, 720,000; paper, 63,360; sugar, 534,312; glass and glass products, 18,792; superphosphates, 21,192; cotton textiles, 155.0 million meters (state plants only); and woolen textiles, 4.7 million (state plants only). Electric power production totaled 2,918 million kw.-hr. in 1961, of which 51% was derived from coal and lignite, and 43% from water.

Early in 1962, Turkey ceased importing refined oil products, as the country's refining capacity was deemed large enough to meet domestic needs. By late 1962, three local refineries were in operation. In May 1962, Turkey inaugurated a $2.6 million atomic reactor, which was fueled by 4 kilograms of uranium-235 donated by the United States.

Foreign Trade.—Total exports, 1961: T£3,120.6 million (up T£1,399.4 million from 1960); imports, T£4,585.1 (up T£2,371.4 million). Exports were largely agricultural (83.3% of total 1961 exports), chiefly tobacco (T£784.7 million), fruits and nuts (T£655.4 million), cereals (T£53.9 million), and cotton (T£520.7 million). Mineral exports were valued at T£236.3 million (7.6% of total exports). Chief imports were production machinery, iron and steel products, vehicles, fuels, textile fibers, and pharmaceuticals. Turkey's major trading partners in 1960 were the United States (which supplied 27.5% of imports and took 18.8% of exports), West Germany (16.7% and 14.7%), the United Kingdom (13.2% and 8.6%), Italy (8.4% and 9.9%), and France (3.5% and 6.9%). Soviet-bloc trade accounted for 7.8% of total imports and 8.6% of exports.

Events, 1962. *Foreign Affairs.*—Turkey's active pro-Western policy was tested during the Cuban crisis of October 1962. After a quarantine of Cuba was imposed by the United States, Turkey responded immediately by announcing its complete cooperation with and support of the United States. Turkish leaders refused to consider the removal of United States-supplied missiles from Turkey as a possible concession to the Soviet Union. They contended that the missiles and United States-manned air bases in Turkey were NATO installations and therefore not subject to unilateral disposal by either the United States or Turkey. Apparently sensing the recalcitrance of the Turks, the Soviet Union dropped its demand for the dismantling of these installations in Turkey in return for Soviet withdrawal of offensive missiles and aircraft from Cuba.

Early in 1962 the Turkish press began carrying reports of widespread brigandage in the eastern provinces, in what used to be Kurdish-dominated territory. Regular army units were sent to assist local law-enforcement agencies in maintaining order. In August the Iraqi government charged Turkey with aiding the Iraqi Kurdish chief, Gen. Nullah Mustafa al-Barzani. The Iraqi claim was categorically denied by the Turks.

It soon became known that several thousand armed Iraqi Kurds of the Baradost tribe had fled to Turkey from Iraq, allegedly to escape from General Barzani. The Kurds surrendered their weapons to Turkish authorities and were apparently granted asylum. Turkey and Iraq exchanged harsh notes charging each other with border violations. Perhaps in an attempt to placate Kurdish groups in Turkey, the parliament in October permitted 55 tribal leaders who had long been exiled in western Turkey to return to their homes in the eastern part of the country.

Turkey continued to negotiate for a limited association with the European Economic Community. In July 1962 the Community agreed in principle to offer Turkey a customs union agreement, which will probably mean removal of Community tariff barriers on imports from Turkey. Turkey, however, was reluctant to offer a reciprocal reduction in import restrictions. A gradual lowering of tariffs over a 22-year period was discussed.

In September 1962 the first group of 30 United States Peace Corps volunteers arrived in Turkey.

In late November, Archbishop Makarios, president of Cyprus, came to Turkey for a state visit.

Domestic Affairs.—In November 1961, after several weeks of interparty negotiations, Ismet Inönü succeeded in forming a coalition government in which the Republican People's Party and the Justice Party each held 11 cabinet posts. On December 2 the new cabinet received a vote of confidence by the National Assembly. The new government promised to abolish the agricultural land tax, introduce rational economic planning, give priority to education, place greater emphasis on agricultural development, and continue Turkey's support for NATO and CENTO.

Martial law, which had been in effect in Istanbul and Ankara since the student demonstration of April 28, 1960, was lifted on Nov. 30, 1961.

On Feb. 13, 1962, a small group of army officers and military cadets under the leadership of a retired colonel, Talat Aydemir, former commandant of the Ankara War College, attempted to seize power, but the revolt was quickly suppressed without bloodshed. Although no one was prosecuted, 21 officers were retired and 13 were reassigned. On December 3, the government forced the retirement of 11 senior air force officers, ostensibly as a move to keep the military forces out of politics. It was reported that some of the retired officers had been holding secret meetings of a political nature.

In April the Justice Party demanded the resignation from the party of those ministers who signed the impending official pardon for persons responsible for the February 22 revolt, unless a date for a general political amnesty was announced. Inönü resigned on May 30, and on June 2 was asked by President Gürsel to form a new cabinet. Two weeks later he succeeded in forging a second coalition cabinet consisting of representatives of the Republican People's Party, the New Turkey Party, and the Republican Peasants Nation Party. Parliament approved the cabinet by a vote of 259 to 134. Of the 147 Justice Party members, 115 voted against approval and 32 abstained.

The Justice Party in October held mass outdoor meetings to demand a general political amnesty for jailed Democrats. Parliament on October 27 approved a resolution releasing 268 persons imprisoned since the military coup of May 27, 1960. Fifty-three persons remained in prison, including former president Celâl Bayar. The act of amnesty did much to relieve political tensions.

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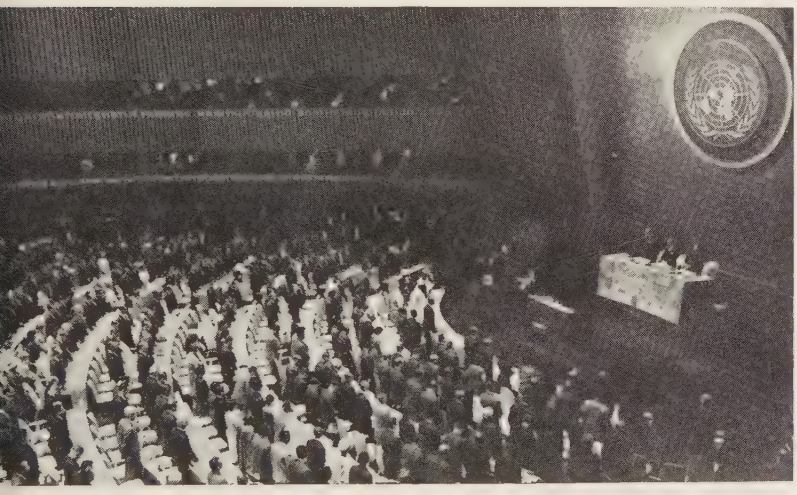


UNITED NATIONS—As delegates stand in silence, the 17th General Assembly session opens on September 18.

UNITED NATIONS

UDALL, Stewart Lee. See biographical sketch under UNITED STATES.

UGANDA

The former British East African territory of Uganda attained independence within the Commonwealth of Nations on Oct. 9, 1962. Uganda is situated in inland east-central Africa, and is bounded on the north by Sudan, on the east by Kenya, on the south by Tanganyika and Rwanda, and on the west by the Republic of the Congo (Léopoldville). The country comprises a fertile plateau, with mountains on the eastern and western borders; desert land in the east; and Lake Victoria to the south. The total area of 93,981 square miles (including 13,689 miles of lakes) is slightly less than that of Oregon. The population at the 1959 census was 6,536,616 (mid-1961 est., 6,845,000), including 6,451,117 Africans, 71,933 Asians, 10,866 Europeans, and 1,946 Arabs. The capital is Entebbe (1959 est., 8,500); the commercial center is Kampala (60,000).

Uganda's flag has six horizontal stripes of alternating black, yellow, and red, and is inscribed in the center with a white disk bearing a colorful crested crane.

Government.—Sir Walter Coutts, who had served as governor from Nov. 30, 1961, became the first governor general of Uganda on Oct. 9, 1962. Uganda achieved internal self-government on March 1, 1962, and Benedicto Kiwanuka, leader of the ruling Democratic Party, was installed as the country's first prime minister. He resigned on April 27 after his party's defeat in general elections, and was succeeded as prime minister on May 1 by Milton Obote, president of the Uganda People's Congress (UPC). In the elections of April 25, 1962, the UPC won 37 of the 82 directly elected seats in the 91-member National Assembly; the Democratic Party received 24 seats; and the Kabaka Yekka (the ruling group in the Kingdom of Buganda that was aligned with the UPC), 21 seats. The UPC on May 9 also received 6 of the 9 specially elected seats in the Assembly, and the Kabaka Yekka was granted the remaining 3 seats. The Kabaka Yekka had won 65 of 68 elected seats in the Buganda Lukiko (legislature) on Feb. 22, 1962; the Lukiko, which assists the ruler, or kabaka, selects Buganda's 21 representatives to the National Assembly.

Education.—About one fourth of all school-age children attend school. The government aims to develop common schools open to all races. Number of schools (with

enrollments, 1960): 5,956 primary (531,752); 298 secondary (31,285); 36 teacher-training (3,281); and 13 technical (1,540). The University College of East Africa at Kampala had 789 students in 1961.

Finance.—Government revenue, fiscal year ending June 30, 1962: £17,648,610 (£20,587,402 in fiscal year 1961); expenditure, £18,606,180 (£21,812,346). Public debt, mid-1960: £16,933,000.

Transportation and Communications.—Railways connect Kampala with Kenya and with Lake George in western Uganda. The road network aggregates about 11,300 miles, including 2,964 miles of main highways. East African Airways and six foreign airlines serve Entebbe airport. Passenger cars: 25,700 (1960); commercial vehicles, 5,200 (1960); telephones, 13,596 (1960); radio receivers, 90,000 (1959).

Agriculture.—Uganda is the largest producer of coffee of the Commonwealth countries, and is an important supplier of cotton. Chief crops (metric tons, 1961): coffee, 91,100 (down 21%); seed cotton, 215,000 (up 2%); sugar, 95,500 (up 2%); leaf tobacco, 7,000 (up 37%); and tea, 5,000 (up 9%). Exports of hides and skins totaled 63,400 cwt. in 1961; and of timber, 194,000 cubic feet.

Manufactures and Minerals.—National income, 1960: £152 million (up 1.5% from 1959). Manufactures are principally processed foods. Chief minerals are copper (13,300 metric tons produced in 1961), gold, tin, wolfram, and lead. Electric power, 1961: 434 million kw.-hr. (up 9% from 1960).

Foreign Trade.—Total exports, 1961: £41.3 million (down 4% from 1960); imports, £26.5 million (up 2%). Coffee and cotton account for about 80% of annual export value; chief imports include textiles, machinery, base metals, vehicles, and fuels. Uganda has a common economic customs union with Kenya and Tanganyika, and its trade is mainly with other Commonwealth countries.

Events, 1962.—Uganda attained internal self-government on March 1 and complete independence from Great Britain on October 9. Independence celebrations in Kampala were attended by representatives of 70 nations, including the Duke of Kent, who represented Queen Elizabeth II, and Senator Benjamin A. Smith, 2d, of Massachusetts, who was President Kennedy's personal representative.

The Uganda government's first decision as an independent country was its refusal to accord diplomatic recognition to the Republic of South Africa and the Federation of Rhodesia and Nyasaland because of the racial policies of those countries. Uganda was admitted to the United Nations on October 25.

The new African nation is unique in having no pressing racial conflicts to settle and in having a working multiple-party political system. Nevertheless, Uganda is faced with serious problems, principally tribal rivalries which threaten to undermine the authority of the central government, and economic underdevelopment. Prior to independence the government ordered an amnesty for 2,500 political and other noncriminal prisoners who had been jailed by the outgoing British administration.

About two thirds of the electorate participated in general elections held on April 25 and elected a majority of candidates of the Uganda People's Congress (UPC), in alliance with the Kabaka Yekka (which means "the kabaka alone") movement in the Kingdom of Buganda, to the new National Assembly. Prime Minister Milton Obote, leader of the moderately leftist UPC, headed a 15-member coalition cabinet of 10 UPC and 5 Kabaka Yekka members who were sworn in on May 1. He succeeded Benedicto Kiwanuka, president of the opposition conservative Democratic Party, who had taken office as prime minister on March 1.

The status of Uganda's so-called "lost counties"—five counties and parts of two others in western Buganda which have been claimed by the neighboring Kingdom of Bunyora—remained unresolved in 1962. A British Commission of Inquiry recommended on May 3 that two of the counties where the population is predominantly composed of Banyora tribes be returned to that kingdom, and that the remaining counties inhabited largely by Baganda tribesmen be retained by Buganda. The kabaka (ruler) of Buganda, however, rejected the commission's recommendations. It was announced on June 30, following a constitutional conference in London, that the two disputed counties would remain as part of Bugunda but would be administered by the central government, pending a self-determination referendum to be held there within two years.

The Uganda government on March 2 adopted a five-year development plan (1962–67), based on an economic survey conducted by the World Bank. The plan emphasizes development of trade and industry at an estimated cost of £54.2 million, of which Uganda is to provide £19 million, and Great Britain, £10 million.

W. R. F.

Uganda's independence celebrations are observed on October 13 by (from the right) Governor General Sir Walter Coutts, the Duchess of Kent, and Prime Minister Milton Obote. Uganda won independence within the Commonwealth on October 9.

CENTRAL PRESS

UKRAINE. See UNION OF SOVIET SOCIALIST REPUBLICS.

UNEMPLOYMENT. See LABOR; and the Index entry, *Unemployment*.

UNESCO. See UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION.

UNION OF SOUTH AFRICA. See SOUTH AFRICA.

UNION OF SOVIET SOCIALIST REPUBLICS

The USSR has the largest contiguous territory of any nation, and ranks third in the world in population, following only Communist China and India. The Soviet population in 1962 was officially claimed to be 220,000,000. The areas and 1961 populations of the 15 Soviet republics are shown in Table 1.

Table 1—AREAS AND POPULATIONS OF THE SOVIET REPUBLICS

Republic	Area (sq. mi.)	Population (1961 est.)
Russian SFSR	6,600,000	120,000,000
Ukrainian SSR	240,000	43,091,000
Kazakh SSR	1,050,000	10,400,000
Uzbek SSR	156,000	8,665,000
Belorussian SSR	80,000	8,226,000
Georgian SSR	30,000	4,200,000
Azerbaidzhan SSR	33,000	3,973,000
Moldavian SSR	13,000	3,040,000
Lithuanian SSR	25,000	2,804,000
Kirgiz SSR	77,000	2,225,000
Latvian SSR	25,000	2,142,000
Tadzhik SSR	55,000	2,104,000
Armenian SSR	12,000	1,893,000
Turkmen SSR	187,000	1,626,000
Estonian SSR	17,000	1,221,000
Total	8,600,000	215,610,000

(Source: *1961 Yearbook of the Great Soviet Encyclopedia*, Moscow 1961.)

Of the total population, 55% are females and 45% are males, an imbalance due mainly to the great loss of males during World War II. Rural residents constitute 52% of the total population; urbanites, 48%. Despite the growth of population in Soviet Asia, 69% of the Soviet people still live in European USSR west of the Ural Mountains. Siberia contains 15% of the population; central Asia, 11%; and the Caucasus, 5%. Great Russians constitute 55% of the population, and Ukrainians, 18%; the remainder is divided among 58 ethnic groups. About 13% of the population is of Mongoloid stock, consisting of Turko-Tatars and Finno-Ugrians.

The largest Soviet cities (with 1959 populations) are Moscow, the capital (5,032,000); Leningrad (3,300,000); Kiev (1,102,000); Baku (968,000); Gorki (942,000); and Kharkov (930,000).

A Soviet decree of Jan. 15, 1962, revoked all past laws naming Soviet cities, districts, factories, railway stations, schools, etc., for the deposed Soviet leaders Lazar M. Kaganovich, Georgi M. Malenkov, Vyacheslav M. Molotov, and Kliment Y. Voroshilov. A series of decrees had previously removed the name of Stalin from similar places; for example, Stalingrad was renamed Volgograd, Stalino became Donetsk, and Stalinsk became Novokuznetsk. By June 1962, Mount Stalin (the highest peak in the USSR) had been renamed Mount Communism.

Two new territories were formed in 1962 in the Kazakh Soviet Republic: the Aktyubinsk, Guryev, and West Kazakhstan oblasts were merged to form West Kazakhstan Territory; and the Dzhambul, Kzyl-Orda, and South Kazakhstan oblasts were joined together as South Kazakhstan Territory. In November the city of Khrushchev in the Ukraine was renamed Kremges.

Government and Political Developments, 1962.— The Soviet Union is a one-party dictatorship ruled by the Presidium of the Central Committee of the Communist Party. The formal framework of government in 1962, however, was as follows:

(1) The *Council of Ministers*, consisting of Premier Nikita S. Khrushchev, 7 deputy premiers, the premiers of the 15 Soviet republics, and about 40 ministers or heads of organizations of ministerial rank. The Council of Ministers is the chief legislative and executive organ of the USSR, and is appointed by the Supreme Soviet or the latter's Presidium.

(2) The *Presidium of the Supreme Soviet*, consisting of a president (Leonid I. Brezhnev, who is the titular head of the Soviet government), 15 vice presidents (the presidents of the 15 Soviet republics), a secretary, and 16 members. It has legislative, appointive, judicial, and treaty-making powers.

(3) The *Supreme Soviet of the USSR*, consisting of two equal houses elected for four years: the Soviet of the Union, with 791 members (one deputy per 300,000 inhabitants); and the 652-man Soviet of Nationalities, which includes 25 deputies from each of the 15 Soviet republics, 11 from each of the 20 autonomous republics, 5 from each of the 8 autonomous oblasts, and 1 from each of the 10 national areas.

WIDE WORLD

Three young Westerners visiting Moscow unfurl a banner demanding an end to nuclear testing, July 13. Soviet security guard (foreground, back to camera) ordered flag folded.

Besides being governmental premier in 1962, Khrushchev was also chairman of the Communist Party Presidium and first secretary of the party Secretariat, thus personally holding the three most powerful positions in the Soviet dictatorship.

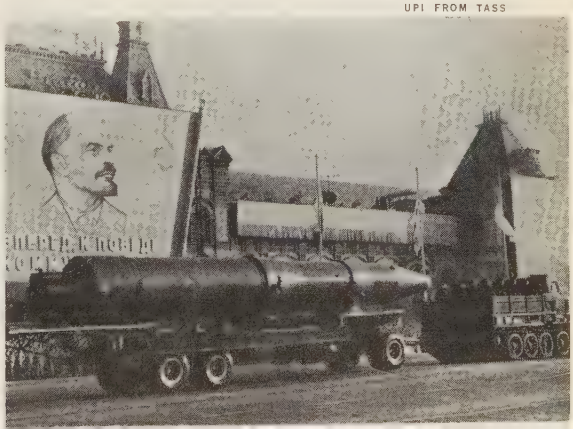
It was announced on April 26 that Andrei P. Kirilenko had been elected as a full member of the party Presidium. Leonid N. Yefremov became a candidate member in November. The Communist Party itself had 9,716,000 members in 1962. Of this large membership, over 60% had joined the party during the Stalin era, 20% were women, and 58% had no more than a grade-school education. By nationality, 63% of the party members were Russian, and 15% were Ukrainian. In class structure, 48% of the party members were classified as intelligentsia; 34%, workers; and 18%, peasants.

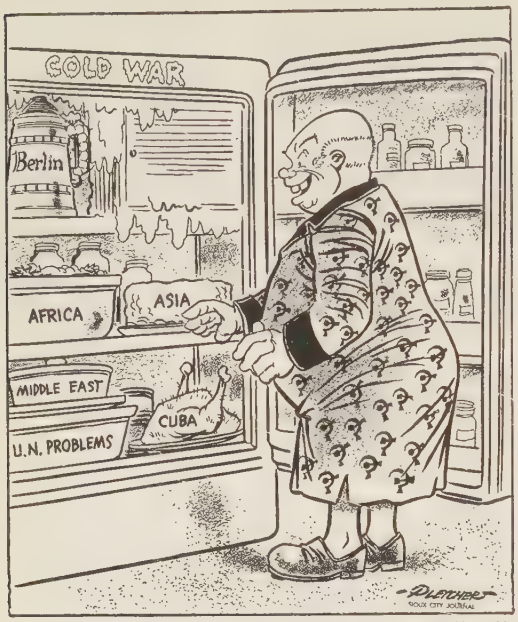
On March 18, elections were held for a new governmental Supreme Soviet. The Communist bloc of candidates ran for office unopposed. Of the deputies elected, 70% were newcomers. The new Supreme Soviet on April 24 reappointed Kliment Y. Voroshilov to the Supreme Soviet Presidium. Thus, of the so-called anti-party group which Khrushchev ousted from power in 1957 and severely criticized in 1961, Voroshilov was the only one who held high public office at the end of 1962.

In February the death penalty was decreed for persons who assaulted policemen, for rapists, and for government officials who accepted large bribes. During 1962 about 100 persons (many of whom had Jewish names) were executed for counterfeit-

(*Left*) Soviet officials review parade in commemoration of 45th anniversary of October Revolution, November 17. From left are Rodion Malinovsky, defense minister; Nikita Khrushchev, chairman of the Council of Ministers; Leonid Brezhnev, president of the Presidium of the Supreme Soviet; Frol Kozlov, secretary of the Communist Party; Alexei Kosygin, vice chairman of the Council of Ministers, and Dmitri Polyanski, a member of the Presidium. (*Right*) Naval rocket is hauled through Red Square.

UPI FROM TASS





PLETCHER IN THE SIOUX CITY JOURNAL

"Gourmet's Delight"

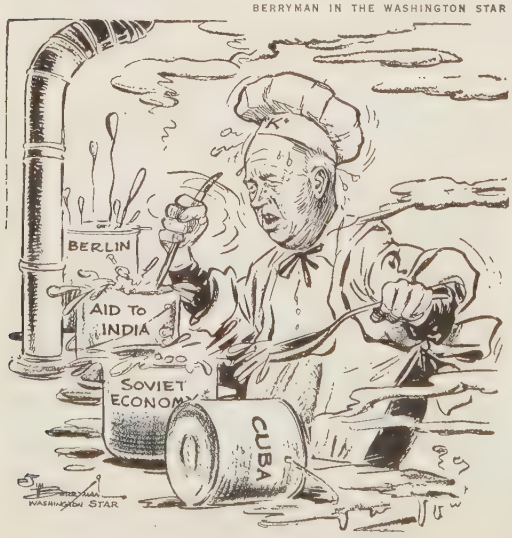
ing, speculating in gold or foreign currencies, or engaging in large-scale embezzlement.

In August and September the Ministry of Internal Affairs (MVD) in each of the 15 Soviet republics was renamed the Ministry for Defense of Public Order (MOOP). In November, Alexander N. Shelepin, a former police minister, was appointed head of a newly created Committee for Party-State Control, which will superintend both the governmental and Communist Party bureaucracy to prevent graft, waste, corruption, and inefficiency.

An even more far-reaching change in November was the division of most regional and local governments and party organizations into separate industrial and agricultural divisions, so that the average region will have two governments (rural and urban) and two similar party groups. Educational, welfare, and other routine administrative functions of government will be divided between these industrial and agricultural organs of authority. The courts and police, however, will remain united under control of the Soviet government.

"Too Many Broths Spoil the Cook"

BERRYMAN IN THE WASHINGTON STAR



It was announced on December 22 that Valerian A. Zorin had been replaced as Soviet delegate to the United Nations by Nicolai T. Fedorenko.

Education and Culture.—In 1962 the USSR had 39 million students, including 2,600,000 in colleges, 2,400,000 in technical high schools, and 1,500,000 in boarding schools. Three fifths of the college freshmen had worked two or more years before entering college. One third of the college graduates were engineers. Attending Soviet colleges in 1962 were 15,000 foreign students from 80 countries. About 5 million Soviet children were in preschool nurseries.

Though rising, the general level of education of the Soviet population was still below that of the United States. In 1962, 60% of all Soviet workers and 77% of the collective farmers had no more than a grade-school education.

The college system of the Communist Party in 1962 consisted of regional three-year schools, inter-regional and republic four-year schools, the higher party schools, and the Academy of Social Science. The colleges train party members for work in administration or propaganda.

The USSR in 1962 had 6,800 newspapers with a combined daily circulation of 67 million, and about 4,700 periodicals with an annual circulation of 1,355 million. There were 381,000 libraries with 1,900 million books. In 1962 more than 1.2 billion copies of books and pamphlets were published. In March the Communist Party warned Soviet composers to avoid formalism and modernism in their musical compositions.

Religion.—The Soviet government is officially atheistic, and disseminates atheist propaganda through the schools, press, radio, television, museums, theaters, and the arts. In 1962 the government decreed April 29, the Russian Orthodox Easter Sunday, as a workday, and April 30 as a day of rest. According to Soviet officials, the Russian Orthodox Church has 50 million adherents; the Muslim sect, 26 million (23 million Sunnites and 3 million Shi'ites); the Hebrew faith, 2,300,000; and the Baptist Church, 500,000. Other religious groups with large congregations are the Roman Catholic, Lutheran, Armenian, Gregorian, and Buddhist. In 1962, as before, the Soviet press complained that religion was still a strong force in Soviet life, and urged an intensification of antireligious propaganda. During 1962 more than 20 Pentacostal ministers and at least seven ministers of Jehovah's Witnesses were imprisoned for illegal religious activities, and an Orthodox archbishop in the Ukraine was sentenced to nine years' imprisonment for alleged embezzlement of church funds. An anti-Semitic quota system prevented many Jews from entering college or working in high government offices.

Armed Forces.—According to West German estimates, Soviet armed forces in 1962 totaled 3,570,000 men. The Soviet Army consisted of 2,200,000 men organized in 125 divisions, and had about 55,000 tanks, 30,000 mortars, and 24,000 antiaircraft rockets and guns. The Soviet Navy had 720,000 men, 1,800 surface ships, and 500 submarines, including 6 nuclear submarines and 15 underseas craft capable of firing nuclear missiles. The air force comprised 650,000 men and 15,000 planes, including 190 intercontinental bombers and 1,100 medium-range bombers. The USSR also was believed to have about 80 intercontinental missiles with nuclear warheads and 200 medium-range

missiles, all operational and located on launching pads. (See also AERONAUTICS; MISSILES.)

In 1962, Soviet military spokesmen claimed that the armed forces had 100,000 parachute troops, rocket-launching bombing planes, anti-rocket rockets, submarines with homing rockets, and hydrogen bombs ranging from 50 to 100 megatons in explosive power. DOSAAF, the civilian defense society, was ordered by the Communist Party in May to teach air raid precautions to the population, train youths who were to be inducted into the armed forces, and make its members learn and practice useful technical skills.

On April 20, 1962, Col. Gen. Ivan I. Yakubovski became commander-in-chief of Soviet troops in East Germany, replacing Marshal Ivan S. Konev. Army Gen. Aleksei A. Yepishev on May 22 replaced Marshal Fedor Golikov as head of the Chief Political Administration of the Soviet Army and Navy Gen. Aleksei I. Antonov, chief of staff of the armed forces of the Warsaw Pact alliance, died on June 18.

The USSR resumed the testing of nuclear weapons on July 22 (see ATOMIC ENERGY).

In response to the quarantine of Cuba imposed by the United States in October, all vacations of troops in the Soviet armed forces were suspended, and as of October 24 no resignations or discharges were permitted for Soviet rocket, antiaircraft, and submarine troops. The combat-readiness alert was cancelled on November 21.

Space Flight.—Soviet rocketry continued to display its prowess in 1962. Several unmanned earth satellites of the Cosmos series were launched during the year, and on October 16–17, two new multistage rockets were fired 7,450 miles from the USSR into the mid-Pacific area. On November 2 a rocket was launched into outer space in an attempt to photograph the planet Mars. The most spectacular space feat occurred in August. A spaceship carrying Major Andrian G. Nikolayev, launched on August 11, completed 64 orbits of the earth in 94 hours and 25 minutes. A second spaceship, launched on August 12 and piloted by Lt. Col. Pavel R. Popovich, made 48 orbits in approximately 71 hours. The two spaceships flew close to each other in space, and landed safely on August 15 in the USSR a few miles apart. (See also SPACE FLIGHT.)

Manpower.—Excluding collective farmers, the USSR in 1962 had 46 million manual workers, and 20 million white-collar and professional workers. About 48% of the urban labor force and 70% of the collective farmers were women. There were 400,000 scientists and science technicians, and about 20 million persons were retired and living on pensions. The trade unions had a membership of 63 million; the Red Cross and Red Crescent societies, 45 million; and consumer cooperatives, 43 million. The Young Communist League had 19.4 million members, and the Pioneers (a society for grade-school children), 18 million.

Finance.—The 1962 actual budget comprised revenues of 84.7 billion rubles and expenditures of 82.7 billion; the comparable figures for 1961 were 79 billion and 77.6 billion, respectively (the ruble equals U.S.$1.11). The state budget includes revenues and expenditures for the central government and for 50,000 regions and localities. Indirect taxes (sales tax, profits tax, and revenues from foreign trade) accounted for 91% of 1962 budget revenues. The 1962 expenditures were allocated as follows (with 1961 percentages in parentheses): industry and housing, 23% (26%); armed forces, 17% (12%); education, propaganda, and science, 15% (14%); social insurance and social security, 14% (14%); communications and trade, 8% (13%); agriculture, 10% (5%); public health and organized sport, 6% (7%); secret, 6% (8%); and administration, 1% (1%). The secret appropriation was probably for military purposes, and there were hidden military expenses in the appropriations for industry, education, science, social security, and sport.

WIDE WORLD

Examining a strain of winter wheat at an experimental farm near Moscow are biologist Trofim Lysenko (with cap), Soviet Premier Khrushchev (center) and Deputy Premier Mikoyan.

Taxation and Savings.—The Soviet population is oppressively taxed, since in 1962 more than two thirds of the national income was taken by the government in taxes. On September 22 a reduction in income taxes, which had been promised previously to take effect on October 1, was indefinitely postponed.

About 52.7 million Soviet citizens had savings accounts in government banks in 1962, and these private accounts totaled 11.7 billion rubles.

Standard of Living.—The Soviet standard of living remained low in 1962, especially outside the capital city of Moscow. The Soviet press admitted that there were shortages of meat, milk, dairy products, sugar, clothing, shoes, furniture, and housing. Many aged collective farmers received no pensions. In 1962 the retail prices of watches and clocks were reduced by 18%; sugar, 5%; and rayon cloth, 20%. The reductions were offset on June 1, however, by a 25% increase in the price of butter, and a 30% rise in the price of meat.

Transportation and Communications.—The USSR in 1962 had 75,000 miles of railways (including 10,000 miles of electrified lines), 82,000 miles of inland waterways, 16,000 miles of gas pipelines, and 940,000 miles of roads, of which only 47,000 miles were paved. Railways transported 89% of all internal freight; inland waterways, 6%; oil pipelines, 3%; and motor trucks, 2%. It was claimed that Soviet railways transported 45% of all rail freight in the world, and carried 2 billion passengers per year. Completion of the 500-mile

Soviet cosmonauts Pavel Popovich (right) and Andrian Nikolayev arrive at Moscow's Vnukovo Airport on August 18. Premier Khrushchev and Popovich's daughter are at left.

UPI

Kara-Kum Canal in southern Turkmen SSR was announced on May 1, 1962. (See also CANALS.) About 2.1 million telephones and 6 million television sets were in operation in the USSR in 1962.

Soviet civil airlines in 1962 had 3,000 passenger planes, operated 200,000 miles of domestic air routes and 50,000 miles of foreign routes, and carried about 30 million passengers. Two thirds of the domestic flights were made by jet planes. During the year, direct air service was opened from the USSR to Cuba, Ghana, Guinea, Mali, Morocco, and Sudan. Aeroflot, the Soviet airline company, operated flights to 29 foreign countries. In September the USSR displayed its new IL-62 plane, which has four jet motors, carries 182 passengers, has a speed of 560 miles per hour, and can fly nonstop from Moscow to New York. Direct radiotelegraph service was opened on August 15 between Moscow and Bamako, Mali.

Industry and Mining.—The USSR in 1962 produced about one fifth of the world's industrial output. Soviet industry was second in size only to that of the United States, and outproduced the United States in iron ore, coal, coke, diesel and electric locomotives, lumber, wool cloth, machine tools, and tractors. Soviet industry remained very unbalanced, with capital goods amounting to about three fourths of all industrial output. The actual 1961 output and preliminary estimates of 1962 production for certain selected commodities are shown in Table 2.

Table 2—USSR PRODUCTION OF SELECTED COMMODITIES

Commodity (and unit of measurement)	1961	1962
Petroleum (million metric tons)	166	186
Iron (million metric tons)	50.9	54.5
Steel (million metric tons)	70.7	75.5
Cement (million metric tons)	50.9	56
Coal (million metric tons)	510	515
Paper (million metric tons)	2.6	2.8
Machine tools (thousand units)	164	178
Motor vehicles (thousand units)	555	575
Tractors (thousand units)	264	288
Harvesting combines (thousand units)	76.3	79
Textiles (billion square meters)	6.7	6.7
Timber (million cubic meters)	236	244
Natural gas (billion cubic meters)	60.9	71.5
Radio and television receivers (million units)	6.2	6.3
Shoes (million pairs)	442	455
Electricity (billion kw.-hr.)	327	367

(Sources: *Pravda* and other Soviet publications.)

In 1962 there was a tendency to recentralize the industrial administration, which had been decentralized in 1957. The USSR was divided into about 40 large industrial areas. In each area the planning and coordination of industry was entrusted to councils which took over the functions formerly executed by more than 100 small regional economic boards. The 40 area councils, in turn, are managed by a newly created Council of the National Economy, headed by Veniamin E. Dymshits.

A major success of Soviet prospecting was the discovery in March 1962 of a large oilfield along the Lena River in eastern Siberia.

Agriculture.—In 1962 the total area under crops was approximately 520 million acres, of which about two thirds belonged to the 42,000 collective farms, and one third to the 8,270 state farms. About three fifths of the total sown area was under grain. Other major crops were potatoes, sunflower seed, cotton, sugar beets, silk, flax, and hemp. Total livestock included 81,900,000 cattle (including 36,300,000 cows), 66,400,000 hogs, and 144,100,000 sheep and goats. Collective and state farm families privately owned 29% of the cattle, 45% of the cows, 26% of the hogs, and 24% of the sheep and goats. The collective and state farms operated 1,168,000 tractors, 503,000 harvesting combines, and 790,000 trucks.

There was in 1962 a reorganization of Soviet agricultural administration. In March, committees composed of governmental and Communist Party officials were organized at the local government level to enforce strict supervision over collective and state farms. The committees usurped certain planning functions which had been entrusted to the farms since 1955. On June 1 the state purchase price for meat was raised 35% on purchases from collective farms and private gardens, and 25% on purchases from state farms.

The most drastic development in agriculture was Premier Khrushchev's condemnation in March of the crop rotation system which had existed in the USSR since the 1930's. The system allowed one fourth of the arable land to lie under fallow or hay, a practice which the premier considered wasteful. He therefore ordered that millions of acres of grassland and fallow should be sown in 1962 with corn, sugar beets, beans, and peas, which are crops that could be used primarily for animal fodder. The proposal evidently aroused some resistance among Soviet agronomists, who feared that soil fertility might be depleted. Trofim D. Lysenko resigned as president of the Soviet Academy of Agricultural Science on April 5, and two other academicians were dismissed.

Khrushchev also declared, in March, that state funds would not be diverted to agriculture at the expense of Soviet industrial development and armament, that state farms must use existing agricultural machinery and not demand more machines, and that the 6 million state farmers should be forbidden to have private gardens.

Despite the new policies the 1962 harvest was poor. Drought lowered crop yields in Siberia and north-central Asia (the new lands), and excessive rainfall caused difficulties in the European USSR. The grain harvest was claimed to be higher than the 137 million metric tons in 1961, but far below the planned 1962 estimate of 164 million. Other 1962 crop outputs, as compared with 1961, are shown in Table 3.

Table 3—USSR PRODUCTION OF SELECTED FARM COMMODITIES
(In thousand metric tons)

Commodity	1961	1962
Cotton	4,500	4,500
Sugar beets	50,900	49,000
Sunflower seed	4,800	4,700
Potatoes	84,300	63,000
Meat	8,700	9,200
Milk	62,600	64,500
Vegetable oil	1,700	1,700
Fish	3,700	4,500
Butter	849	950
Wool	366	369
Eggs (in millions)	29.3	30.0

(Sources: Pravda; New York *Herald Tribune*.)

Foreign Trade.—Soviet foreign trade in 1962 amounted to approximately $12 billion, of which 70% was with other Communist countries, 20% with Western industrial nations, and 10% with economically underdeveloped nations. About 60% of Soviet exports were raw materials, chiefly oil, metals, and chemicals. Farm and forest products accounted for 20% of exports, and machinery, 20%. In 1962 about 700,000 Soviet citizens traveled abroad, and an equal number of foreigners visited the USSR.

In 1962 the USSR contributed about $2.7 billion in technical aid to underdeveloped countries, of which more than four fifths went to India, the United Arab Republic, Indonesia, Iraq, Syria, and Cuba. About 8,400 Soviet technicians worked on technical projects in the underdeveloped nations. The USSR signed technical aid pacts with Afghanistan, Burma, Cameroun, Ceylon, Guinea,

India, Iraq, Nepal, Senegal, Somalia, Tunisia, Turkey, and the United Arab Republic.

Foreign Affairs, 1962.—Summarized below are highlights of the year in Soviet foreign affairs. For more details on these developments, see ATOMIC ENERGY; COMMUNISM; DISARMAMENT; FOREIGN POLICY OF THE U.S.; KHRUSHCHEV; SPACE FLIGHT; UNITED NATIONS; and articles on the countries named herein, particularly CHINA, CUBA, and GERMANY.

Europe.—The USSR concluded cultural exchange agreements with Norway on February 8, Belgium on March 2, and Italy on May 30. A fisheries agreement was concluded with Norway on February 22. A Soviet-Finnish treaty signed on September 27 leased the USSR's Saimaa Canal and Maly Vysotsky Island to Finland.

The Soviet Union made many protests to western European governments during the year. In February, two Soviet protests were addressed to West Germany against the latter's arrest and trial of a Soviet trade mission official on charges of espionage. During June, July, and September, the USSR protested to the United States, Britain, and France about bombings, shootings, and other incidents along the wall dividing East and West Berlin. On August 22 the USSR abolished the office of the Soviet commandant in Berlin. In March, France withdrew its ambassador from Moscow in protest against Soviet recognition of the Algerian rebel government, and the USSR withdrew its envoy from Paris. Also in March, Albania refused the Soviet offer of food and medicine to aid victims of an Albanian earthquake.

Africa.—The USSR in 1962 concluded cultural exchange agreements with Mali, Guinea, Senegal, and Cameroun. Diplomatic relations were established with the Algerian Republic on March 19, and Dahomey on June 4. In August the USSR began to ship food to Algeria.

Asia.—The Soviet Union concluded cultural exchange pacts with Communist China, Indonesia, India, Afghanistan, Iraq, North Vietnam, and Syria. The USSR recognized newly independent Western Samoa on January 1.

An employee of the Turkish embassy and an employee of the Iranian embassy were expelled (in April and June, respectively) from the USSR for selling foreign currency and goods to Soviet citizens.

On May 8 the Soviet Union signed an arms pact with Indonesia. In June the USSR rejected Japan's proposal for unilateral cessation of Soviet nuclear testing. On July 23 the Soviet Union signed the 14-nation treaty for the neutralization of Laos. Iran on September 15 promised the USSR that foreign missile bases would not be built on Iranian soil.

Friction between the USSR and Communist China delayed the conclusion of their 1962 trade pact, which was not signed until April 20. A Sino-Soviet technical aid pact was concluded on May 13, and a scientific-cooperation agreement in June. However, China rejected in November the Soviet proposal for a truce in the Sino-Indian border war.

Western Hemisphere.—The USSR protested to Uruguay on May 16 against the bombing of a Soviet mission building in Montevideo, and to Canada on June 14 against alleged Canadian plans for nuclear armament.

Anatoly Fyodorovich Dobrynin assumed the post of Soviet ambassador to the United States in January, and Foy David Kohler became the new United States ambassador to the USSR in September. The USSR on February 10 released U-2 pilot Francis Gary Powers, and on March 8 signed a U.S.–USSR cultural exchange pact for 1962–63.

WIDE WORLD

Muscovites place signs on fence around United States embassy on October 27 in protest against quarantine of Cuba.

Soviet-American relations remained tense, however. The USSR expelled United States embassy employee Cesarina Storoni on April 16 for alleged black-marketing; *Newsweek* correspondent Whitman Bassow on August 16 for alleged misreporting; and, on charges of espionage, U.S. Assistant Naval Attaché Raymond D. Smith on October 5, United States embassy first secretary Kermit S. Midthun on October 12, and United States embassy archivist Richard Carl Jacob on November 4. The USSR protested to the United States on April 26 against the searching of Soviet ships in the Panama Canal; in June and August, about incidents at the Berlin wall; on September 4, against a U-2 flight over Sakhalin Island; and later, against United States seizure of Cuban sugar enroute to the USSR.

Cuba and the Soviet Union signed trade agreements on January 9 and May 14, a cultural exchange pact on March 30, technical aid agreements on May 8 and September 25, and an armament supply treaty on August 29. In response to the United States quarantine of Cuba beginning on October 24, the USSR at first offered to withdraw its intermediate missiles from Cuba if the blockade were lifted, but then added the unacceptable stipulation that United States missiles should be withdrawn from Turkey. The USSR proposed on October 28 that the United Nations supervise the withdrawal of Soviet missiles from Cuba, and that the United States pledge not to invade Cuban territory. The United States accepted this latter proposal, and the Soviet Union dismantled and withdrew its offensive missiles from Cuba. After the Soviet Union also agreed to withdraw its jet bombers from Cuba, the United States lifted the quarantine of Cuba on November 20.

(For further references, see the Index entry, *Union of Soviet Socialist Republics.*)

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UNIONS, Labor. See LABOR; and the Index entry, *Unions, Labor.*

UNITED ARAB REPUBLIC

This Middle Eastern republic was formed in 1958 by the merger of the Arab states of Egypt and Syria, but since the secession of Syria in late 1961 has comprised only the Egyptian region, situated in northeastern Africa and bordering the Mediterranean and Red seas. Its total area is 386,000 square miles, and its inhabited part—the Nile

Valley and its delta—is only 13,500 square miles. The United Arab Republic (UAR) has a population of 26,578,000 (est. 1961), which increases by some 600,000 annually. Chief cities (with 1961 population estimates): Cairo, the capital (3,346,000); Alexandria, the principal port (1,513,000); Port Said (244,000).

Government.—The government and the governing institutions underwent revolutionary changes in 1962, but the centralization of nearly all powers in the office of president has remained unchanged. More changes were envisaged by the announcement, following Syria's secession, of elections for a National Congress. In February 1962 the Congress was constituted of 1,500 elected members and of 250 members appointed by President Gamal Abdel Nasser (who has held the office since the formation of the UAR in 1958). President Nasser on Sept. 24, 1962, announced the establishment of a Presidential Council, and the transformation of the Cabinet into an Executive Council under a premier. Ali Sabry was designated premier and Mahmoud Fawzi was reappointed foreign minister on September 24. (See also below, *Events, 1962.*)

Religion and Education.—About 91% of the people are Muslims, 8% are Christians, and there are a few thousand Jews. Education is compulsory for children aged 6 to 12; the schools are government-supported and free. Nearly 500 new schools are built annually, but pressing needs call for more. Number of schools (with enrollments), 1959–60: 7,393 elementary (2,451,816); 1,155 secondary (379,441); 282 vocational and technical (96,531); 6 universities and 41 institutes of Koranic learning (90,462). There is also an Academy of Arabic Languages.

Finance.—Egypt's finances experienced severe difficulties in early 1962, but the situation was eased by a series of short-term loans. On January 9 the International Monetary Fund made available $22.4 million, and on March 9 the UAR was permitted to draw $7.5 million more. A stand-by arrangement of May 7 enabled the UAR to draw $42.5 million in currencies held by the Fund, and provided for a new exchange rate for the Egyptian pound (E£) of $2.30 (old rate, $2.87). As part of this last arrangement the United States loaned the UAR $20 million on June 1. The budget for fiscal year 1963, including the development budget and the 5-year economic plan budget, was E£2,352 million (about $5,410 million).

Transportation and Communications.—Railroads total some 3,500 miles, and there is a good highway network of more than 10,000 miles. The international airport at Cairo serves all major air carriers. The Suez Canal is the UAR's most profitable waterway, carrying 187,059,000 tons of cargo and earning more than $148 million in 1961. On May 23 the Canal Authority engaged Krupp, the West German firm, to build a new road and rail swing bridge over the canal at El-Ferdan, and to widen that part of the canal. (See also BRIDGES; CANALS.) In 1961 the UAR had 22,700 trucks and 75,600 cars. The government owns and operates the only broadcasting system and several television channels. In 1962 there were 2 million radio sets and 120,000 television receiving sets in use.

Agriculture.—Production has not kept pace with planned goals. The 1961–62 cotton crop, the chief foreign exchange earner, was estimated at 6,681,000 kantars (about 100 pounds each), down by about one third from a normal year's crop. Output of wheat in the 1961–62 crop year was estimated at 1,522,000 tons (1,430,000 tons in 1960–61); barley, 145,000 tons; and rice, 784,000 tons (1,021,000 tons in 1960–61).

Minerals and Manufactures.—Petroleum production in 1961 reached the planned goal of 100,000 barrels per day. An Italian firm was given concessions to explore oil and gas in the Nile and Arabian (Eastern) Desert area, and was to share its profits equally with the government. Iron and steel production at Helwan increased to 276,940 tons in the first half of 1962 (221,540 tons in the first half of 1961). The discovery of a seam of coal estimated at 40 million tons was made at Oyoun Moussa. More reserves of iron ore at Bahariya Oasis and radioactive phosphates in the New Valley were reported. Work on the Aswân High Dam was accelerated by the arrival of 300 more Soviet technicians. A number of projects were initiated in 1961–62 to increase the production of the weaving and spinning industries. Textile manufactures and outputs in 1961 (in metric tons): cotton, 115,000; jute, 40,100; artificial silk, 8,720; wool, 2,750; and linen, 1,400. Other manufactures include electrical appliances, bicycles, electronic equipment, coke and byproducts, and ships and barges. National income in 1961 totaled E£1.5 billion, and the per capita income increased to $170.

Foreign Trade.—There still exists a gap between the UAR's imports and exports. In 1961, imports totaled $662,390,000 ($630,000,000 in 1960); and exports, $462,644,000 ($445,000,000). Trade with the Sino-Soviet bloc decreased in 1961, when 54.3% of the UAR's trade was with Western countries (44% in 1960). Exports to the United States in 1961 rose to $28,848,000, and imports from that country totaled $130,585,000.

Events, 1962.—The year was crowded with significant events portending revolutionary political, social, and economic changes. Late in 1961, President Nasser had announced his plan for reorganizing the government through the popular election of a National Congress representing "genuine popular forces—peasants, workers, artisans, industrialists, etc." On January 27 he decreed February 5–24 as election days, when voting for 1,500 members representing various organizations took place. On February 24 the president named 250 additional members to the National Congress of Popular Forces.

At the opening of the Congress on May 21, President Nasser presented a National Charter "containing a political, economic, and social program for the UAR." He called for the formation of an Arab Socialist Union and promised that elections for a National Assembly would be held soon. On June 30 the Congress approved the Charter, and on September 24 the president announced the reorganized government, in which authority was divided. The new government comprised the president, the Presidential Council of 12 members, and an Executive Council of 25 cabinet ministers.

On the economic and social fronts the government pushed its nationalization plans into new areas. Foreign-owned agricultural land totaling about 140,000 acres, owned mainly by Greeks and Italians, had been nationalized on Dec. 23, 1961; foreign-owned properties thus nationalized were valued at E£500 million. On February 1 many export, insurance, and transportation firms were nationalized, as were 77 bakeries in Cairo and a number of small flour mills. On April 28 most of the property of the Greek community, valued at E£120 million, was confiscated. In September the government assumed 50% capital shares in all shipping and ship-repairing firms.

The first distribution of profits from nationalized firms, which shared 25% of their profits with their employees, took place on May 1. It was decreed on May 5 that every government employee would receive a bonus "equal to 10 days' pay." Under these socialist measures about E£15 million was distributed to some 1,500,000 persons.

In celebration of the 10th anniversary of the Egyptian Revolution, UAR armed forces on July 21 fired rockets from a launching site near Cairo, and President Nasser claimed that rockets were in "full-scale production." (See also MISSILES.) Four days later he formally opened a new jet aircraft factory in Cairo.

While the drive for Arab socialism was in full swing, the United Arab Republic suffered a financial crisis, partly because of large payments of premiums on imports and of heavy subsidies on

Gamal Abdel Nasser, born in Alexandria, Egypt, on Jan. 15, 1918, was the son of a postal worker and grew up in the village of Beni Mor in Upper Egypt. A professional soldier since 1938, he was the moving force in the revolution that overthrew the rule of King Faruk in 1952. As prime minister (1954) and president (1956), he led Egypt's efforts at industrialization and land distribution. In 1955 he turned to the Soviet Union for military equipment and in 1958 signed an agreement with the USSR for the construction of a high dam at Aswân. After nationalizing the Suez Canal in 1956, he gained a diplomatic triumph by obtaining the support of the United States and the Soviet Union against the British-French-Israeli invasion of Egypt later that year. A leading proponent of Arab unity, he brought about the union of Egypt and Syria under the United Arab Republic in 1958, but in 1961 conceded the withdrawal of Syria from the union. Opposition to his self-asserted role as leader of the pan-Arab movement has led to the deterioration of relations between the UAR and neighboring countries in recent years, culminating in a violent denunciation of Nasser by Syria at a special meeting of the Arab League in August 1962.

Work on the Aswân High Dam in the United Arab Republic entered the third year in 1962 under the guidance of Soviet Union technicians. Excavation for the diversion channel outlet is pictured at right.

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exports. The situation was adjusted through a series of international loans (see above, *Finance*). Trade and economic cooperation agreements also helped.

An agreement with the Soviet Union on January 27 provided for Soviet economic aid of E £ 13 million. On March 15 a trade and payments agreement for 1962–65 was signed with Bulgaria. A similar trade agreement totaling 150 million rubles was signed with the USSR on June 23. On July 5 an economic cooperation agreement with Poland assured the delivery of industrial plants and equipment valued at $20 million. A group of West German banks agreed on September 20 to advance credits of DM80 million ($20 million), and pledged an equal amount for development aid.

Perhaps more important than any or all of these trade agreements, however, was the amount of aid and loans granted by the United States. On February 10 an agreement between the United States and the United Arab Republic assured the delivery of 200,000 tons of wheat and 50,000 tons of soya bean oil, together valued at $32 million. Ten days later a United States grant of $40 million for the construction of 49 silos was announced. By another agreement of May 10 the UAR was given 400,000 tons of wheat and wheat flour valued at $28 million. It was reported that the United States also had pledged about $100 million annually to the UAR for the next five years.

The UAR's relations with many Arab countries deteriorated. Her relations with the Sino-Soviet bloc were well balanced. The UAR enhanced its standing with neutralist countries, and maintained good relations with the West.

Ties with Yemen had been broken by the dissolution of the Union of Arab States on Dec. 26, 1961. At that time President Nasser had attacked the imam of Yemen, King Hussein of Jordan, and King Saud of Saudi Arabia as "reactionaries." Early in January, Saudi Arabia refused exit to 71 Egyptian printers who quit their jobs in Jidda. The UAR retaliated on January 25 by forbidding the departure of Saudi Arabians without special permits. In August, Saudi Arabia refused to accept the traditional Egyptian gift *Kiswa,* the embroidered carpet sewn in Cairo and conveyed annually by Egyptian pilgrims to Mecca. The UAR accused King Saud of bribing plotters to assassinate President Nasser on the 10th anniversary celebration of the Egyptian Revolution.

Relations with Syria, at times friendly, were strained in July because Syria charged that the UAR was "instigating disorders and supporting subversion" in Syria. Syria's formal complaint to the Arab League Council was aired in late August at a Council meeting in Shtoura (Lebanon). The other Arab members seemed sympathetic to the Syrian view, whereupon the UAR delegation on August 28 walked out of the meeting, and President Nasser threatened to withdraw from the League. The Council promptly halted further discussion of the Syrian charges.

The UAR on September 29 became the first Arab nation to recognize the newly established Yemeni Republic, and on November 10 the two countries signed a joint defense agreement. The UAR sent an estimated 12,000 troops to support the republican government in the civil war that ensued in Yemen, but on December 19 the UAR agreed to withdraw its troops from the country in return for United States recognition of the Yemeni Republic.

Relations between the UAR and other neutralist countries improved. On February 4, Yugoslav President Tito conferred in Cairo with President Nasser on political and economic cooperation between the neutralist states. The Economic Committee of the "Casablanca group" (Ghana, Guinea, Mali, Morocco, the UAR, and Algeria) met in Cairo on April 2 and agreed to form an African Common Market. The same powers held a second conference on June 5 in Cairo at the heads-of-state level. On July 9–18 a conference of 36 neutralist states was held in Cairo on problems of economic underdevelopment.

An agreement for cooperation in the development of atomic energy was signed by the UAR and India on September 22. President Nasser offered on October 31 to mediate in the Sino-Indian border dispute, but was rebuffed by Communist China. On November 21 he approached a group of neutralist states about providing aid to India.

The UAR's shifting attitude toward the West did not change materially; relations with certain states improved, but relations with Greece were strained. Four members of the French Property Commission in Cairo were put on trial (January 15) on charges of plotting to assassinate President Nasser, and of smuggling currency out of the country, but on April 7 they were freed, apparently in return for French readiness to conciliate Algerian nationalists. President Kennedy's special representative, Chester W. Bowles, visited Cairo for five days in early February, and subsequent to this visit United States aid and loans to the UAR were increased. On August 21 a pact was signed with Great Britain settling the question of British property seized by the UAR in 1956; Britain made a loan of $2 million to "assist" the UAR in meeting payments.

(See also MIDDLE EAST.)

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Analyst in Middle Eastern and East European Affairs, The Library of Congress.

UNITED CHURCH OF CANADA

At the end of 1961, the adult communicant membership of the United Church was 1,036,936; its congregations listed a total of 2,609,415 persons under their pastoral care, and a total constituency of nearly 4,000,000. Total contributions amounted to $60,280,270, of which $9,652,017 was for the wider work of the church and $3,000,000 for church extension, colleges, and benevolences.

The year 1962 saw the launching of a new curriculum in Christian education, the preparations for which had taken several years. The first textbook issued, *The Word and the Way,* is being used by parents and adult groups as basic preparation. The Berkeley Studio, audio-visual center for the United Church, has won high awards for its movies and radio programs. The Twentieth General Council, meeting in London, Ontario, in September 1962, considered important reports regarding long-range planning for the church, Christian marriage and divorce, international affairs, ordination, and "the renewal of the church."

ERNEST E. LONG,
Secretary of the General Council.

UNITED CHURCH OF CHRIST

July 4, 1962, marked the first anniversary of the constitution adopted by the United Church of Christ, a union of the Evangelical and Reformed Church and the Congregational Christian churches. In April, even before the new denomination had completed the staffing and structuring of its departments, representatives of the church met in Washington, D.C., with leaders of the Protestant Episcopal Church, the Methodist Church, and the United Presbyterian Church in the U.S.A., to discuss a possible union. Similar negotiations have been held with the International Convention of Christian Churches (Disciples of Christ).

Formal merger of the churches' youth and adult laymen's organizations took place in 1962. The Evangelical and Reformed Churchmen's Brotherhood and the Congregational Christian Laymen's Fellowship joined to form the Churchmen's Fellowship. Youth groups of the two merged churches voted to disband in favor of a new plan which emphasizes integration of the teen-agers into the total life of the church.

Final work on a new Sunday Church School curriculum was completed in 1962. The curriculum is built around six unifying themes, and Biblical emphasis is on both the historical context of the Scriptures and their relevance to contemporary situations. An extensive program of leadership education is under way to help prepare Sunday School teachers of local churches to use the new materials effectively. A National Conference on Christian Education conducted by the denomination at Purdue University in August drew 4,000 ministers and teachers from local churches across the nation. Smaller regional and local training sessions have also been held.

The church has 525 missionaries and fraternal workers engaged in relief, rehabilitation, social service, education, medical work, and evangelism in 25 countries. During 1962 its United Church Board for World Ministries initiated a program of cooperation between United Church laymen working abroad and foreign church leaders and missionaries.

The United Church of Christ has a membership of 2,015,770 in 6,755 churches.

BEN MOHR HERBSTER,
President,
United Church of Christ.

UNITED COMMUNITY FUNDS AND COUNCILS OF AMERICA, INC. See the article SOCIETIES AND ORGANIZATIONS.

UNITED FUNDS AND COMMUNITY CHESTS. See SOCIETIES AND ORGANIZATIONS.

UNITED JEWISH APPEAL. See RELIGION—*Judaism.*

UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND. See GREAT BRITAIN.

UNITED NATIONS

The major activities of the United Nations in its seventeenth year are reviewed under the following six headings:

(1) Organization of the United Nations
(2) Security Council
(3) Economic and Social Council
(4) Trusteeship Council
(5) International Court of Justice
(6) General Assembly

(1) ORGANIZATION OF THE UNITED NATIONS

THE SECRETARIAT

Secretary General: U Thant

THE GENERAL ASSEMBLY

President: Mongi Slim (Tunisia), resumed parts of 16th session; Muhammad Zafrulla Khan (Pakistan), 17th session.

Afghanistan
Albania
Algeria
Argentina
Australia
Austria
Belgium
Belorussian SSR
Bolivia
Brazil
Bulgaria
Burma
Burundi
Cambodia
Cameroun
Canada
Central African Republic
Ceylon
Chad
Chile
China
Colombia
Congo, Republic of
Congo, Republic of the
Costa Rica
Cuba
Cyprus
Czechoslovakia
Dahomey
Denmark
Dominican Republic
Ecuador
El Salvador
Ethiopia
Finland
France
Gabon
Ghana
Greece
Guatemala
Guinea
Haiti
Honduras
Hungary
Iceland
India
Indonesia
Iran
Iraq
Ireland
Israel
Italy
Ivory Coast
Jamaica
Japan
Jordan
Laos
Lebanon
Liberia
Libya
Luxembourg
Malagasy Republic
Malaya
Mali
Mauritania
Mexico
Mongolian People's Republic
Morocco
Nepal
Netherlands
New Zealand
Nicaragua
Niger
Nigeria
Norway
Pakistan
Panama
Paraguay
Peru
Philippines
Poland
Portugal
Rumania
Rwanda
Saudi Arabia
Senegal
Sierra Leone
Somalia
South Africa
Spain
Sudan
Sweden
Syria
Tanganyika
Thailand
Togo
Trinidad and Tobago
Tunisia
Turkey
Uganda
Ukrainian SSR
USSR
United Arab Republic
United Kingdom
United States
Upper Volta
Uruguay
Venezuela
Yemen
Yugoslavia

COMMITTEES

General: Composed of 21 members as follows: General Assembly president; the 13 General Assembly vice presidents (chiefs of delegation or their deputies of Australia, Belgium, China, Colombia, France, Guinea, Haiti, Jordan, Malagasy Republic, Rumania, the USSR, the United Kingdom, and the United States); and the chairman of the following 7 committees, which are composed of representatives of all member countries:

First (Political and Security): Omar A. H. Adeel (Sudan).

Special Political: Dr. Leopoldo Benítes (Ecuador).

Second (Economic and Financial): Bohdan Lewandowski (Poland).

Third (Social, Humanitarian and Cultural): Nemi Chandra Kasliwal (India).

Fourth (Trusteeship): Col. Guillermo Flores Avendãno (Guatemala).

Fifth (Administrative and Budgetary): Dr. Jan Paul Bannier (Netherlands).

Sixth (Legal): Prof. Constantine T. Eustathiades (Greece).

THE SECURITY COUNCIL

(Membership ends on December 31 of the year noted; asterisks indicate permanent membership.)

Brazil (1964)
China*
France*
Ghana (1963)
Morocco (1964)
Norway (1964)
Philippines (1963)
USSR*
United Kingdom*
United States*
Venezuela (1963)

Military Staff Committee: Chiefs of staff (or their representatives) of China, France, the USSR, the United Kingdom, and the United States.

Disarmament Commission: Representatives of all members of the United Nations.

THE ECONOMIC AND SOCIAL COUNCIL

President: Jerzy Michalowski (Poland), 33d and 34th sessions, 1962. (Membership ends on December 31 of the year noted.)

Argentina (1965)	Ethiopia (1963)	USSR (1965)
Australia (1964)	France (1963)	United Kingdom (1965)
Austria (1965)	India (1964)	United States (1964)
Colombia (1964)	Italy (1963)	Uruguay (1963)
Czechoslovakia (1965)	Japan (1965)	Yugoslavia (1964)
El Salvador (1963)	Jordan (1963)	
	Senegal (1964)	

THE TRUSTEESHIP COUNCIL

President: Jonathan B. Bingham (United States), 28th and 29th sessions, 1962.

Australia[1]	Liberia[2]	United Kingdom[1]
China[3]	New Zealand[1]	United States[1]
France[3]	USSR[3]	

[1] Administers trust territories. [2] Elected for term ending Dec. 31, 1965. [3] Permanent member of the Security Council which does not administer trust territories.

THE INTERNATIONAL COURT OF JUSTICE

President: Bohdan Winiarski (Poland)

R. J. Alfaro (Panama)	V. K. Wellington Koo (China)
A. H. Badawi (UAR)	V. M. Koretsky (USSR)
J. Basdevant (France)	G. Morelli (Italy)
J. L. Bustamante y Rivero (Peru)	L. M. Moreno Quintana (Argentina)
R. Córdova (Mexico)	Sir Percy Spender (Australia)
Sir Gerald Fitzmaurice (U.K.)	J. Spiropoulos (Greece)
P. C. Jessup (U.S.A.)	K. Tanaka (Japan)

INTERGOVERNMENTAL ORGANIZATIONS RELATED TO THE UNITED NATIONS

Food and Agriculture Organization of the United Nations; Intergovernmental Maritime Consultative Organization; International Atomic Energy Agency; International Bank for Reconstruction and Development; International Civil Aviation Organization; International Development Association; International Finance Corporation; International Labor Organization; International Monetary Fund; International Telecommunication Union; United Nations Educational, Scientific and Cultural Organization; Universal Postal Union; World Health Organization; World Meteorological Organization.

(2) Security Council

Congo.—On Jan. 30, 1962, the Security Council met to take up a Soviet request that it consider the situation in the Congo and the question of the implementation of its resolution of Nov. 24, 1961, on the problem of the integration of Katanga Province. The request was rejected (7–2, with 2 abstentions), and, despite Soviet objections, a United States proposal for adjournment was adopted by the same vote.

During the year, Acting Secretary General U Thant (q.v.) transmitted a series of reports from the officer in charge of the UN Operation in the Congo (ONUC) on developments relating to the application of the council's resolutions of February 21 and Nov. 24, 1961. The report submitted on Nov. 26, 1962, outlined steps for the implementation of the Plan of National Reconciliation, which U Thant had submitted to the central government of the Congo in August and, with its agreement, to the government of President Moïse Tshombe in Katanga. The main elements of the plan were elaboration of a federal constitution; division of revenue and foreign exchange earnings between the central and provincial governments; unification of the currency; integration and unification of all military, paramilitary, or gendarmerie units into a national army and gendarmerie structure; withdrawal of all provincial representatives and diplomatic or consular missions not serving under the authority of the central government; proclamation of a general amnesty; and reconstitution of the central government to provide for representation of all political and provincial groups.

The plan was accepted by Congolese Premier Cyrille Adoula on August 23 and by Tshombe on September 3. Steps taken to implement the plan included the drafting of a federal constitution and the establishment of a Military Commission, a Revenue Commission, and a Commission on Foreign Exchange. It soon became apparent, however, that the Katangan authorities, while stating that they agreed in principle with the plan, were reluctant to put it into effect. The ONUC report of November 26 therefore recommended a course of action that would allow the authorities in Katanga 10 days in which to agree to the plan's proposals. If they failed to do so, governments would be requested to impose an economic boycott by refusing to import Katangan copper and cobalt. Despite warnings and inducements to adhere to the plan, President Tshombe remained recalcitrant, and late in December fighting broke out between United Nations and Katangan forces.

Cuba.—The question of Cuba came before the Security Council in several contexts in 1962. Meeting on February 27, the council decided not to include in its agenda a Cuban complaint that the United States had promoted enforcement action through regional organizations, in violation of the UN Charter, "as a prelude to a large-scale invasion of Cuba" (there were only 4 votes for inclusion and 7 abstentions).

On March 14, the council took up a Cuban request that it consider asking the International

UNITED NATIONS

UN Secretary General U Thant (left) and General Assembly President Zafrulla Khan of Pakistan confer on October 11.

Court of Justice for an advisory opinion on legal decisions taken at the Punta del Este Conference in January. Cuba, a nonmember of the council, was invited to participate in the meetings. The question was discussed in seven meetings between March 14 and 23, when a Cuban draft resolution was rejected (7–2, with 1 abstention and 1 not participating).

In four meetings held on October 23–25, the council heard complaints by the United States, Cuba, and the USSR on the crisis that had developed following United States disclosure of the secret presence in Cuba of Soviet "missiles and other offensive weapons" and steps initiated by the United States to "remove the existing threat to the security of the Western Hemisphere and the peace of the world." On October 24, U Thant reported that he had sent messages to President John F. Kennedy and Premier Nikita S. Khrushchev, requesting them to take steps to resolve the crisis. He also made an appeal to the president and premier of Cuba. In his reply, which was read to the council by the United States representative,

Adlai E. Stevenson, on October 25, President Kennedy said that he deeply appreciated the spirit that had prompted U Thant's message. "As we made clear in the Security Council, the existing threat was created by the secret introduction of offensive weapons into Cuba, and the answer lies in the removal of such weapons," he asserted. The president then noted that U Thant had made "certain suggestions and invited preliminary talks to determine whether satisfactory arrangements can be assured." He said that he had instructed Ambassador Stevenson to discuss these arrangements promptly with the acting secretary general. Premier Khrushchev stated in his reply, which was read to the council by the Soviet representative, Valerian Zorin, that he welcomed U Thant's initiative and understood his concern about the situation in the Caribbean, since the Soviet government also considered the situation as "dangerous" and requiring immediate intervention by the United Nations. On motion of the United Arab Republic, the council adjourned to await the results of talks between representatives of the parties concerned and U Thant.

Although Cuba did not agree to inspection on its soil, the crisis was resolved when the USSR dismantled the bases and removed the missiles (as announced on November 8) and withdrew its bombers from the island (as announced on December 6).

Kashmir.—At the request of Pakistan, the council met on Feb. 1, 1962, to consider the question of Kashmir. After hearing statements by representatives of India and Pakistan, it deferred further consideration of the matter to a later date. The question was considered again in 10 meetings between April 27 and June 22, when a draft resolution of Ireland, urging the two countries concerned to enter into negotiations as soon as possible and to adopt measures to create a favorable atmosphere, was vetoed by the USSR. (The vote was 7–2, with 2 abstentions.)

Palestine.—The council considered complaints from Syria and Israel on border incidents in eight meetings held between March 28 and April 9, 1962. It then adopted (10–0, with 1 abstention) a United Kingdom–United States draft resolution reaffirming its resolution of Jan. 19, 1956, "which condemned Israeli military action in breach of the General Armistice Agreement, whether or not undertaken by way of retaliation," and declared the Israeli attack of March 16–17, 1962, a "flagrant" violation of that resolution. In addition, the council called on Israel to refrain from such action in the future.

(3) Economic and Social Council

The 33d session of the Economic and Social Council (ECOSOC) met in New York on April 3–18, 1962, while the 34th session met first in Geneva on July 3–August 3, and resumed its meetings in New York on December 18–20. Meetings were also held by many of the council's commissions and committees.

The 33d session considered reports from the UN Children's Fund (UNICEF), International Monetary Fund (IMF), International Bank for Reconstruction and Development (IBRD), International Finance Corporation (IFC), International Development Association (IDA), Committee for Industrial Development, and other bodies. It adopted resolutions on international economic cooperation, nonagricultural resources, the World Food Program, the Water Resources Development Center, a projected Conference on International Travel and Tourism, the Latin American Institute for Economic and Social Planning, establishment of an African Development Bank, and revision of the agreement between the United Nations and the UN Educational, Scientific and Cultural Organization (UNESCO).

The 34th session passed resolutions on reports of intergovernmental organizations related to the United Nations, long-term projections, African educational development, public administration, the UN Development Decade, the convening of a Conference on Trade and Development, provision for safeguarding and promoting the interests of children and youth, commodity and trade problems of developing countries, the economic and social consequences of disarmament, the financing of economic development, the proposed establishment of a UN Capital Development Fund, promotion of the flow of private capital, expansion of United Nations activities in industrial development, international commodity problems, new sources of energy, decentralization of United Nations economic and social activities and strengthening of the regional economic commissions, and technical cooperation. The council also approved resolutions on coordination of the results of scientific research, international cooperation in seismological research and in the peaceful uses of outer space, planning for balanced economic and social development, housing and urban development, social services and development planning, strengthening of the work of the United Nations in the social field, land reform, advisory services in human rights, international control of narcotic drugs, technical cooperation in narcotics control, and promotion among youth of ideals of peace, mutual respect, and understanding between peoples.

When the council resumed its discussions in December, it approved the Expanded Program of Technical Assistance for 1963. It refused to expel Spain and Portugal from the Economic Commission for Africa.

Commission on Human Rights.—Meeting in New York on March 19–April 14, the 18th session of the commission passed resolutions and considered progress with regard to such matters as advisory services in human rights, periodic reports on human rights, portions of the draft Principles on Freedom and Nondiscrimination in the Matter of Religious Rights and Practices, strengthening of information media in less-developed countries, formation of national advisory committees on human rights, and the right of everyone to be free from arbitrary arrest, detention, and exile.

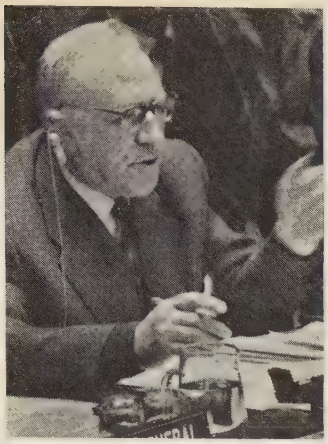
Commission on International Commodity Trade.—The 10th session of the commission, held in Rome on May 15–23, considered financial measures to offset fluctuations in the export income of primary producing countries, the position of synthetics in the measurement and analysis of international markets for primary commodities, and fluctuations in primary commodity markets.

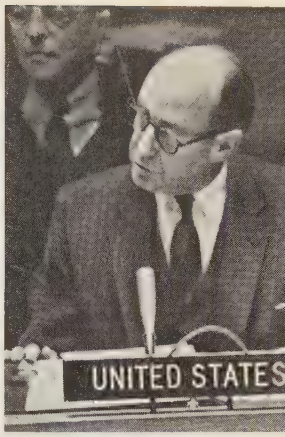
Commission on Narcotic Drugs.—The 17th session of the commission met in Geneva on May 14–June 1, and reviewed reports and passed resolutions on the implementation of narcotics treaties and international control, illicit traffic, drug addiction, programs of scientific research on opium and cannabis, the question of the coca leaf and of synthetic and other new narcotic drugs, the production and use of barbiturates, and preparations for the coming into force of the Single Convention on Narcotic Drugs.

Commission on the Status of Women.—Meeting in New York on March 19–April 6, the 16th session of the commission considered reports and passed resolutions on the political rights of women, equal pay for equal work, economic rights and opportunities for women, the access of women to education, the status of women in private law, and the advancement of women in developing countries.

Committee for Industrial Development.—The 2d session of the committee, which met in New York on March 5–28, adopted recommendations on the planning of industrial development, training and management, the mobilization and utilization of domestic financial resources, the role of small-scale industries, and the transfer of industrial technology to newly developing countries. It also requested ECOSOC to consider the urgent problem of adequate staffing in the Secretariat for industrial development purposes.

Economic Commission for Africa (ECA).—The 4th session of the commission met in Addis Ababa on February 19–March 3, and considered reports on the economic situation in Africa, economic and social development, trade and





WIDE WORLD

Aerial photographs of missile-launching sites in Cuba (*center*) form part of a United States exhibit in UN Security Council debate on Cuban crisis, October 25. (*Right*) U.S. Ambassador Adlai Stevenson and (*left*) Soviet Delegate Valerian Zorin.

commodity problems, social welfare and community development, African statistics, transportation, training, and international assistance. The commission recommended to ECOSOC that Spain and Portugal be deprived of their membership in ECA, and that South Africa be deprived of its membership until such time as it put an end to its policy of racial discrimination. In addition, resolutions were adopted on such matters as natural resources and industrialization, African educational development, timber trends, the proposed establishment of an African Planning and Development Institute, aid to members on technical assistance projects, consolidation of information media, and subregional development of an integrated transportation and communications system.

Economic Commission for Asia and the Far East (ECAFE).—The 18th session of the commission, meeting in Tokyo on March 5–19, passed resolutions on world trade as it affects the region, measures to facilitate industrial investment, the proposed establishment of an Asian Institute for Economic Development, efforts to complete the Asian highway network, strengthening of ECAFE's activities in social development, and the development of tourism as a source of foreign exchange.

Economic Commission for Europe (ECE).—The 17th session of the commission met in Geneva on April 24–May 11, and adopted resolutions on an analysis of the results achieved by the commission in 15 years, techniques of distribution of consumer goods, the exchange of abstracts of documents relating to applied economics, and the development of standardization and its relation to the expansion of international trade.

Economic Commission for Latin America (ECLA).—The ECLA Committee of the Whole held its 8th session in Santiago, Chile, on February 14–16; met there in special session on March 21; and held its 9th session in New York on June 6–7. Its chief business was the formation of a Latin American Institute for Economic and Social Planning.

Social Commission.—Meeting in New York on April 30–May 11, the 14th session of the commission adopted resolutions on planning for balanced economic and social development, housing and urban development, the needs of rural communities, administration of the United Nations social services program, and strengthening of the work of the United Nations in the social field.

Special Fund.—At its 7th session, held in New York on January 9–15, the Governing Council authorized the expenditure of $42.8 million to assist 48 new economic development projects in 38 less-developed countries and territories. With counterpart contributions of $67.7 million made by the governments receiving assistance, the cost of new projects totaled $110.5 million. The 8th session of the council, meeting in New York on May 21–29, authorized $36.9 million for 41 new projects in 35 countries and territories. These allocations brought total Special Fund commitments to $210,254,900 for assistance to 246 projects in 71 countries and territories. Including counterpart contributions, the projects were valued at $496 million.

Statistical Commission.—The 12th session of the commission, held in New York on April 24–May 10, discussed and passed resolutions on the extension of United Nations statistical publications, the improvement of comparability of data from countries having different economic and social systems, systems of industrial statistics, statistics of the financial accounts of enterprises, country practices in national accounting, the methodology and evaluation of continuous population registers, developments in demographic statistics, reports on the 1960 world population and housing census program, the development of statistics for social programs, balance-of-payments statistics, and external trade statistics.

Subcommission on the Prevention of Discrimination and Protection of Minorities.—Meeting in New York on January 8–February 2, the 14th session of the subcommission examined and adopted for transmittal to the Commission on Human Rights draft principles designed to ensure exercise of political rights by everyone without discrimination. These General Principles on Freedom and Nondiscrimination in the Matter of Political Rights include articles on the right of all peoples to self-determination, political rights of nationals, freedom of opinion and association, universality of suffrage, equality of suffrage, the secrecy of the vote, the periodicity of elections, the genuine character of elections and other public consultations, access to elective and nonelective public office, constitutional guarantees, and recourse to independent tribunals.

UN Coffee Conference.—The conference, which was held in New York on July 9–August 25 and on September 28, was attended by 58 nations as participants and by 13 as observers. At its close, 24 governments signed a five-year agreement designed to raise the purchasing power of coffee-exporting countries by keeping prices at equitable levels and by increasing consumption. In addition to approving

(*Left*) Premier Cyrille Adoula of the Congo (right) confers at the United Nations, February 2, with Secretary General U Thant. (*Right*) The Stanley Monument in Léopoldville forms backdrop for Nigerian soldier, a member of the UN Force in the Congo.

WIDE WORLD; UNITED NATIONS

the text of the agreement, the conference authorized the secretary general to convene an International Coffee Council. The agreement was to come into force as soon as it had been ratified by 20 exporting countries furnishing at least 80% of coffee exports in 1961 and by 10 importing countries accounting for at least 80% of the imports in that year.

UN Technical Conference on the International Map of the World on the Millionth Scale.—The conference, which was held in Bonn on August 6–22, was attended by cartographers from 43 countries. It unanimously adopted revised specifications designed to meet modern needs in the field of economic planning. In addition, it approved resolutions to help ensure that these specifications would be put into practice.

UN Wheat Conference.—The conference, which was held in Geneva on January 31–March 10, was attended by 49 nations as participants and by 6 as observers. It negotiated a new three-year International Wheat Agreement designed to provide a measure of stability to the prices of wheat and flour entering into international trade. Upon receipt of a sufficient number of ratifications, it was to enter into force on the expiration of the previous agreement on July 31, 1962.

(4) Trusteeship Council

The 28th session of the Trusteeship Council met on January 10–11, and the 29th session on May 31–July 20, 1962, in New York. Two trust territories achieved independence during the year. Western Samoa became independent on January 1, and the trusteeship agreement for Ruanda-Urundi was terminated on July 1, when Rwanda and Burundi emerged as sovereign states. Of the original 11 territories in the trusteeship system, only 3 remained: Nauru (administered by Australia, New Zealand, and the United Kingdom); New Guinea (administered by Australia); and the Pacific Islands (administered by the United States).

The 28th session postponed consideration of an annual report from Ruanda-Urundi, and requested the Secretariat to prepare a paper on the procedures of the council in view of the decrease in its work load. The 29th session examined reports from the administering authorities and considered petitions on the Pacific Islands, Nauru, and New Guinea, as well as the reports of a visiting mission to Nauru and New Guinea. It was decided in future to hold only one council meeting a year.

(5) International Court of Justice

Following oral hearings and the final submissions of the parties in March 1962, the court delivered its judgment in the case concerning the Temple of Preah Vihear (*Cambodia* v. *Thailand*) on June 15. By a vote of 9 to 3, it found that the temple was situated in Cambodian territory, and that Thailand was under an obligation to withdraw any forces or guards stationed at the temple or in its vicinity in Cambodian territory. The court also found (7–5) that Thailand was obliged to restore to Cambodia any sculpture, fragments of monuments, or similar material that its authorities might have removed from the temple.

In a resolution of Dec. 20, 1961, the General Assembly had requested an advisory opinion of the court on the financial obligations of member nations. Written statements were submitted to the court by March 16, 1962, and oral hearings were conducted on May 14–21. On July 20, the court declared (9–5) that in its opinion the expenditures authorized in the General Assembly and Security Council resolutions listed in the assembly's request were "expenses of the Organization" within the meaning of Article 17, paragraph 2, of the UN Charter. In essence, this decision meant that members were legally obligated to pay their portion of expenses for the maintenance of ONUC and the UN Emergency Force in the Middle East (UNEF). (See also International Law.)

On June 19, the Belgian government instituted new proceedings before the court in its dispute with Spain concerning the Barcelona Traction, Light, and Power Company, Ltd. The case, which had first been brought to the court in 1958, was withdrawn in 1961 when it appeared that negotiations were possible. When these failed, Belgium reopened the case. In the case concerning Northern Cameroons (*Cameroun* v. *United Kingdom*), the United Kingdom filed a preliminary objection to the jurisdiction of the court on September 14. On October 2–22, oral hearings were held on the question of the court's jurisdiction in the South West Africa cases (*Ethiopia* v. *South Africa* and *Liberia* v. *South Africa*). The court ruled (8–7) on December 21 that it had authority to hear the cases.

(6) General Assembly

The resumed 16th session of the General Assembly met in New York from January 15 through February 23, and from June 7 through June 28, 1962. The 17th session also met in New York, from September 18 through December 20.

Elections.—On October 17, the Philippines was elected to a one-year term on the Security Council (after a deadlock in the 16th session of the General Assembly, Rumania had been elected to this seat with the understanding that it would resign at the end of a year's service, and that the Philippines would complete the term). At the same time, Brazil, Morocco, and Norway were elected to two-year terms on the Security Council; Argentina, Austria, Czechoslovakia, Japan, the USSR, and the United Kingdom, to three-year terms on ECOSOC; and Liberia, to a three-year term on the Trusteeship Council.

Membership.—Acting on favorable recommendations by the Security Council, the assembly on September 18 admitted Jamaica, Rwanda, Burundi, and Trinidad and Tobago to membership in the United Nations by acclamation. Algeria was admitted on October 8, and Uganda on October 25 (both by acclamation). The total membership of the organization thus rose to 110.

Secretary General.—Following agreement in a private meeting of the Security Council on November 30, the assembly on the same day, by secret ballot, elected (109–0, with 1 member absent) U Thant secretary general for a term expiring on Nov. 3, 1966. Since he had been elected acting secretary general on Nov. 3, 1961, to fill the vacancy caused by the death of Dag Hammarskjöld, he was scheduled to serve a full five-year term, as provided for the office in the UN Charter.

West New Guinea.—On Sept. 21, 1962, the assembly took note of an agreement resolving the 13-year-old dispute between Indonesia and the Netherlands over West New Guinea (West Irian) and authorized the secretary general to carry out the tasks entrusted to him under its terms. The agreement, which was signed at UN Headquarters on August 15, provided for the transfer by the Netherlands of administration of the territory to a UN Temporary Executive Authority (UNTEA), established by and under the jurisdiction of the secretary general. After May 1, 1963, administration was to be transferred to Indonesia. In addition, the agreement provided for exercise of the right of self-determination by the people of West New Guinea before the end of 1969. Hostilities between Netherlands and Indonesian forces were to cease at midnight, Greenwich time, Aug. 18, 1962. On September 7, Brig. Indar Jit Rikhye, sent to the territory by U Thant to supervise the cessation of hostilities, reported that most of his tasks had been completed. Administration of the territory was transferred to UNTEA on October 1,

and on October 22, Dr. Djalal Abdoh of Iran was appointed United Nations administrator.

Other Political and Security Matters.—On October 26, the assembly adopted (66–0, with 11 abstentions) a resolution taking note of the report of a commission of investigation into the circumstances of the deaths of Dag Hammarskjöld and members of his party in 1961 (the report, while raising some unanswered technical questions, found no overt causes for the plane crash in which they were killed). The membership of Communist China was rejected (56–42, with 12 abstentions) on October 30. On November 6, the assembly passed (75–0, with 21 abstentions) a resolution on the urgent need for suspension of nuclear weapon tests, calling on the United States, the United Kingdom, and the USSR to achieve agreement on cessation of such tests by Jan. 1, 1963, and, if that was not possible, to reach an immediate agreement on prohibition of tests in the air, in space, and underwater, accompanied by an interim arrangement for suspension of underground tests. A second resolution urged (51–10, with 40 abstentions) the Committee on Disarmament to seek the conclusion of a treaty with effective international controls that would prohibit nuclear weapon tests. At the same time, the assembly adopted (67–16, with 23 abstentions) a resolution deploring South Africa's apartheid policies and requesting members to break off diplomatic relations with the republic, close ports to South African vessels, and boycott South African goods.

On November 20, the assembly passed (85–0, with 11 abstentions) a resolution approving the work of the UN Scientific Committee on the Effects of Atomic Radiation and calling for the establishment of a worldwide monitoring system to measure fallout. The next day, it took note of the negotiations of the Committee on Disarmament in Geneva and reaffirmed (84–0, with 1 abstention) the need for early agreement on disarmament. On November 29, it unanimously requested the secretary general to prepare plans for a 3d International Conference on the Peaceful Uses of Atomic Energy. The assembly also, on December 14, requested (33–0, with 25 abstentions) the secretary general to consult with governments on the possibility of convening a conference for signing a convention prohibiting the use of nuclear and thermonuclear weapons; and made unanimous recommendations for international cooperation in the peaceful uses of outer space.

On December 18, the assembly called (57–14, with 18 abstentions) on Portugal to desist from armed action and repressive measures against the people of Angola. The next day, it unanimously created a preparatory committee to plan a possible UN International Cooperation Year in 1965; and reaffirmed (63–11, with 26 abstentions) United Nations objectives for a unified Korea. Finally, on December 20, it expressed (100–0, with 2 abstentions) appreciation for the work of the UN Relief and Works Agency for Palestine Refugees in the Near East and extended UNRWA's mandate until June 30, 1965; and abolished (50–13, with 43 abstentions) the position of the United Nations representative on the question of Hungary, requesting the secretary general "to take any initiative that he deems helpful" on the question.

Economic and Financial Matters.—The assembly, on December 8, endorsed (91–0, with 1 abstention) ECOSOC's proposal to convene a Conference on Trade and Development in 1963 or early 1964; and, on December 14, passed (87–2, with 12 abstentions) a resolution on the question of permanent sovereignty over natural resources. On December 18, it adopted resolutions on the Cairo Declaration of Developing Countries (78–0, with 2 abstentions), the International Coffee Agreement (80–1), establishment of a UN Capital Development Fund (85–0, with 12 abstentions), a United Nations training and research institute (85–0, with 6 abstentions), measures to help offset fluctuations in commodity prices (82–0, with 10 abstentions), support of the Special Fund and the Expanded Program of Technical Assistance (81–0, with 10 abstentions), technical assistance for Rwanda and Burundi (81–0, with 11 abstentions), and population growth and economic development (69–0, with 27 abstentions).

UPI

The United States, represented by Ambassador Stevenson (r.), buys the first United Nations bond from Secretary General U Thant on November 2 to help finance UN peace operations.

At the same time, the assembly unanimously adopted resolutions on industrial development, decentralization of United Nations economic and social activities, the training of technical personnel for the acceleration of industrialization in less-developed countries, the World Food Program, land reform, inflation and economic development, economic development and conservation, African educational development, assistance to Libya, and a declaration on conversion to peaceful needs of resources released by disarmament.

Social, Humanitarian, and Cultural Matters.—On October 5, the assembly unanimously approved measures to assist the recovery of Iran from an earthquake. A draft Convention on Consent to Marriage, Minimum Age for Marriage and Registration of Marriages was adopted (92–0, with 7 abstentions) on November 7. On December 7, the assembly approved resolutions on the establishment of a Committee on Housing, Building and Planning (81–0, with 11 abstentions), international control of narcotics (92–1, with 4 abstentions), advisory services in human rights (80–0, with 21 abstentions), continuation of the Office of the UN High Commissioner for Refugees (99–0, with 1 abstention), and assistance to Chinese refugees in Hong Kong (58–22, with 26 abstentions). At the same time, it unanimously adopted resolutions on UNICEF, the fifteenth anniversary of the Universal Declaration of Human Rights, respect for human rights and fundamental freedoms, the advancement of women in developing countries, development of information media in less-developed countries, manifestations of racial prejudice and national and religious intolerance, and the preparation of draft declarations and conventions on the elimination of racial discrimination and religious intolerance. On December 19, the assembly unanimously adopted a resolution on the implementation of the Supplementary Convention of 1956 on the Abolition of Slavery, the Slave Trade and Institutions and Practices Similar to

Slavery; and three resolutions on the draft International Covenants on Human Rights.

Trusteeship and Non-Self-Governing Territories Matters.—On January 30, at its resumed 16th session, the assembly urged (99–2, with 1 abstention) Portugal to undertake reforms designed to promote the achievement of independence by Angola. On February 23, it created (88–0, with 11 abstentions) a commission to facilitate negotiations for the independence of Ruanda-Urundi. At the same time, it authorized (55–0, with 46 abstentions) the commission to engage in talks for the peaceful settlement of the future of the mwami of Rwanda. Later, on June 27, it passed (93–0, with 10 abstentions) a resolution noting that Rwanda and Burundi had decided to achieve independence separately on July 1, terminating the trusteeship agreement as of that date, and providing for assistance to the two new nations.

The assembly on February 23 voted (57–21, with 24 abstentions) to inquire into whether Southern Rhodesia had attained full self-government, and on June 28 adopted (73–1, with 27 abstentions) a resolution deploring the denial of equal political rights and liberties to all the people of Southern Rhodesia and urging the United Kingdom to take steps to correct the situation. At its 17th session the assembly, on October 12, urged (83–2, with 11 abstentions) the United Kingdom to take steps to release political prisoners in Southern Rhodesia and remove the ban on the Zimbabwe African People's Union; and, on October 31, requested (81–2, with 19 abstentions) the United Kingdom to convene a conference with full representation of all political parties in Southern Rhodesia to formulate a constitution ensuring the rights of the majority.

On December 14, the assembly adopted resolutions on the question of South West Africa (98–0, with 1 abstention), territories under Portuguese administration (82–7, with 13 abstentions), special training programs for Portuguese territories (96–2), dissolution of the Special Committee on Territories under Portuguese Administration (100–0, with 1 abstention), petitions and communications relating to South West Africa (unanimous), and the Special Committee for South West Africa (unanimous). On December 17, several resolutions were passed on the implementation of the 1960 Declaration on the Granting of Independence to Colonial Countries and Peoples. The Special Committee was continued and enlarged (101–0, with 4 abstentions), and recommendations were made on Zanzibar (84–0, with 4 abstentions) and Kenya (88–0, with 4 abstentions). On the next day, similar recommendations were made on Basutoland, Bechuanaland, and Swaziland (42–2, with 12 abstentions) and on Nyasaland (54–0, with 6 abstentions). The assembly on December 19 adopted resolutions on the report of the Committee on Information from Non-Self-Governing Territories (97–0, with 3 abstentions), continuation of the committee (96–0, with 5 abstentions), dissemination of information in these territories on the 1960 declaration (101–0, with 1 abstention), and the report of the Trusteeship Council (89–0, with 10 abstentions). At the same time, it adopted unanimous resolutions on study and training facilities for inhabitants of non-self-governing territories, racial discrimination in these territories, and dissemination of information on the United Nations and the trusteeship system in the trust territories.

Administrative and Budgetary Matters.—On December 19, the assembly accepted (76–17, with 8 abstentions) the advisory opinion of the International Court of Justice on the obligations of members to pay such budgetary expenses as those for the maintenance of UNEF and ONUC, established (78–14, with 4 abstentions) a working group of 21 nations to study criteria for the sharing of expenses of such operations, and passed (76–11, with 2 abstentions) a resolution on the geographical distribution of the staff of the Secretariat. On the next day, it authorized the secretary general to spend up to June 30, 1963, as much as $1,580,000 monthly for UNEF (76–11, with 8 abstentions), and as much as $10,000,000 monthly for ONUC (75–12, with 13 abstentions); decided (77–0, with 21 abstentions) to convene a special session before June 30, 1963, to consider the report of the working group and the financial situation of the organization (77–0, with 21 abstentions); approved unanimously a supplementary appropriation of $3,673,480, increasing the total budget for 1962 to $85,818,220; approved (88–11, with 2 abstentions) a budget of $93,911,050 for 1963; and increased (91–11, with 3 abstentions) the Working Capital Fund to $40,000,000.

Legal Matters.—The assembly on November 20 unanimously adopted resolutions on the report of the International Law Commission, and on the question of extended participation in general multilateral treaties concluded under the auspices of the League of Nations. On December 8, it approved (76–0) a revision of the agreement between the United Nations and UNESCO, abolishing the necessity for ECOSOC approval of membership applications to UNESCO by nonmembers of the United Nations. On December 18, it unanimously adopted resolutions on an international conference of plenipotentiaries on consular relations; publication of a juridical yearbook; technical assistance to promote the teaching, study, dissemination, and wider appreciation of international law; and consideration of principles of international law concerning friendly relations and cooperation among states in accordance with the charter.

International Law Commission (ILC).—The 14th session of the ILC, which met in Geneva on April 24–June 29, 1962, considered its first report on the law of treaties and adopted 29 draft articles. It also decided to limit its future program to the law of treaties, state responsibility, and the succession of states and governments.

(See also articles on the countries discussed herein, and on major subjects considered by the United Nations, such as DISARMAMENT and REFUGEES AND DISPLACED PERSONS.)

THOMAS HOVET, JR.,
Professor of International Relations and Administrator of the UN Program, New York University.

UNITED NATIONS CHILDREN'S FUND. See CHILDREN AND YOUTH—*Child Welfare*, and the Index entry, *United Nations Children's Fund.*

UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION

UNESCO is a specialized agency of the United Nations, with headquarters in Paris, France. Its policies are formulated by a biennial general conference of representatives from member nations and by an executive board of 30 members, responsible to their own governments. Activities are carried out by an international secretariat headed by an elected director-general, by experts in the field, and by national commissions which serve as a liaison between UNESCO headquarters and their own countries. The addition of Algeria, Burundi, Jamaica, Mauritania, the Mongolian People's Republic, Rwanda, Sierre Leone, Tanganyika, Trinidad and Tobago, Uganda, and Yemen in 1962 brought to 113 the number of UNESCO members.

On Nov. 14, 1962, René Maheu of France was elected director-general at the biennial UNESCO general conference. Maheu had been serving as acting director-general since November 1961 when Vittorino Veronese of Italy resigned because of ill health. A budget ceiling of $39,000,000 for ordinary UNESCO expenses for 1963 and 1964 was also set by the conference.

Education.—A UNESCO report, made public on May 24, 1962, estimated that 44% of the world's population was illiterate. The report stated that 97 of the world's 198 countries and territories had illiteracy rates of more than 50%, and 20 others of more than 95%, and that illiteracy was increasing in Asia.

In 1961–62, UNESCO concentrated on expanding educational opportunities and facilities in less-developed areas, encouraging regional cooperation. The $11.5 million crash program launched by UNESCO in 1961 to help meet African needs for trained teachers, manuals and textbooks, and inexpensive school buildings was continued during 1962. At a conference in Karachi in 1960, Asian educators called for universal primary school enrollment by 1980, despite an estimated cost of $56 billion and a total of 155 million children to be educated. With UNESCO help, three regional education offices have been established to map long-range plans and conduct research on school building.

UNESCO is acting as the executing agency for the United Nations Special Fund in setting up 42 technical and teacher-training institutes in less-developed areas.

The Convention Against Discrimination in Education, sponsored by UNESCO, came into force in May 1962. The general conference set up machinery to settle disputes arising from infringements of the declaration, which has already been signed by ten nations.

Natural Sciences.—The UNESCO scientific program, begun in 1961 and involving an expenditure of $12,801,027, was continued during 1962. In 1963–64, scientific hydrology will be stressed to tap the world's waning water resources, an activity expected to lead to an international hydrologic decade to start in 1965.

An intergovernmental survey of the Indian Ocean, begun under UNESCO sponsorship in 1961, continued during 1962. Results of this international effort are being made available to all nations through two data centers—one in Washington, D.C., and the other in Moscow. A similar study in the South Atlantic will follow.

UNESCO also established two important new science centers, an International Computation Center in Rome, and an International Institute of Seismology and Earthquake Engineering in Tokyo. In 1962, UNESCO sent experts to Iran, following the earthquake there, and established training programs for seismologists so that future damage could be minimized.

Culture.—Seven more nations, making a total of 50, ratified in 1962 the International Convention on the Protection of Cultural Property in the Event of Armed Conflict, sponsored by UNESCO.

As part of the UNESCO program to extend copyright protection, the International Convention for the Protection of Performers, Producers of Phonograph Records, and Broadcasting Organizations was deposited at United Nations Headquarters and opened for signature by member states. The convention was approved in Rome in October 1961. UNESCO also continued its work on behalf of the Universal Copyright Convention, which protects the rights of authors, artists, and publishers, and which in 1962 was ratified by seven more nations, making a total of 44.

A plan for medium-term bank loans to finance salvaging the 3,500-year-old Abu Simbel temples was rejected by the general conference. It was decided instead to encourage donations from private sources to complete the UNESCO campaign which, since its start in 1960, had already guaranteed the saving of many ancient Egyptian monuments in the Nubian Valley threatened with innundation when the Aswân High Dam is completed.

Mass Communications.—The third regional conference on mass communication, held in Paris, was concluded on Feb. 6, 1962. The principal recommendation was that the level of communications media in Africa be raised substantially.

SALLY SWING SHELLEY,
Information Officer, UNESCO, New York.

UNITED STATES

The United States of America comprises the 50 states (commonly referred to as the Union) and the District of Columbia. Puerto Rico became a self-governing commonwealth associated with the United States in 1952. The outlying possessions of the United States include Guam, the Virgin Islands of the United States, American Samoa, and various small Pacific and Caribbean islands. Among outlying areas under its jurisdiction are the Canal Zone and the Corn Islands. In addition, since World War II the United States has administered territories in the Pacific under United Nations trusteeship, as well as other former Japanese islands which, according to the Japanese Peace Treaty (1951), remain under United States control although Japan retains residual sovereignty over them.

Area.—The aggregate area of the United States and outlying areas is 3,628,150 square miles, comprising the following: the Union, 3,615,211 square miles (land, 3,548,974; inland water, 66,237), exclusive of the Great Lakes and Lake St. Clair (60,422 square miles within United States boundaries) and such major coastal waters as Long Island Sound, Delaware and Chesapeake bays, the Gulf of Mexico, Puget Sound, and the straits of Georgia and Juan de Fuca; Puerto Rico, 3,435 square miles; the possessions, 463 square miles; the Canal Zone, 553 square miles; the Corn Islands, 4 square miles; and the Trust Territory of the Pacific Islands, 8,484 square miles. (See separate articles on the states; AMERICAN SAMOA; DISTRICT OF COLUMBIA; GUAM; PACIFIC ISLANDS; PANAMA CANAL AND CANAL ZONE; PUERTO RICO; and VIRGIN ISLANDS OF THE UNITED STATES.)

Population.—According to the census of April 1, 1960, the population of the United States (50 states and the District of Columbia) was 179,323,175, exclusive of members of the armed forces and their dependents living abroad, United States citizens residing in foreign countries, and the crews of American ships at sea or in foreign ports (the 1960 census figure plus the estimate of the armed forces overseas totaled 180,004,000). This figure was 18.5% higher than the 1950 census total of 151,325,798 for the conterminous United States (48 states and the District of Columbia) and the then territories of Alaska and Hawaii. A census Bureau estimate placed the United States population (including the armed forces abroad) at 188,045,000 as of Jan. 1, 1963. Washington, D.C., the national capital, had a population of 763,956 at the 1960 census. (See also CENSUS DATA, U.S.)

Government.—Republican in form, the government of the United States is divided into executive, legislative, and judicial branches.

Executive Branch.—John F. Kennedy (q.v.), Democrat, was elected to the presidency in the national election of Nov. 8, 1960, and was sworn into office on Jan. 20, 1961. He receives a salary of $100,000, plus $50,000 for expenses; in addition, up to $40,000, nontaxable, may be expended for traveling and official entertainment.

The vice president, who serves as president of the Senate, is Lyndon B. Johnson (q.v.), also sworn in on Jan. 20, 1961. His salary is $35,000, plus $10,000 for expenses.

The executive branch also comprises 10 departments (the heads of which form the cabinet) and a number of independent establishments. The members of the cabinet receive salaries of $25,000 each. As of Jan. 1, 1963, the 10 departments and their heads were as follows:

DEPARTMENT OF STATE: Secretary, Dean Rusk; sworn in on Jan. 21, 1961.
DEPARTMENT OF THE TREASURY: Secretary, Douglas Dillon; sworn in on Jan. 21, 1961.
DEPARTMENT OF DEFENSE: Secretary, Robert S. McNamara; sworn in on Jan. 21, 1961.
DEPARTMENT OF JUSTICE: Attorney General, Robert F. Kennedy; sworn in on Jan. 21, 1961.
POST OFFICE DEPARTMENT: Postmaster General, J. Edward Day; sworn in on Jan. 21, 1961.
DEPARTMENT OF THE INTERIOR: Secretary, Stewart L. Udall; sworn in on Jan. 21, 1961.
DEPARTMENT OF AGRICULTURE: Secretary, Orville L. Freeman; sworn in on Jan. 21, 1961.
DEPARTMENT OF COMMERCE: Secretary, Luther H. Hodges; sworn in on Jan. 21, 1961.
DEPARTMENT OF LABOR: Secretary, W. Willard Wirtz; sworn in on Sept. 25, 1962.
DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE: Secretary, Anthony J. Celebrezze; sworn in on July 31, 1962.

Legislative Branch.—See the article UNITED STATES CONGRESS.

Judicial Branch.—The judiciary consists of a Supreme Court (q.v.), circuit courts of appeal, district courts, special courts, District of Columbia courts, and territorial courts. (For a discussion of the Supreme Court's principal decisions in 1961–62, see the article LAW.)

Education.—The United States Office of Education is the country's chief advisory authority on education. For particulars regarding the general trend of education in the United States, see the article EDUCATION; the section on *Education* in the articles on the states and possessions; COLLEGES AND UNIVERSITIES; LIBRARIES; and Index entries under *Education.*

Religion.—See the article RELIGION and Index entries under this heading.

Social Welfare.—See the article SOCIAL WELFARE and Index entries under this heading.

Finance.—See the article TREASURY DEPARTMENT, U.S.

Economy.—See below, the section on *The United States in 1962;* the article BUSINESS DATA, U.S.; and references under the Index entry *Financial and Economic Review.*

Agriculture.—See the article AGRICULTURE and Index entries under this heading.

Industry.—See the article INDUSTRIAL PRODUCTION.

Labor.—See the article LABOR.

Mineral Production.—See the articles MINERAL PRODUCTION and MINING and articles on specific minerals.

Foreign Trade.—According to the Department of Commerce, United States exports (including reexports) were valued at $20,874 million in 1961, and imports at $14,720 million. In the first 10 months of 1962, exports totaled $17,852.3 million, and imports $13,596.7 million. (For a discussion of United States foreign trade, see the articles INTERNATIONAL TRADE and TARIFFS and the Index entries on these subjects.)

Defense.—The organization for national security as of January 1963 included the following:

NATIONAL SECURITY COUNCIL: Membership includes the president of the United States, the vice president, the secretaries of state and defense, and the director of the Office of Emergency Planning.
SECRETARY OF DEFENSE: Robert S. McNamara (sworn in on Jan. 21, 1961); assisted by a deputy secretary of defense (Roswell L. Gilpatric; sworn in on Jan. 24, 1961), a director of defense research and engineering, 7 assistant secretaries of defense, a general counsel, a special assistant, and assistants to the secretary of defense for atomic energy and legislative affairs.
Department of the Army: Cyrus R. Vance, secretary of the army (sworn in on July 5, 1962).
Department of the Navy: Fred Korth, secretary of the navy (sworn in on Jan. 4, 1962).
Department of the Air Force: Eugene M. Zuckert, secretary of the air force (sworn in on Jan. 24, 1961).
Joint Chiefs of Staff: Chairman—Gen. Maxwell D. Taylor; Chief of Staff, U.S. Army—Gen. Earle G. Wheeler; Chief of Naval Operations—Adm. George W. Anderson, Jr.; Chief of Staff, U.S. Air Force—Gen. Curtis E. LeMay. The commandant of the Marine Corps, Gen. David M. Shoup, has a voice on the Joint Chiefs of Staff whenever it considers policy or strategy measures which "directly concern the Marine Corps."
Armed Forces Policy Council: Chairman—the secretary of defense.

(See the articles CIVIL DEFENSE and NATIONAL SECURITY and the Index entries *Military* and *National Security.*)

Communications.—See Index entries under this heading.

Transportation.—See Index entries under this heading.

THE UNITED STATES IN 1962

An international crisis over Cuba, the success of the first American astronauts to orbit the earth, and unsteadiness of the stock market overshadowed even the elections or sports in gripping American attention in 1962. Crises over Berlin, the Congo, and Southeast Asia seemed distant but nevertheless compelling in their claims on American obligation. Resumption of nuclear testing in the atmosphere, authorized by President John F. Kennedy on April 24, was generally supported for reasons of national defense and security. The Century 21 Exposition in Seattle attracted tourists westward. The death on November 7 of Mrs. Franklin D. Roosevelt turned the national mind to regret for the loss of her grace and courage.

The Cold War.—The political and economic struggle between factionally divided Soviet and Chinese communism on the one hand and the free world on the other permeated international negotiations over disarmament, commerce, and the development of new nations. The United States pressed for a coalition government of the warring rightist, neutralist, and pro-Communist factions in Laos, a position defended on January 15 by President Kennedy as well worth the risk in order to prevent a greater military threat. The coalition, supported by the United States, Great Britain, the USSR, and 11 other nations in talks with the three Laotian princes heading the factions, was finally agreed to at a conference in Khang Khay, Laos, on June 11. Meanwhile, the United States, in addition to its military complement in Laos, announced on February 8 the formation of a new military command in South Vietnam, where American military personnel became involved in guerrilla attacks by Communist forces infiltrating the country from North Vietnam. On May 15, Kennedy ordered additional ground and air forces to Thailand, at the invitation of its government, to protect that nation against the Communist guerrillas also threatening Laos (the last units of these forces were withdrawn by December). Representatives of 14 nations, meeting at Geneva, Switzerland, on July 23, signed pacts pledging the independence of Laos and arranging for withdrawal of all foreign forces from the country. (See also FAR EAST; LAOS; VIETNAM.)

Francis Gary Powers and Col. Rudolf I. Abel were released from prison terms for espionage by the Soviet Union and the United States, respectively, and exchanged at the East Germany–West Berlin border on February 10. On March 6, Powers testified before the Senate Armed Services Committee concerning his capture after his U-2 reconnaissance plane had been shot down in the USSR in 1960. The committee released a statement by John A. McCone, director of the Central Intelligence Agency, exonerating Powers for his part in the incident.

The United States, Britain, and France on February 7 and repeatedly thereafter rejected demands by the USSR that part of the air space in

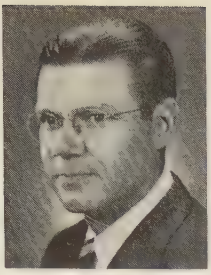
(*Continued on page 708*)

UPI

Dean Rusk
(State)

UPI

Douglas Dillon
(Treasury)



FORD MOTOR CO.

Robert S. McNamara
(Defense)

UPI

Robert F. Kennedy
(Attorney General)

WIDE WORLD

J. Edward Day
(Postmaster General)

MEMBERS OF PRESIDENT KENNEDY'S CABINET

(As of January 1, 1963)

Biographies of the four top-ranking cabinet officers—Dean Rusk, C. Douglas Dillon, Robert S. McNamara, and Robert F. Kennedy—appear under their own names. Sketches of the others (listed in order of succession to the presidency) follow.

J(ames) Edward Day (b. Jacksonville, Ill., Oct. 11, 1914) was sworn in as postmaster general on Jan. 21, 1961. After graduation from the University of Chicago (B.A., 1935) and Harvard Law School (LL.B. *cum laude*, 1938), he was associated with a Chicago law firm until 1949, except for Navy service during World War II. In 1949, Illinois Gov. Adlai Stevenson chose him as his legal and legislative aide, and in 1950–53 he was state insurance commissioner. In 1953 he joined the legal staff of the Prudential Insurance Company, and after 1957 headed the Western division office as a vice president.

Stewart Lee Udall (b. St. Johns, Ariz., Jan. 31, 1920), reelected in 1960 for his fourth term as Democratic congressman from Arizona, was sworn in as secretary of the interior on Jan. 21, 1961 (becoming the first cabinet officer from his state). In World War II he served with the Fifteenth Air Force in Italy. Later he completed his education at the University of Arizona (LL.B., 1948), and practiced law in Tucson until his election to Congress in 1954.

During 1962, Secretary Udall engaged in a number of conferences and tours designed to keep problems of the conservation and development of natural resources active in the minds of Americans. At a White House Conference on Conservation on May 24, he told the 500 attending conservationists that some short-term profits must be sacrificed to satisfy "the overriding need of men for an environment that will renew the human spirit."

On August 17 and 18, the secretary accompanied President Kennedy on his tour of new dams and damsites in the West. From August 29 to September 9, Udall visited a number of Soviet hydroelectric stations as head of a United States delegation of federal power officials under the United States–USSR exchange program, and on September 6 he conferred with Soviet Premier Khrushchev.

Orville Lothrop Freeman (b. Minneapolis, Minn., May 9, 1918), sworn in as secretary of agriculture on Jan. 21, 1961, was graduated *magna cum laude* from the University of Minnesota in 1940 (LL.B., 1946). While engaged with a Minneapolis law firm, he was elected governor in 1954 as candidate of the Democrat-Farmer-Labor Party. As leader of this group, he was a severe critic of Secretary of Agriculture Ezra T. Benson's policies. He was named to the Kennedy cabinet after his unsuccessful bid for a fourth term as governor.

Strenuous efforts by Secretary Freeman, including visits to some 50 congressmen, were unable to prevent the defeat of the Kennedy administration's farm bill by the House of Representatives on June 21, 1962.

As details of the controversial activities of Billy Sol Estes became public (see TEXAS), accusations of complicity in his dealings were leveled at leading officials of the Department of Agriculture. On May 11, President Kennedy issued a statement expressing confidence in Freeman, but two Republican senators demanded his resignation. When the Senate's permanent investigating subcommittee opened hearings into the case, Secretary Freeman strongly defended his department in testimony on June 28–29 and again on July 5.

Luther Hartwell Hodges (b. Pittsylvania County, Virginia, March 9, 1898), sworn in as secretary of commerce on Jan. 21, 1961, has had two separate careers. A graduate of the University of North Carolina (B.A., 1919), he worked for the Marshall Field & Company textile empire, rising to a vice presidency before his retirement in 1950. In his first political endeavor he was elected lieutenant governor of North Carolina in 1952, and succeeded to the governorship on the incumbent's death in 1954. He won the gubernatorial election in 1956.

When the stock market slumped sharply in late May 1962, Secretary Hodges declared that he favored immediate action to stimulate the economy. He called for an early announcement of administration proposals to revise the tax laws and for cuts in both individual and corporate income tax rates.

W(illiam) Willard Wirtz (b. De Kalb, Ill., March 14, 1912) was sworn in as secretary of labor on Sept. 25, 1962, with the confirmation of the prior secretary, Arthur J. Goldberg, as justice of the U.S. Supreme Court. A graduate of Beloit College (A.B., 1933) and Harvard Law School (LL.B., 1937), Wirtz taught law at the State University of Iowa for two years and labor law at Northwestern University (1939–1942 and 1946–1954). From 1942 to 1946 he served in Washington successively as assistant general counsel of the Board of Economic Warfare, general counsel and public member of the War Labor Board, and chairman of the National Wage Stabilization Board. A law partner of Adlai E. Stevenson for some years, Wirtz was also an arbitrator in private practice. He became under secretary of labor on Jan. 30, 1961, and was executive director of President Kennedy's Advisory Committee on Labor-Management Policy.

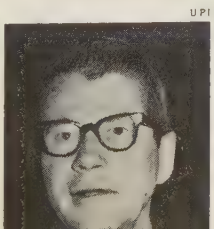
In 1962, Wirtz assisted in the mediation of the west coast maritime strike and the Chicago railway telegraphers strike. After becoming secretary of labor in September, he helped settle the New York Newspaper Guild—*Daily News* strike of November 1–8.

Anthony Joseph Celebrezze (b. Anzi, Italy, Sept. 4, 1910) was sworn in as secretary of health, education, and welfare on July 31, 1962, succeeding Abraham A. Ribicoff, who had resigned on July 12 to seek election to the U.S. Senate from Connecticut. When he was two years old, Celebrezze's parents, who were naturalized United States citizens visiting their native Italy, brought him to their home in Cleveland, Ohio. Growing up in a slum area, the ninth of a family of 13 children, he was graduated from Cleveland's Central High School, attended John Carroll University for a year, and transferred to Ohio Northern University at Ada (LL.B., 1936). He practiced law in Cleveland, except for naval service in World War II, until his election to the state Senate in 1950. While serving his second term in the Senate, he was elected mayor of Cleveland. Winning a fifth consecutive term in 1961, he received 73.8 percent of the total vote and carried every ward in the city. His administration was highlighted by slum clearance and urban renewal programs.

Stewart L. Udall
(Interior)

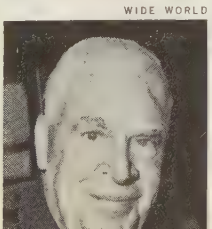
UPI

Orville L. Freeman
(Agriculture)



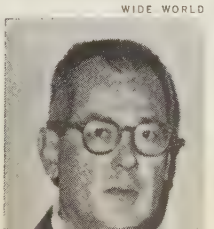
UPI

Luther H. Hodges
(Commerce)



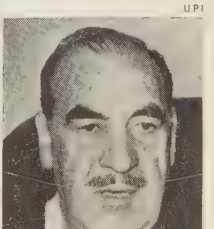
WIDE WORLD

W. Willard Wirtz
(Labor)



WIDE WORLD

Anthony J. Celebrezze
(Health, Educ., Welf.)



UPI

the corridors leading to West Berlin be reserved for its military aircraft. Beginning on February 14, Soviet jet fighters from time to time harassed planes in the corridors. Although the Soviet government abolished the post of Soviet commandant in Berlin on August 22, the three Western powers refused to recognize this unilateral abdication of responsibility. (See also GERMANY.)

President Kennedy announced on March 2 that the United States would begin nuclear tests in the atmosphere over the Pacific Ocean by the end of April in order to keep American progress in nuclear defense abreast of developments resulting from the resumption of Soviet atmospheric testing in September 1961. He offered, however, to abandon test plans if the USSR would sign a treaty providing for the discontinuance of all nuclear weapons tests with provision for international inspection and supervision. The American tests began on April 25 near Christmas Island and ended there with the detonation on July 11 of a 26th device. High-altitude tests were conducted near Johnston Island. On July 9, an explosion aboard a Thor missile at an altitude of about 200 miles lit the Pacific night from Hawaii to Samoa. Atmospheric tests were resumed on October 2 and completed on November 4. (See also ATOMIC ENERGY.)

Disarmament talks dragged on at a 17-nation conference held at Geneva from March 14 to September 7 and again after November 26. The United States and Britain were prepared to accept a treaty, without international inspection, outlawing all nuclear tests except underground ones, or alternatively a treaty including all tests with adequate inspection. The Soviet Union insistently declined to open its territory to general international inspection. (See also DISARMAMENT.)

Cuban Crisis.—On September 26, in response to Soviet-supported arms development in Cuba, Congress passed a joint resolution declaring that the United States would "prevent by whatever means may be necessary, including the use of arms," the extension by force or threat of Cuba's "aggressive or subversive activities to any part of this hemisphere." Passage by the House of Representatives that day was by a vote of 384 to 7, following Senate approval on September 20 by 86 to 1, the opposition contending only that the resolution was too weak.

In a radio and television address on October 22, President Kennedy revealed that "within the past week unmistakable evidence has established the fact that a series of offensive missile sites is now in preparation" in Cuba. One type of installation included missiles capable of carrying nuclear warheads for 1,000 miles, while other uncompleted sites appeared to be designed for "missiles capable of traveling twice as far." Moreover, Soviet jet bombers were being uncrated and assembled on the island. The president branded as false Soviet statements of October 11 and 18 that arms deliveries to Cuba had been made solely for defensive purposes. He announced a naval quarantine of foreign military equipment under shipment to Cuba and declared that the United States would "regard any nuclear missile launched from Cuba against any nation in the Western Hemisphere as an attack by the Soviet Union on the United States, requiring a full retaliatory response upon the Soviet Union." The Council of the Organization of American States (19–0, with 1 abstention) approved the quarantine the next day.

The quarantine, effective on October 24, resulted in no direct challenge from Cuba-bound Soviet ships, most of which changed course. On October 26, Soviet Premier Nikita S. Khrushchev offered to remove missiles from Cuba under United Nations supervision if the United States would end the quarantine and give assurances that it would not invade Cuba. President Kennedy generally accepted these proposals, but Cuban Premier Fidel Castro refused inspections and demanded that the United States withdraw from its naval base at Guantánamo. The United States suspended its quarantine and also aerial photographic flights for 48 hours from October 30, during a visit to Cuba by Acting Secretary General U Thant, who was unable to obtain Cuban agreement to inspected removal of the missiles. Soviet First Deputy Premier Anastas I. Mikoyan, in Cuba on November 2–26, presumably met with a similar refusal.

Department of Defense officials announced on November 8 that aerial photography revealed that "all known" missile bases in Cuba had been dismantled, and that missiles were being withdrawn. On November 20, President Kennedy announced the end of the naval quarantine that day, after agreement by the Soviet Union to withdraw jet bombers from Cuba (the bombers were duly withdrawn, as announced by the Department of Defense on December 6). (See also CUBA; INTER-AMERICAN AFFAIRS.)

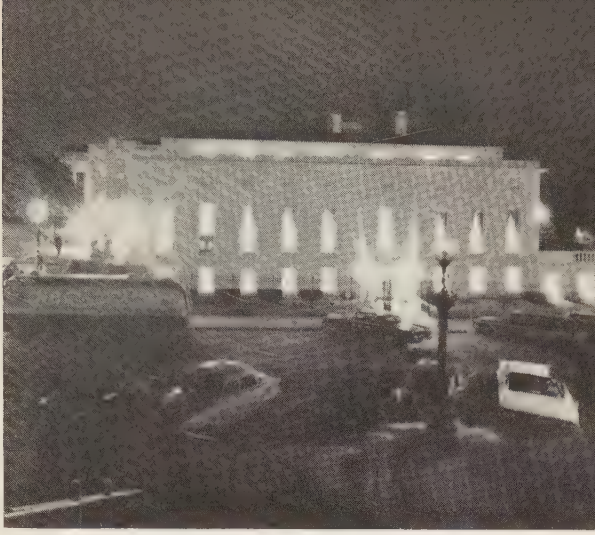
Global Responsibilities.—The United States government vigorously supported United Nations efforts to reunite secessionist Katanga Province with the central government of the Republic of the Congo. In particular, it backed a plan, proposed on August 20 by U Thant, whereby Katanga would be given some financial and political concessions. The secretary general suggested that United Nations members apply an embargo against the province if it did not agree to reunification. The plan was reluctantly supported by Britain and Belgium, but opposed by France and the Soviet Union. No progress was made toward a peaceful settlement, and in December fighting was renewed between United Nations and Katangan forces. (See also CONGO, REPUBLIC OF THE.)

On October 29, the United States agreed to furnish emergency arms aid requested by India because of attacks by Communist China. This aid policy resulted in strained relations with Pakistan, but these were eased when United States Assistant Secretary of State W. Averell Harriman helped to arrange an agreement, announced on November 29, for Indo-Pakistani talks on Kashmir. (See also FAR EAST; INDIA.)

Relations between the United States and its allies in the North Atlantic Treaty Organization were strained at times because of American official views that the United States should assume the burden of nuclear weapons development for reasons of cost and centralized command, and that other NATO powers should increase their ground forces. The desire of the United States to abandon the Skybolt missile, on which Britain was depending for its own nuclear deterrent, was the chief topic of the conference of President Kennedy and Prime Minister Harold Macmillan, held in the Bahamas on December 18–21. It was then decided to provide Britain with Polaris missiles instead of the Skybolt. (See also GREAT BRITAIN; MISSILES; NORTH ATLANTIC TREATY ORGANIZATION.)

National Defense and Space Flights.—Secretary of Defense Robert S. McNamara declared on February 17 that administration planning included defense against all types of warfare, whether small-scale guerrilla actions or nuclear conflict. On February 5, he had stated that the United States had "nuclear capability to absorb a first strike" and "retain sufficient weapons" to destroy an opponent. During the year the administration be-

UPI: PARIS MATCH



(*Above*) President Kennedy on October 23 signs the formal proclamation of the naval "quarantine" of Cuba. (*Right*) Lights blaze brightly in the White House on October 23 as strategy sessions on the Cuban crisis last into the night.

came involved in controversy with members of Congress over the desirability of RS-70 bombers, which McNamara regarded as less suitable and more vulnerable than B-52 bombers. Chairman Carl Vinson of the House Armed Services Committee agreed on March 20 to accept assurances from the president and secretary that the RS-70 program would be restudied. On August 1, Congress appropriated $48.1 billion for defense. (See also NATIONAL SECURITY.)

On February 20, Lt. Col. John H. Glenn, Jr., became the first American to go into orbit, circling the earth three times in a space capsule. Lt. Comdr. Malcolm S. Carpenter repeated the feat on May 24, and Comdr. Walter M. Schirra, Jr., circled the earth almost six times on October 3. Meanwhile, on April 26, a United States lunar probe, Ranger IV, reached the hidden side of the moon. On July 22, a Venus probe, Mariner I, was destroyed in flight by signal because it had veered from course; but on December 14, Mariner II passed Venus and recorded scientific data. Television pictures were transmitted for the first time by satellite relay on April 24. The American Telephone and Telegraph Company, in cooperation with the United States government, placed a Telstar communications satellite in orbit on July 10; and on December 13 a Relay satellite was placed in orbit. (See also SPACE FLIGHT.)

Secretary of State Dean Rusk said in Seattle on May 25 that space activities should be placed under "international law and supervision." President Kennedy declared in Houston on September 12 that space should not be governed by "a hostile flag of conquest" but by "a banner of freedom and peace." On September 25, Congress appropriated $3.7 billion for the National Aeronautics and Space Administration for the fiscal year 1963.

Legislative Record.—The 2d session of the 87th Congress convened on January 10 and adjourned on October 13. At the beginning of the session the Senate had 64 Democrats and 36 Republicans, and the House of Representatives 258 Democrats and 174 Republicans (plus 5 vacancies). John W. McCormack, Democrat, was elected speaker of the House by a straight party vote on January 10 to succeed the late Sam Rayburn. The Democratic caucus on January 9 had unanimously elected Carl Albert majority leader to succeed McCormack. Hale Boggs was designated majority whip. Charles A. Halleck continued as minority leader. In the Senate, Mike Mansfield continued as majority leader, and Everett McKinley Dirksen as minority leader. Senate Republicans, by a vote of 21 to 14 on January 10, chose Bourke B. Hickenlooper over Leverett Saltonstall as chairman of their Policy Committee to succeed the late Styles Bridges.

In his State of the Union message on January 11, President Kennedy emphasized the need for freer trade with the European Economic Community (Common Market), for a $200 million purchase by the United States of United Nations bonds, and for a $3 billion program for the Alliance for Progress. He also advocated tax revision, including presidential authority to reduce personal income taxes; manpower training and youth employment programs; higher salaries for federal employees; federal aid for public school construction and for teachers' salaries; health insurance for the aged through social security; a public health and welfare program; increased postal rates; incentives

(*Below*) Combat flag carried by brigade which invaded Cuba in 1961 is given to President Kennedy in Miami, Fla., on December 29 after prisoners were ransomed. (*Right*) Three prisoners ransomed by their families land in Miami, July 29.

WIDE WORLD

Released by the Soviet Union in February, Francis Powers testifies before a congressional committee on March 6. His U-2 aircraft, on a high-altitude mission, was shot down in May 1960.

WIDE WORLD

to build fallout shelters; a cabinet Department of Urban Affairs and Housing; and mass transportation, air pollution control, conservation, and recreation programs. On January 18, he submitted to Congress a balanced budget for the fiscal year 1963, proposing expenditures of $92.5 billion.

The proposal for a Department of Urban Affairs and Housing was defeated after a series of events widely interpreted as strengthening the coalition of Southern Democrats and Republicans in Congress. Kennedy submitted a reorganization plan to effect the change and announced his intention of appointing Robert C. Weaver, administrator of the Housing and Home Finance Agency, to the proposed cabinet position. Weaver, in a speech in New York on February 13, called it "unfortunate" that many persons would consider a negative vote "as a vote against the concept of having a Negro in the cabinet." Senator Mansfield attempted to obtain a Senate vote on the plan before a House vote by moving to take the proposal out of committee, but his motion was criticized by some senators as political interference with procedures, and it was defeated by a vote of 58 to 42 on February 20. The next day, the House defeated the proposal by a vote of 264 to 150.

A three-year, $435 million Manpower Development and Training Act was adopted by voice votes in the Senate on March 8 and in the House on March 13. President Kennedy called it "perhaps the most significant" employment measure "since the historic Employment Act of 1946," and signed it on March 15. (See also LABOR.) Both houses, by voice votes on June 27, passed the administration-supported Migration and Refugee Assistance Act, which was signed by the president on June 28. (See also REFUGEES AND DISPLACED PERSONS.) An administration bill for welfare liberalization, passed on July 19 by the House by a vote of 357 to 34 and by the Senate by voice vote, was signed on July 25. (See also SOCIAL WELFARE.) A constitutional amendment prohibiting a poll tax as a requirement for voting in federal elections received congressional approval on August 27, when the House passed it by a vote of 295 to 86. It had been adopted (77–16) by the Senate on March 27. The proposed amendment is subject to ratification within seven years by the legislatures of three fourths of the states.

Poet Robert Frost (right) is awarded Congressional Medal by President Kennedy on March 26 for his contributions to American letters. (Frost, age 88, died on Jan. 29, 1963.)

WIDE WORLD

An administration-supported measure authorizing the creation of a private corporation to own and operate communications by satellite was approved (373–10) by the House on August 27 and signed by the president on August 31. The bill had passed the Senate (66–11) on August 17 after debate had been ended by the imposition of cloture (by a vote of 63 to 27) on August 14. The cloture procedure, requiring a two-thirds majority, was voted by the Senate for the first time since 1927. Several liberal Democratic senators had talked at length in favor of a government-owned satellite communications system. In signing the bill, the president declared that it had "many safeguards to protect the public interest."

Authorization of a loan of $100 million to the United Nations, on the basis of equal fund matching by other countries, was approved by the House (257–134) on September 14 and by the Senate by voice vote on September 19, and was signed by the president on October 2. The House voted (177–102) to express the judgment that the United Nations should implement an advisory opinion of the International Court of Justice to the effect that expenditures authorized for United Nations forces in the Congo and the Middle East were legal obligations of the members, to be included in calculating the delinquency of more than two years in paying assessments that would result in the loss of voting rights in the General Assembly. (See also INTERNATIONAL LAW.)

The House agreed (342–13) on September 24 to a joint resolution approving a presidential request for authority to call up 150,000 reservists and to extend periods of active duty. The Senate had voted its approval (76–0) on September 13. A compromise farm bill was passed by the House (202–197) on September 20 and by the Senate (52–41) on September 25; it was signed by the president two days later. The administration had wanted a bill to reduce the cost of helping farmers by means of tightening controls on wheat and feed grains, with quotas based on total production instead of acreage. The compromise provided for wheat controls effective in 1964 after approval by two thirds of the wheat farmers in a national referendum, with acreage to be set by the secretary of agriculture at a level sufficient to produce total wheat requirements; for the reduction of supports for corn and feed-grain prices to a range of 50 to 90% of parity; and for a 10-year pilot program designed to convert surplus cropland to recreation and conservation uses. (See also AGRICULTURE.)

Provision for tax-deductible pension funds established by self-employed persons was made in legislation passed by the Senate (70–8) on September 23 and by the House (361–0) on September 25. The bill was signed on October 10 by the president, who said that it was "more suited" to a general tax reform which he intended to propose in 1963. Tax revision legislation, less extensive than

the administration preferred, was passed on October 2 by voice vote in the House and by 56 to 22 in the Senate, and was signed by the president on October 16. It allowed a tax credit of 7% for business modernization and restricted tax deductions for business entertainment. It did not include the president's recommendation for withholding taxes on dividends and interest. (See also TAXATION.)

A major administration goal was achieved by the passage of the Trade Expansion Act on October 4, by voice vote in the Senate and by 225 to 91 in the House. The act authorized the president to reduce tariffs by as much as 50% and to eliminate them entirely on many goods exported primarily by the United States and Common Market countries. Foreign aid appropriations of $3,928.9 million, $1,032.4 million less than the administration had requested, were passed in the House (171–108) on October 6 and in the Senate by voice vote on October 8. (See also FOREIGN AID PROGRAMS, U.S.; INTERNATIONAL TRADE.)

Alarmed by harmful effects reported from the use of the drug thalidomide, Congress enacted (by voice vote in the Senate on October 3 and by 347 to 0 in the House the next day) new drug control legislation. Signed by the president on October 10, the act required proof of the effectiveness of drugs before marketing, imposed new testing and labeling standards, and permitted the government to withdraw hazardous drugs from the market. Postal rate increases and federal employee pay raises were adopted by the Senate by voice vote on October 3 and by the House by 312 to 20 on October 5, and were approved by the president on October 11. Rates for first-class mail were raised by 1 cent per ounce, and rates for publications were increased by stages over a three-year period. Salary increases averaged 11% for 590,000 postal workers and 10% for about 1,000,000 other federal employees.

Legislation for medical care for the aged through the Social Security system had been defeated (52–48) by the Senate on July 17. Other legislation shelved during the session included aid to higher education, restrictions on literacy tests for voting, proposals for youth employment and training, and a fallout shelter incentive program. Appropriations were delayed by disputes between the House and the Senate over procedures. Major legislative investigations dealt with government stockpiling programs, regulation of the speeches of military officers, missile industry profits, highway land acquisition policies, and practices of the Department of Agriculture in grain storage and cotton allotments, highlighted by the indictment for fraud of financier Billie Sol Estes of Texas.

Political Developments.—President Kennedy participated in the fall political campaign with a vigor unprecedented for an American president by speaking in the East, Midwest, and West for Democratic candidates for Congress, while former President Dwight D. Eisenhower campaigned extensively for Republican candidates. As a result of the elections of November 6, the Democrats retained control of both houses of Congress—the Senate with an increase of 4 seats and the House with a loss of 4. The new 88th Congress was to have 68 Democratic to 32 Republican seats in the Senate, and 258 to 176 (plus 1 vacancy) in the House. Subsequently, the Republicans gained a 33d Senate seat by the appointment of Gov. Edwin L. Mechem of New Mexico, following the death on November 18 of Democratic Sen. Dennis Chavez.

In 35 races for governorships, Democrats won 20, and Republicans 15. In consequence, 33 of the 50 governorships became Democratic, and 17 Republican, producing a net gain of 1 for the Republicans. Republicans overturned 7 Democratic administrations, including those of the large industrial states of Pennsylvania, Ohio, and Michigan, and that of Oklahoma for the first time in history; but Democrats replaced Republicans in 6 states, including Massachusetts, New Hampshire, and Vermont. Voter dissatisfaction with incumbent governors, not generally matched in the case of incumbents in Congress, was attributed to higher taxes and to problems involved in providing expanded public services.

President Kennedy, clearly the national leader of the Democratic Party, was everywhere regarded as the prospective party nominee for reelection in 1964. The reelection of Nelson A. Rockefeller as governor of New York made him a front runner for the Republican presidential nomination, and the election of William W. Scranton and George W. Romney as governors, respectively, of Pennsylvania and Michigan, brought them into prominent consideration. Sen. Barry M. Goldwater of Arizona continued to receive support from conservatives in the Republican Party. (See also DEMOCRATIC PARTY; ELECTIONS, U.S.; REPUBLICAN PARTY.)

The restoration of the White House, under Mrs. John F. Kennedy's direction, continued in 1962. This photo is of the Red Room.

UPI

A decision of the Supreme Court on March 26 that federal courts had jurisdiction over state legislative apportionment issues, arising under the 14th Amendment to the federal Constitution, brought action or litigation on reapportionment in many states. (See also REAPPORTIONMENT AND REDISTRICTING.)

National Economy.—In 1962, Congress appropriated a peacetime record of $92,266,154,659 (the president had requested $96,928,562,615), and approved $9,996 million in permanently recurring appropriations, chiefly for interest on the national debt. Expenditures of the federal government for the fiscal year 1962 totaled $87.7 billion, and receipts a record $81.4 billion. The resulting deficit of $6.3 billion had been exceeded in peacetime only in the fiscal year 1959. The gross direct debt of the federal government on Nov. 30, 1962, was $305.4 billion, as compared with $296.2 billion at the end of 1961.

On April 10–11, 1962, several steel companies announced price increases averaging $6 per ton. Regarding this action as a threat to his policy of promoting economic growth without inflation, President Kennedy denounced it on April 11 as "a wholly unjustifiable and irresponsible defiance of the public interest." The administration brought pressure to bear on the industry by threatening the loss of government contracts, by taking steps toward prosecution under the antitrust laws, and by

persuading some industry leaders to forgo the price rise. On April 13–14, the industry rescinded the increase. The president's victory was generally popular, but many businessmen resented administration pressures and what they construed as antibusiness attitudes. In a number of public statements, the president therefore undertook to reassure business.

The stock market suffered a sharp decline on May 28, with losses in value aggregating $20.8 billion, but prices rallied the next day, and 60% of the losses were recovered. The New York Stock Exchange reported that the sale of securities by individual investors had caused the decline, and that purchases by banks and mutual funds had aided the recovery. Prices again declined sharply on June 13–14, with the Dow-Jones industrial average dropping to 563, the lowest point of the year. Administration officials viewed the market fluctuations as the adjustment of prices to real values and expressed their confidence in the soundness of the economy. By mid-November, average stock prices were 15% above the June low, but 17% below the peak of December 1961. (See also Stocks and Bonds.)

The gross national product, which was $518.7 billion in 1961, rose to a seasonally adjusted annual rate of $555.3 billion in the third quarter of 1962. Total personal income, which had been $416.4 billion in 1961, increased steadily from a seasonally adjusted annual rate of $428.8 billion in January to $447.4 billion (preliminary figure) in November. (See also Income.) Civilian employment, which was 67,824,000 in October 1961, was 65,058,000 in January 1962. It rose steadily to 69,762,000 in August and then declined irregularly to 67,981,000 in November. Unemployment, which was 4,091,000 in December 1961 and 4,663,000 in January 1962, generally declined, with upward fluctuations in June and July, to 3,294,000 in October, but rose again to 3,801,000 in November, when the seasonally adjusted rate of unemployment was 5.8% of the civilian labor force. Average weekly hours of production workers in manufacturing establishments (seasonally adjusted) rose only slightly, from 40.2 in October 1961 to 40.5 in September 1962, and stood at 40.4 (preliminary figure) in November. Average weekly earnings in the same establishments were $94.54 in October 1961 and $97.36 (preliminary figure) in November 1962. (See also Labor; Wages and Hours.)

"I'm Making a Few Alterations."

The value of new construction, at seasonally adjusted annual rates, was $59,019 million in January 1962. After a decline to $56,811 million in February, it rose irregularly to a high of $62,829 million in August and stood at $62,646 million in October. (See also Housing.)

The consumer price index (1957–59 = 100) was 104.5 in January 1962, rose steadily to 106.1 in September, and declined slightly to 106.0 in October. The index of food prices, which was 102.5 in January, rose to 104.8 in September and decreased to 104.3 in October. The index of prices received by farmers for all products (1910–14 = 100), which was 242 in January, fluctuated to a high of 250 in September and stood at 245 in November. The parity ratio was 80 in January and, after modest fluctuations, was again 80 in November. (See also Cost of Living.)

Exports of United States merchandise totaled $1,617.2 million in January 1962, rose steadily to a high of $1,948.5 million in June, and declined irregularly to $1,593.1 million in October. General imports, which were $1,372.6 million in January, fluctuated to a high of $1,453.5 million in May and were $1,438.9 million in October. (See also International Trade.) Seasonally adjusted manufacturers' sales were $32.04 billion in January, rose to $33.5 billion in May, and after modest fluctuations reached a high of $33.68 billion in September before declining to $33.33 billion in October. Personal consumption expenditures, which totaled $338.1 billion in 1961, were at a seasonally adjusted annual rate of $350.2 billion in the first quarter of 1962 and of $358.2 billion in the third. Corporate profits after taxes were at a seasonally adjusted annual rate of $25.6 billion in the first quarter and $26.1 billion in the second. (See also Business Data, U.S.) The seasonally adjusted index of industrial production (1957–59 = 100) rose from 114.3 in January to 119.9 in September and stood at 119.5 (preliminary figure) in November. (See also Industrial Production.)

Consumer credit was $56,278 million in January and rose irregularly to $59,744 million in October. Mortgage debt increased (preliminary figures) from $229.8 billion at the end of the first quarter of 1962 to an all-time high of $236.5 billion at the end of the second. Discount rates at all Federal Reserve banks remained at 3%, a rate which had prevailed since August–September 1960. United States gold reserves, which had declined from $22,857 million at the end of 1957, totaled $16,847 million in January 1962 and $16,081 million in September. (See also Banking; Consumer Credit.)

Organized Labor.—On February 24, the AFL-CIO Executive Council suggested a "more adequate and aggressive program" to combat unemployment. Contending that unemployment rather than inflation presented the greater threat to the economy, it proposed vigorous collective bargaining policies, an extensive public works program, and, in times of unemployment, a shorter workweek without a reduction in pay. At its meeting in Bal Harbour, Fla., on February 19–26, the council also advocated reduced taxes for low-income groups, greater benefits and flexibility in unemployment compensation systems, the increase of the minimum wage to $1.50 per hour and the extension of coverage of the law, and the enactment of legislation to provide medical care for the aged under Social Security.

In a statement of administration labor-management policy, Secretary of Labor Arthur J. Goldberg said on February 23 that government must

"give more help to the collective bargaining process" and "increasingly provide guidelines" for settlements in the public interest. George Meany, president of the AFL-CIO, replied on February 26 that the role of government was one of "mediation, conciliation," or other aid to "industrial peace," but not assertion of "the national interest," which he regarded as "infringing on the right of free people and free society." The AFL-CIO Executive Council, in Chicago on August 13, approved plans to achieve through collective bargaining and legislation a national 35-hour workweek without pay reductions. The opposition of the administration to this proposal was expressed by Goldberg, who met with the council on August 25.

The Supreme Court held (5–3) on June 18 that federal courts were not authorized by law to halt strikes called in violation of a labor contract pledge against them. (See also LABOR.)

Civil Liberties.—The most controversial ruling of the Supreme Court in 1962 held, in a 6–1 vote announced on June 25, that a state-recommended nondenominational prayer could not be used to open school sessions in New York. Justice Hugo L. Black in the opinion of the court said that the prayer, from which pupils could be excused on request, was a governmental religious activity violating the "establishment of religion" prohibition in the 1st Amendment to the Constitution.

During the year the Department of Justice brought additional suits in Alabama, Georgia, and Mississippi to end racial discrimination in voting rights. (See also CIVIL LIBERTIES; LAW.)

Desegregation.—Rioting by students and outsiders at the University of Mississippi at Oxford, Miss., on September 30–October 1 accompanied the court-ordered registration of James H. Meredith, a Negro, as a student. Two persons were killed. For a time resistance by Gov. Ross R. Barnett complicated the registration. United States marshals were reinforced by national guardsmen and by federal troops, and by October 2 troops stationed in and near Oxford numbered 13,500. Former Maj. Gen. Edwin A. Walker and others were arrested on charges of inciting part of the disturbances. Meredith attended classes beginning on October 1 under the gradually relaxed escort of United States marshals. (See also EDUCATION; MISSISSIPPI.)

The President's Committee on Equal Employment Opportunity, headed by Vice President Lyndon B. Johnson, announced the agreement of 31 leading defense contractors on February 7 to the elimination of employment discrimination against minorities. Herbert Hill of the National Association for the Advancement of Colored People said on April 5 that the pledges, to which others had been added, "resulted in more publicity than progress." On November 15, 119 of 131 national unions of the AFL-CIO signed antidiscrimination pledges with the committee.

Racial integration in all military Reserve units was ordered by the Department of Defense on April 3. The order did not, however, apply to the National Guard units under the command of state governors (in 10 states these were reported to be segregated). President Kennedy, on November 20, issued an executive order prohibiting racial or religious discrimination in housing built or purchased with federal assistance or financed by federally insured mortgages.

The Department of Justice brought suit in a federal court at Richmond, Va., on September 17 to prohibit segregation in Prince George County public schools, which receive federal aid because of their location in an impacted area where federal military and civilian personnel live. In many communities school and other desegregation proceeded without incident during the year, although frequently only on a token basis.

(For additional references, see the Index entry, *United States.*)

FRANKLIN L. BURDETTE,
Professor and Director, Bureau of Governmental Research, University of Maryland.

Sen. John McClellan (left) and Agriculture Secretary Orville Freeman enter Senate hearing room on June 28 as committee investigates the case of financier Billie Sol Estes.

WIDE WORLD

UNITED STATES AIR FORCE. See AIR FORCE, U.S.
UNITED STATES ARMY. See ARMY OF THE U.S.
UNITED STATES BUREAU OF MINES. See MINING.
UNITED STATES COAST AND GEODETIC SURVEY. See COAST AND GEODETIC SURVEY, U.S.
UNITED STATES COAST GUARD. See COAST GUARD, U.S.

UNITED STATES CONGRESS

The Congress of the United States, legislative branch of the federal government, consists of the Senate, the 100 members of which are elected for six-year terms; and the House of Representatives, the 435 members of which are elected for two-year terms. The members of Congress receive salaries of $22,500; the salary of the speaker of the House of Representatives is $35,000, plus $10,000 for expenses.

The 2d session of the 87th Congress was held from Jan. 10 to Oct. 13, 1962. The 1st session of the 88th Congress convened on Jan. 9, 1963; its composition was as follows: Senate—67 Democrats and 33 Republicans; House of Representatives—258 Democrats, 176 Republicans, 1 vacancy, and 1 resident commissioner. The vacancy was filled by the election of Don H. Clausen, Republican, from California's 1st District on Jan. 22, 1963. A list of the members of Congress as of Jan. 9, 1963, appears on pages 714–715.

(For information on major congressional activities in 1962, see UNITED STATES—*The United States in 1962;* also Index entries on special subjects, such as *Foreign Aid Programs, U.S.; Housing; Labor;* and *Taxation.*)

UNITED STATES INFORMATION AGENCY

As a separate federal agency, USIA tells the United States story abroad. It seeks to make national policies, according to Edward R. Murrow, director, "everywhere intelligible and, wherever possible, palatable." In 1962 it operated through 219 field posts associated with American diplomatic missions in 99 countries.

In 1962 the Voice of America, the radio service of the agency, regularly broadcast by short wave in 38 languages for a total of over 740 hours

(*Continued on p. 716*)

EIGHTY-EIGHTH CONGRESS OF THE UNITED STATES
(FIRST SESSION)
(Membership as of Jan. 22, 1963)

SENATE

(Democrats, 67; Republicans, 33; total, 100)

President: Vice President Lyndon B. Johnson, Texas
President Pro Tempore: Carl Hayden, Ariz.
Secretary: Felton M. Johnston

Majority Leader: Mike Mansfield, Mont.
Minority Leader: Everett McKinley Dirksen, Ill.

Letters after senators' names refer to party affiliation—D for Democrat, R for Republican. Single asterisk (*) denotes term expiring in January 1965; double asterisk (**), term expiring in January 1967; triple asterisk (***), term expiring in January 1969; dagger (†), appointment to serve until next election as provided by law.

Alabama
***Lister Hill, D
**John Sparkman, D

Alaska
**E. L. Bartlett, D
***Ernest Gruening, D

Arizona
***Carl Hayden, D
*Barry Goldwater, R

Arkansas
**John L. McClellan, D
***J. W. Fulbright, D

California
***Thomas H. Kuchel, R
*Clair Engle, D

Colorado
**Gordon Allott, R
***Peter H. Dominick, R

Connecticut
*Thomas J. Dodd, D
***Abraham Ribicoff, D

Delaware
*John J. Williams, R
**J. Caleb Boggs, R

Florida
*Spessard L. Holland, D
***George A. Smathers, D

Georgia
**Richard B. Russell, D
***Herman E. Talmadge, D

Hawaii
*Hiram L. Fong, R
***Daniel K. Inouye, D

Idaho
***Frank Church, D
**Len B. Jordan, R

Illinois
**Paul H. Douglas, D
***Everett M. Dirksen, R

Indiana
*Vance Hartke, D
***Birch Bayh, D

Iowa
***Bourke B. Hickenlooper, R
**Jack Miller, R

Kansas
***Frank Carlson, R
**James B. Pearson, R

Kentucky
**John Sherman Cooper, R
***Thruston B. Morton, R

Louisiana
**Allen J. Ellender, D
***Russell B. Long, D

Maine
**Margaret Chase Smith, R
*Edmund S. Muskie, D

Maryland
*J. Glenn Beall, R
***Daniel B. Brewster, D

Massachusetts
**Leverett Saltonstall, R
*Edward M. Kennedy, D

Michigan
**Pat McNamara, D
*Philip A. Hart, D

Minnesota
**Hubert H. Humphrey, D
*Eugene J. McCarthy, D

Mississippi
**James O. Eastland, D
*John Stennis, D

Missouri
*Stuart Symington, D
***Edward V. Long, D

Montana
*Mike Mansfield, D
**Lee Metcalf, D

Nebraska
*Roman L. Hruska, R
**Carl T. Curtis, R

Nevada
***Alan Bible, D
*Howard W. Cannon, D

New Hampshire
***Norris Cotton, R
**Thomas J. McIntyre, D

New Jersey
**Clifford P. Case, R
*H. A. Williams, Jr., D

New Mexico
**Clinton P. Anderson, D
†E. L. Mechem, R

New York
***Jacob K. Javits, R
*Kenneth B. Keating, R

North Carolina
***Sam J. Ervin, Jr., D
**B. Everett Jordan, D

North Dakota
***Milton R. Young, R
*Quentin N. Burdick, D

Ohio
***Frank J. Lausche, D
*Stephen M. Young, D

Oklahoma
***A. S. Mike Monroney, D
†J. Howard Edmondson, D

Oregon
***Wayne Morse, D
**Maurine B. Neuberger, D

Pennsylvania
***Joseph S. Clark, D
*Hugh Scott, R

Rhode Island
*John O. Pastore, D
**Claiborne Pell, D

South Carolina
***Olin D. Johnston, D
**Strom Thurmond, D

South Dakota
**Karl E. Mundt, R
***George McGovern, D

Tennessee
**Estes Kefauver, D
*Albert Gore, D

Texas
*Ralph Yarborough, D
**John G. Tower, R

Utah
***Wallace F. Bennett, R
*Frank E. Moss, D

Vermont
***George D. Aiken, R
*Winston L. Prouty, R

Virginia
*Harry Flood Byrd, D
**A. Willis Robertson, D

Washington
***Warren G. Magnuson, D
*Henry M. Jackson, D

West Virginia
**Jennings Randolph, D
*Robert C. Byrd, D

Wisconsin
*William Proxmire, D
***Gaylord Nelson, D

Wyoming
*Gale W. McGee, D
**Milward L. Simpson, R

HOUSE OF REPRESENTATIVES

(Democrats, 258; Republicans, 177; total, 435)

Speaker: John W. McCormack, Mass.
Clerk: Ralph R. Roberts

Majority Leader: Carl Albert, Okla.
Minority Leader: Charles A. Halleck, Ind.

Letters after representatives' names refer to party affiliation—D for Democrat, R for Republican. The abbreviation "At-L." in place of congressional district number means "representative at large." Asterisk (*) before member's name indicates reelection in 1962 (served in 87th Congress).

Alabama
At-L. *G. W. Andrews, D
At-L. *C. Elliott, D
At-L. *G. Grant, D
At-L. *G. Huddleston, Jr., D
At-L. *R. E. Jones, Jr., D
At-L. *A. Rains, D
At-L. *K. A. Roberts, D
At-L. *A. I. Selden, Jr., D

Alaska
At-L. *R. J. Rivers, D

Arizona
1. *J. J. Rhodes, R
2. *M. K. Udall, D
3. G. F. Senner, Jr., D

Arkansas
1. *E. C. Gathings, D
2. *W. D. Mills, D
3. *J. W. Trimble, D
4. *O. Harris, D

California
1. D. H. Clausen, R
2. *H. T. Johnson, D
3. *J. E. Moss, D
4. R. L. Leggett, D
5. *J. F. Shelley, D
6. *W. S. Mailliard, R
7. *J. Cohelan, D
8. *G. P. Miller, D
9. W. D. Edwards, D
10. *C. S. Gubser, R
11. *J. A. Younger, R
12. B. L. Talcott, R
13. *C. M. Teague, R
14. *J. F. Baldwin, Jr., R
15. *J. J. McFall, D
16. *B. F. Sisk, D
17. *C. R. King, D
18. *H. Hagen, D
19. *C. Holifield, D
20. *H. A. Smith, R
21. A. F. Hawkins, D
22. *J. C. Corman, D
23. *C. Doyle, D
24. *G. P. Lipscomb, R
25. R. B. Cameron, D
26. *J. Roosevelt, D
27. E. G. Burkhalter, D
28. *A. Bell, R
29. G. E. Brown, Jr., D
30. E. R. Roybal, D
31. C. H. Wilson, D
32. *C. Hosmer, R
33. *H. R. Sheppard, D
34. R. T. Hanna, D
35. *J. B. Utt, R
36. *B. Wilson, R
37. L. Van Deerlin, D
38. M. C. Martin, R

Colorado
1. *B. G. Rogers, D
2. D. G. Brotzman, R
3. *J. E. Chenoweth, R
4. *W. N. Aspinall, D

Connecticut
1. *E. Q. Daddario, D
2. W. L. St. Onge, D
3. *R. N. Giaimo, D
4. *A. W. Sibal, R
5. *J. S. Monagan, D
At-L. B. F. Grabowski, D

Delaware
At-L. *H. B. McDowell, Jr., D

Florida
1. *R. L. F. Sikes, D
2. *C. E. Bennett, D
3. C. Pepper, D
4. *D. B. Fascell, D
5. *A. S. Herlong, Jr., D
6. *P. G. Rogers, D
7. *J. A. Haley, D
8. *D. R. Matthews, D
9. D. Fuqua, D
10. S. Gibbons, D
11. E. J. Gurney, R
12. *W. C. Cramer, R

Georgia
1. *G. E. Hagan, D
2. *J. L. Pilcher, D
3. *E. L. Forrester, D
4. *J. J. Flynt, Jr., D
5. C. L. Weltner, D
6. *C. Vinson, D
7. *J. W. Davis, D
8. J. R. Tuten, D
9. *P. M. Landrum, D
10. *R. G. Stephens, Jr., D

Hawaii
At-L. T. P. Gill, D
At-L. S. M. Matsunaga, D

Idaho
1. C. I. White, D
2. *R. R. Harding, D

Illinois
1. *W. L. Dawson, D
2. *B. O'Hara, D
3. *W. T. Murphy, D
4. *E. J. Derwinski, R
5. *J. C. Kluczynski, D
6. *T. J. O'Brien, D
7. *R. V. Libonati, D
8. *D. Rostenkowski, D
9. *E. R. Finnegan, D
10. *H. R. Collier, R
11. *R. C. Pucinski, D
12. R. McClory, R
13. D. Rumsfeld, R
14. *E. J. Hoffman, R
15. C. T. Reid, R

16. °J. B. Anderson, R
17. °L. C. Arends, R
18. °R. H. Michel, R
19. R. T. McLoskey, R
20. °P. Findley, R
21. °K. J. Gray, D
22. °W. L. Springer, R
23. °G. E. Shipley, D
24. °M. Price, D

Indiana

1. °R. J. Madden, D
2. °C. A. Halleck, R
3. °J. Brademas, D
4. °E. R. Adair, R
5. °J. E. Roush, D
6. °R. L. Roudebush, R
7. °W. G. Bray, R
8. °W. K. Denton, D
9. °E. Wilson, R
10. °R. Harvey, R
11. °D. C. Bruce, R

Iowa

1. °F. Schwengel, R
2. °J. E. Bromwell, R
3. °H. R. Gross, R
4. °J. Kyl, R
5. °N. Smith, D
6. °C. B. Hoeven, R
7. °B. F. Jensen, R

Kansas

1. °R. Dole, R
2. °W. H. Avery, R
3. °R. F. Ellsworth, R
4. °G. E. Shriver, R
5. J. Skubitz, R

Kentucky

1. °F. A. Stubblefield, D
2. °W. H. Natcher, D
3. M. G. Snyder, R
4. °F. Chelf, D
5. °E. Siler, R
6. °J. C. Watts, D
7. °C. D. Perkins. D

Louisiana

1. °F. E. Hébert, D
2. °H. Boggs, D
3. °E. E. Willis, D
4. °J. D. Waggonner, Jr., D
5. °O. E. Passman, D
6. °J. H. Morrison, D
7. °T. A. Thompson, D
8. G. W. Long, D

Maine

1. °S. R. Tupper, R
2. °C. G. McIntire, R

Maryland

1. R. C. B. Morton, R
2. C. D. Long, D
3. °E. A. Garmatz, D
4. °G. H. Fallon, D
5. °R. E. Lankford, D
6. °C. M. Mathias, Jr., R
7. °S. N. Friedel, D

At-L. C. R. Sickles, D

Massachusetts

1. °S. O. Conte, R
2. °E. P. Boland, D
3. °P. J. Philbin, D
4. °H. D. Donohue, D
5. °F. B. Morse, R
6. °W. H. Bates, R
7. °T. H. Macdonald, D
8. °T. P. O'Neill, Jr., D
9. °J. W. McCormack, D
10. °J. W. Martin, Jr., R
11. °J. A. Burke, D
12. °H. Keith, R

Michigan

1. °L. N. Nedzi, D
2. °G. Meader, R
3. °A. E. Johansen, R
4. E. Hutchinson, R
5. °G. R. Ford, Jr., R
6. °C. E. Chamberlain, R
7. °J. G. O'Hara, D
8. °J. Harvey, R
9. °R. P. Griffin, R
10. °E. A. Cederberg, R
11. °V. A. Knox, R
12. °J. B. Bennett, R
13. °C. C. Diggs, Jr., D
14. °H. M. Ryan, D
15. °J. D. Dingell, D
16. °J. Lesinski, D
17. °M. W. Griffiths, D
18. °W. S. Broomfield, R

At-L. N. Staebler, D

Minnesota

1. °A. H. Quie, R
2. °A. Nelsen, R
3. °C. MacGregor, R
4. °J. E. Karth, D
5. D. M. Fraser, D
6. A. G. Olson, D
7. °O. Langen, R
8. °J. A. Blatnik, D

Mississippi

1. °T. G. Abernathy, D
2. °J. L. Whitten, D
3. °J. B. Williams, D
4. °A. Winstead, D
5. °W. M. Colmer, D

Missouri

1. °F. M. Karsten, D
2. °T. B. Curtis, R
3. °L. K. Sullivan, D
4. °W. J. Randall, D
5. °R. Bolling, D
6. °R. W. Hull, Jr., D
7. °D. G. Hall, R
8. °R. H. Ichord, D
9. °C. Cannon, D
10. °P. C. Jones, D

Montana

1. °A. Olsen, D
2. °J. F. Battin, R

Nebraska

1. °R. F. Beermann, R
2. °G. Cunningham, R
3. °D. Martin, R

Nevada

At-L. °W. S. Baring, D

New Hampshire

1. L. C. Wyman, R
2. J. C. Cleveland, R

New Jersey

1. °W. T. Cahill, R
2. °M. W. Glenn, R
3. °J. C. Auchincloss, R
4. °F. Thompson, Jr., D
5. °P. Frelinghuysen, Jr., R
6. °F. P. Dwyer, R
7. °W. B. Widnall, R
8. °C. S. Joelson, D
9. °F. C. Osmers, Jr., R
10. °P. W. Rodino, Jr., D
11. J. G. Minish, D
12. °G. M. Wallhauser, R
13. °C. E. Gallagher, D
14. °D. V. Daniels, D
15. E. J. Patten, D

New Mexico

At-L. °J. M. Montoya, D
At-L. °T. G. Morris, D

New York

1. °O. G. Pike, D
2. J. R. Grover, Jr., R
3. °S. B. Derounian, R
4. J. W. Wydler, R
5. °F. J. Becker, R
6. °S. Halpern, R
7. °J. P. Addabbo, D
8. °B. S. Rosenthal, D
9. °J. J. Delaney, D
10. °E. Celler, D
11. °E. J. Keogh, D
12. °E. F. Kelly, D
13. °A. J. Multer, D
14. °J. J. Rooney, D
15. °H. L. Carey, D
16. J. M. Murphy, D
17. °J. V. Lindsay, R
18. °A. C. Powell, D
19. °L. Farbstein, D
20. °W. F. Ryan, D
21. °J. C. Healey, D
22. °J. H. Gilbert, D
23. °C. A. Buckley, D
24. °P. A. Fino, R
25. °R. R. Barry, R
26. O. R. Reid, R
27. °K. St. George, R
28. °J. E. Wharton, R
29. °L. W. O'Brien, D
30. °C. J. King, R
31. °C. E. Kilburn, R
32. °A. Pirnie, R
33. °H. W. Robison, R
34. °R. W. Riehlman, R
35. °S. S. Stratton, D
36. F. J. Horton, R
37. °H. C. Ostertag, R
38. °C. E. Goodell, R
39. °J. R. Pillion, R
40. °W. E. Miller, R
41. °T. J. Dulski, D

North Carolina

1. °H. C. Bonner, D
2. °L. H. Fountain, D
3. °D. N. Henderson, D
4. °H. D. Cooley, D
5. °R. J. Scott, D
6. °H. R. Kornegay, D
7. °A. Lennon, D
8. °C. R. Jonas, R
9. J. T. Broyhill, R
10. °B. L. Whitener, D
11. °R. A. Taylor, D

North Dakota

1. °H. C. Nygaard, R
2. °D. L. Short, R

Ohio

1. C. W. Rich, R
2. °D. D. Clancy, R
3. °P. F. Schenck, R
4. °W. M. McCulloch, R
5. °D. L. Latta, R
6. °W. H. Harsha, R
7. °C. J. Brown, R
8. °J. E. Betts, R
9. °T. L. Ashley, D
10. H. E. Abele, R
11. O. P. Bolton, R
12. °S. L. Devine, R
13. °C. A. Mosher, R
14. °W. H. Ayres, R
15. R. T. Secrest, D
16. °F. T. Bow, R
17. °J. M. Ashbrook, R
18. °W. L. Hays, D
19. °M. J. Kirwan, D
20. °M. A. Feighan, D
21. °C. A. Vanik, D
22. °F. P. Bolton, R
23. °W. E. Minshall, R

At-L. R. Taft, Jr., R

Oklahoma

1. °P. Belcher, R
2. °E. Edmondson, D
3. °C. Albert, D
4. °T. Steed, D
5. °J. Jarman, D
6. °V. Wickersham, D

Oregon

1. °W. Norblad, R
2. °A. Ullman, D
3. °E. Green, D
4. R. B. Duncan, D

Pennsylvania

1. °W. A. Barrett, D
2. °R. N. C. Nix, D
3. °J. A. Byrne, D
4. °H. Toll, D
5. °W. J. Green, Jr., D
6. °G. M. Rhodes, D
7. °W. H. Milliken, R
8. °W. S. Curtin, R
9. °P. B. Dague, R
10. J. M. McDade, R
11. °D. J. Flood, D
12. °J. I. Whalley, R
13. °R. S. Schweiker, R
14. °W. S. Moorhead, D
15. °F. E. Walter, D
16. °J. C. Kunkel, R
17. °H. T. Schneebeli, R
18. °R. J. Corbett, R
19. °G. A. Goodling, R
20. °E. J. Holland, D
21. °J. H. Dent, D
22. °J. P. Saylor, R
23. °L. H. Gavin, R
24. J. D. Weaver, R
25. °F. M. Clark, D
26. °T. E. Morgan, D
27. °J. G. Fulton, R

Rhode Island

1. °F. J. St. Germain, D
2. °J. E. Fogarty, D

South Carolina

1. °L. M. Rivers, D
2. A. W. Watson, D
3. °W. J. B. Dorn, D
4. °R. T. Ashmore, D
5. °R. W. Hempshill, D
6. °J. L. McMillan, D

South Dakota

1. °B. Reifel, R
2. °E. Y. Berry, R

Tennessee

1. J. H. Quillen, R
2. °H. H. Baker, R
3. W. E. Brock, R
4. °J. L. Evins, D
5. R. Fulton, D
6. °R. Bass, D
7. °T. Murray, D
8. °R. A. Everett, D
9. °C. Davis, D

Texas

1. °W. Patman, D
2. °J. Brooks, D
3. °L. Beckworth, D
4. °R. Roberts, D
5. °B. Alger, R
6. °O. E. Teague, D
7. °J. Dowdy, D
8. °A. Thomas, D
9. °C. W. Thompson, D
10. °H. Thornberry, D
11. °W. R. Poage, D
12. °J. Wright, D
13. °G. Purcell, D
14. °J. Young, D
15. °J. M. Kilgore, D
16. E. Foreman, R
17. °O. Burleson, D
18. °W. Rogers, D
19. °G. Mahon, D
20. °H. B. Gonzalez, D
21. °O. C. Fisher, D
22. °B. Casey, D

At-L. J. R. Pool, D

Utah

1. L. J. Burton, R
2. S. P. Lloyd, R

Vermont

At-L. °R. T. Stafford, R

Virginia

1. °T. N. Downing, D
2. °P. Hardy, Jr., D
3. °J. V. Gary, D
4. °W. M. Abbitt, D
5. °W. M. Tuck, D
6. °R. H. Poff, R
7. J. O. Marsh, Jr., D
8. °H. W. Smith, D
9. °W. P. Jennings, D
10. °J. T. Broyhill, R

Washington

1. °T. M. Pelly, R
2. °J. Westland, R
3. °J. B. Hansen, D
4. °C. May, R
5. °W. Horan, R
6. °T. C. Tollefson, R
7. K. W. Stinson, R

West Virginia

1. °A. A. Moore, Jr., R
2. °H. O. Staggers, D
3. °J. M. Slack, Jr., D
4. °K. Hechler, D
5. °E. Kee, D

Wisconsin

1. °H. C. Schadeberg, R
2. °R. W. Kastenmeier, D
3. °V. W. Thomson, R
4. °C. J. Zablocki, D
5. °H. S. Reuss, D
6. °W. K. Van Pelt, R
7. °M. R. Laird, R
8. °J. W. Byrnes, R
9. °L. R. Johnson, D
10. °A. E. O'Konski, R

Wyoming

At-L. °W. H. Harrison, R

Puerto Rico

Resident Commissioner
°A. Fernós-Isern, D

per week. These programs were carried from 87 transmitters, 32 of them in the United States; other programs were taped in as many as 62 languages for some 2,500 medium-wave local stations abroad. Communist countries employed over 2,000 jamming transmitters to prevent reception, at a cost several times that of American broadcasts.

Television films were provided by the agency to stations in 57 countries to serve an estimated 55 million sets and 176 million viewers. Motion pictures were distributed in 52 languages through 210 film libraries maintained in 98 countries. A wireless file of news, some 10,000 words daily, was sent abroad for translation, supplemented by picture prints and negatives. Four magazines were published in Washington for use abroad; posts overseas produced 68 other magazines in 25 languages, issued 20 newspapers, and distributed 12.5 million pamphlets.

The agency maintained 181 libraries in 83 countries and, in addition, 84 reading rooms in 37 countries. They were stocked with 2.5 million books, a third of them in local languages. Binational cultural centers, providing study programs in English and other subjects in cooperation with leading local citizens, increased to 145 in 35 countries, 14 new ones being established in 1962 in Latin America. About 220,000 students were enrolled in English courses under agency auspices. Publication of 7.1 million copies of books was supported abroad, almost 5 million of them in translation. The Informational Media Guaranty Program provided for conversion to United States funds of $5.3 million of foreign currencies received by Americans from sale of publications in countries where currency could not readily be converted.

Congress appropriated for the fiscal year ending June 30, 1963, $129 million in operating funds (of $136.3 million requested), $10.3 million for construction of radio facilities, $8 million for special international exhibits, and $1 million for the Informational Media Guaranty Program—a total of $148.3 million. On Aug. 31, 1962, agency personnel totaled 11,028 (2,620 domestic employees, 1,645 Americans abroad, and 6,763 citizens of the host countries).

FRANKLIN L. BURDETTE,
Professor and Director, Bureau of Governmental Research, University of Maryland.

UNITED STATES MARINE CORPS. See MARINE CORPS, U.S.

UNITED STATES MARITIME ADMINISTRATION. See MERCHANT MARINE.

UNITED STATES MINT. See TREASURY DEPARTMENT, U.S.

UNITED STATES NAVY. See NAVY, U.S.

UNITED STATES OFFICE OF EDUCATION. See EDUCATION.

UNITED STATES SUPREME COURT. See LAW; SUPREME COURT.

UNITED STATES TARIFF COMMISSION. See TARIFFS.

UNITED STATES TREASURY. See TREASURY DEPARTMENT, U.S.

UNIVERSITIES. See COLLEGES AND UNIVERSITIES; EDUCATION.

UPPER VOLTA

The Republic of Upper Volta is a landlocked country in West Africa. It has an estimated area of 105,839 square miles, and a population (1961 est.) of 4,400,000, consisting largely of Voltaic and Mandé ethnic groups and a European minority of 3,000, mainly French. Ouagadougou (pop. est., 63,000) is the capital; Bobo-Dioulasso (pop., 51,000) is a principal economic center. French is the official language.

Government.—This former French overseas territory within French West Africa became independent on Aug. 5, 1960. The republic has a presidential system of government. Legislative power is vested in an unicameral Legislative Assembly of 75 members, elected for five-year terms by universal suffrage. In the elections of April 19, 1959, the Voltaic Democratic Union (UDV) won 64 seats. Maurice Yaméogo, leader of the UDV, was elected president of the republic by the National Assembly on Dec. 8, 1960. The republic is a member of the Council of the Entente.

Education and Religion.—School enrollment, 1960: 59,553 (5% of the school-age population), including primary, 56,598; secondary, 1,480; technical, 625; teacher-training, 850. The majority of the population holds animistic beliefs; the peoples in the northeast are mainly Muslims, and there is a small minority of Christians.

Finance.—Government revenue, 1961: 5,654 million francs CFA; expenditure, 7,771 million (246.85 francs CFA equal U.S.$1). The budget deficit was made up by contributions from France and the Council of the Entente Solidarity Fund. In 1962, West Germany granted Upper Volta 700 million francs CFA, and the European Development Fund contributed $8.4 million for various development projects.

Transportation.—Upper Volta's chief link to the sea is the Abidjan-Niger railroad, which runs southwestward from Ouagadougou, via Bobo-Dioulasso, to the port of Abidjan, Ivory Coast. All-weather roads connect the main towns and aggregate some 3,700 miles. There are international airports at Ouagadougou and Bargo, 11 miles from Bobo-Dioulasso.

Production.—About 90% of the population is engaged in agriculture or animal husbandry. Cattle, sheep, and goats are raised in the northern areas free from the tsetse fly; about 70,000 cattle and 170,000 sheep and goats are exported annually. Subsistence crops include millet, sorghum, corn, sweet potatoes, and yams. Cash crops are mainly peanuts (96,000 metric tons in 1961), cotton, rice, shea nuts, sesame, and sisal. Proved mineral deposits include gold, manganese, bauxite, and copper, but only a small amount of gold is extracted. Fishing is of economic importance. Industries include chiefly the processing of agricultural oils, cotton ginning, the manufacture of sisal twine, and handicrafts.

Foreign Trade.—Total exports, 1961: 882 million francs CFA; imports, 7,004 million. The chief export was live animals. Ghana was the principal customer; principal suppliers were France and Ghana. Much of Upper Volta's trade is with Ivory Coast but is not included in trade statistics.

Events, 1962.—Upper Volta continued to develop close ties with neighboring Ghana. The two countries had removed custom barriers and other trade restrictions in 1961, and they announced on Feb. 9, 1962, that an agreement had been reached to permit the free movement of peoples and goods in transit. The development was regarded as a preliminary step toward Upper Volta's eventual membership in the Union of African States, of which Ghana is the leading member.

Closer relations with Mali were achieved through the visit of Mali President Modibo Keita to Upper Volta in late March. In a joint communiqué, Presidents Yaméogo and Keita declared that their countries would follow a joint diplomatic policy as far as was possible.

As a further step toward complete independence, President Yaméogo, on March 9, called for the removal of all French troops and bases from Upper Volta. In late 1961, France transferred its gendarmerie, consisting of Voltaic officers in its colonial army, as well as its barracks in Ouagadougou and Bobo-Dioulasso, to the Upper Volta government. The national Army of Upper Volta was established in December 1961.

J. L. L.

URANIUM

In 1961, United States production of uranium oxide (U_3O_8) was 49% of world output (44% in 1960), according to the U.S. Bureau of Mines. Domestic output of uranium ore mined from over

1,000 mines totaled 8,041,329 short tons valued at $148 million, compared with 7,970,221 tons valued at $152.2 million in 1960. The yield of concentrates (from 26 mills) was 17,348 tons valued at nearly $290 million, compared with 17,646 tons valued at $330 million in 1960. The additional output of 51 tons of U_3O_8 in 1961 and 114 tons in 1960 came from processing phosphate rock in the eastern United States.

Uranium ore was produced by 13 states in 1961. These states, in the order of value of mine production, were: New Mexico ($62,482,000); Wyoming ($28,218,000); Utah ($25,734,000); Colorado ($21,509,000); Arizona ($4,965,000); Washington ($3,582,000); and Texas, South Dakota, Alaska, Oregon, Idaho, Montana, and Nevada ($1,809,000).

Uranium from foreign sources supplied 43% of the United States requirements in 1961, against 48% in 1960. Imports totaled 12,915 tons of contained U_3O_8, of which Canada supplied 8,735 tons. The remainder came from Australia, Belgium, the Republic of the Congo (Léopoldville), Portugal, and South Africa.

On Sept. 26, 1961, President Kennedy increased the quantity of enriched uranium to be made available for peaceful uses, domestically and abroad, from 100,000 to 165,000 kilograms of contained uranium-235.

As of Dec. 31, 1961, the United States uranium reserve was estimated at 74 million short tons containing 0.28% of U_3O_8, a decrease of about 8 million tons from the Dec. 31, 1960, estimate. In addition, approximately 1.3 million tons of ore was in government and private stockpiles.

World Production.—In 1961 the total free world output of uranium oxide was 35,850 short tons, 12% less than the 40,740 tons produced in 1960. Of the 1961 total, North America provided about 75% (United States, 48.5%; Canada, 27.4%). Of the eight other producing countries, South Africa supplied 5,468 short tons; Australia, 1,400 tons; and France (including estimates from the Malagasy Republic and Gabon), 1,637 tons. Under the terms of new arrangements reported by the South African Atomic Energy Board, that country will continue to produce uranium until 1970. In the first half of 1962, South Africa's output of uranium oxide was 2,492 short tons, 15.6% less than the 2,954 tons produced in the same period of 1961.

(See also Atomic Energy and the Index entry, *Uranium.*)

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URBAN PLANNING AND RENEWAL. See City Planning; Housing.

URBAN TRANSIT

As of Jan. 1, 1962, the urban transit industry in the United States was composed of 1,247 operating companies: 1,217 were engaged exclusively in the operation of motorbuses; 12 companies had composite trolley coach and motorbus fleets; 15 had composite fleets including motorbuses, electric railway cars, and/or trolley coaches; and 3 companies were using railway facilities exclusively in passenger service. The 6 rapid transit systems (elevated and subway operations), are included in the foregoing. Companies engaged exclusively in electric railway freight and switching were eliminated from industry statistics, effective Jan. 1, 1961.

During 1962 the transit industry operated nearly 2.1 billion miles and carried more than 8.7 billion passengers. Some 116,046 miles of route were served by 63,730 passenger vehicles. The facilities to furnish the service required an investment of $3.9 billion. The average annual compensation for each employee during 1962 was $5,820. The total wages and salaries of employees amounted to $857 million.

U.S. URBAN TRANSIT INDUSTRY

	Calendar year 1962 (preliminary)	Calendar year 1961 (final)
Results of Operation:		
Operating revenues	$1,387,460,000	$1,389,700,000
Operating expenses[1]	1,296,000,000	1,295,770,000
Operating taxes[2]	66,960,000	67,330,000
Net operating revenues[3]	$ 24,500,000	$ 26,600,000
Operating Statistics:		
Number of passengers (total)	$8,742,235,000	$8,883,000,000
Vehicle miles operated	2,046,300,000	2,077,100,000
Route miles operated[4]	116,046	116,118
Passenger vehicles owned[4]	63,730	64,012
Employees (average)	147,300	151,800
Total payroll	$ 857,000,000	$ 856,400,000

[1] Including depreciation. [2] Except federal income and excess profits taxes. [3] Before income deductions and federal income and excess profits taxes. [4] As of December 31.

Material, supplies, and other services called for a further expenditure of $439 million. Operating taxes, including all taxes except federal income taxes, amounted to $67 million in 1962.

(See also City Planning; Highways; Motor Transportation.)

A. W. Baker,
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URUGUAY

The Republic of Uruguay, with an area of 72,172 square miles, is the smallest country in South America. It lies between Argentina and Brazil on the South Atlantic coast. In 1962 its estimated population was 2,650,000. Montevideo, the capital, has nearly half this total, while Paysandú has about 43,000, Salto 40,000, and Mercedes 24,000. The official language is Spanish. About 85% of the population is white; most nonwhites (Negro, 2%; mestizo, 13%) live in the interior. The average standard of living is the highest in Latin America, but poverty is increasing widely.

Government.—The 1951 constitution provides for the exercise of executive power by the 9-member National Council of Government (NCG). The leading party by law holds 6 seats, and the second party 3 seats; in the 1959–63 term they were the Blanco (or National) and the Colorado parties, respectively. Faustino Harrison became presi-

Draped with black funeral crepe, the last streetcar to operate in Washington, D.C., makes final run on January 27.

WIDE WORLD

dent of the NCG and titular chief of government for one year on March 1, 1962, succeeding Eduardo Víctor Haedo. The cabinet is composed of nine executive department heads or ministers. The bicameral General Assembly comprises a 31-member Senate and a 99-member Chamber of Deputies; it legislates, can override NCG vetoes, and can interpellate ministers. The Assembly also elects the 5-member Supreme Court of Justice. (See also below, *Events, 1962.*)

A principal governmental problem is Uruguay's overgrown and inefficient bureaucracy. More serious is the diffusion of power and responsibility resulting from the use of the NCG. Uruguay's principal asset is its high level of true political democracy and freedom. The country is highly socialized, with very broad social welfare programs and government ownership of most public utilities, three of the largest banks, and several important businesses.

Education and Religion.—Compulsory free public primary education was established in 1877. About 57% of the school-age population attend school. In 1960 there were 15,433 students and 1,600 teachers in the University of the Republic in Montevideo. In 1958 there were 1,757 government primary schools (227,000 pupils), and 317 government and private secondary schools (92,500). About 85% of the population is literate. In 1960 the 27 daily newspapers had a total daily circulation of 750,000, the highest per capita figure in Latin America.

Religious freedom is complete, and many Protestant sects hold services. About 90% of the population is nominally Roman Catholic.

Finance.—The peso is the monetary unit. In April 1962 it was effectively devalued to an official rate of 10.40 pesos to U.S.$1. On Dec. 31, 1962, the open market exchange rate was 10.98. The 1961 central government budget expenditure was 2,217.3 million pesos (1,425.2 million in 1960); revenue was 2,104.7 million (1,454.9 million). Deficits in the government businesses raised the total deficit to 210.1 million pesos. Public debt in domestic circulation totaled 2,331 million pesos on Dec. 31, 1961, with 801.1 million authorized but not issued.

Transportation and Communications.—The government railroad system includes 1,860 miles of lines. A six-year 358 million peso modernization and renovation program for its seriously obsolete physical plant was begun in 1960. Many improvements in track and rolling stock were made in 1962, but a pattern of falling passenger and rising freight traffic is developing.

There are about 5,800 miles of highways of all types, of which 1,320 are all-weather. In 1961 a program to build both trunk and farm-to-market roads in the center of the country was begun with United States aid. On Oct. 27, 1962, the World Bank made an $18.5 million loan for the rebuilding of the 320-mile north-south highway. In 1959, 160,000 motor vehicles were registered, the highest per capita figure in Latin America. There are 500 miles of navigable waterways. The domestic airline, Primeras Líneas Uruguayas de Navegación Aerea (PLUNA) is government owned; it and many foreign airlines provide international service at Carrasco National Airport.

A third television station was opened in Montevideo in April 1962; television sets numbered 70,000 in 1962. There are about 80 radio stations and 800,000 radios (1959); telephones total 141,500 (1960). United States and World Bank loans are aiding the expansion of the telephone system, which is government owned.

Production.—Animal husbandry and agriculture produce about 30% of the national income; about 45% of the population is considered rural. The 1961 census reported 8.7 million beef cattle, 21.5 million sheep, and the use of 82.5% of the productive land for grazing. Stock raising and its derivatives produce about 70% of all agricultural income. Poor weather and poor herd management have resulted in some inadequacy of domestic meat supply, as well as a decrease in exports. Deliveries of cattle to packing plants were encouraged by cash bonuses during part of 1962. A near-record wool clip in 1960–61 fell somewhat in 1961–62, and exports of wool were off 24% to about 156,000 half-ton bales.

Poor-to-dry weather in 1961–62, plus smaller plantings, caused wheat production to fall to 374,700 metric tons (413,600 in 1959–60), and corn to 149,100 metric tons (220,000). However, production of less important crops rose: sunflower seed to 82,800 metric tons (from 57,000), and rice to 61,800 metric tons (53,900). Subsidies for wheat and cotton were announced for 1963.

Mineral deposits are scant. Evidence of petroleum was found in 1962. Low-grade iron ore cannot be mined economically. Only sand, marble, and stone are exploited. Electric power production, in large part hydroelectric, was curtailed by drought conditions (1,017 million kw.-hr. in 1960).

A reported 1,300 businesses were closed in Montevideo from January to April 1962, and major factories, especially textiles, went on short workweeks, as economic stagnation progressed. Living costs rose 10% in 1961 and an additional 5.1% by June 1962, raising the cost-of-living index (1948 = 100) to 580.5. An estimated 100,000 persons were unemployed in Montevideo alone.

Foreign Trade.—Total exports, 1961: $174.7 million ($129.4 million in 1960); imports, $207.6 million ($228.6 million). First-half 1962 figures showed a deficit of $10.7 million, and this was expected to increase sharply in the last half of the year. Leading exports in 1961: wool, $109.8 million ($66.8 million in 1960); meat, $27.4 million ($30.8 million); and hides, $16.2 million ($15.3 million). Imports were raw materials (34.2%), vehicles and parts (16.1%), machinery and apparatus (13.5%), and fuels and lubricants (12.9%). Principal buyers of exports in 1961 were Great Britain (24.2%), the United States (13.5%), Netherlands (11.4%), and West Germany (8.5%). Principal suppliers in 1961 were the United States (22.6%), West Germany (12.5%), Great Britain (10.3%), and Brazil (8.4%).

Events, 1962.—Government economic reforms were found to be continuing satisfactorily by the International Monetary Fund (IMF), which in October renewed its $30 million standby credit. But most observers found much evidence that Uruguay's economy was in great difficulty and that the IMF views were self-deceiving. A government deficit of 350 million pesos was expected for 1962. The government concluded several loans with the Inter-American Development Bank, as well as several loans with the Alliance for Progress, which were partly intended as make-work projects. In March, a four-point plan for economic development under the Alliance was presented. It involved the creation of a national planning board, new statistical services, economic cooperation with other countries, and development of a 10-year development program. The government also had an extensive program of aid to agriculture and of land reform.

In the quadrennial election held on November 25 the Blanco Party won a narrow victory over the Colorado Party to retain control of the National Council of Government, although it lost its majorities in both houses of Parliament. The voters rejected a proposition to return the country to a one-man presidential form of government.

Uruguay was one of the few Latin American governments that maintained relations with Cuba, but became very critical of Cuban actions in late 1962. Anti-Semitic terrorist groups were active in Montevideo in August. Membership was maintained by Uruguay in the Latin American Free Trade Area (LAFTA), but impatience was evidenced at the slowness of negotiations and mutual concessions.

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USSR. See UNION OF SOVIET SOCIALIST REPUBLICS.

UTAH

A Western state of the United States, Utah ranks 11th among the states in area (land, 82,339 square miles; inland water, 2,577) and 38th in population (967,000 on July 1, 1962, an 8.6% increase from the 1960 census figure of 890,627). Urban places with populations above 7,500 in 1960:

Bountiful	17,039	Ogden	70,197
Brigham City	11,728	Orem	18,394
Cedar City	7,543	Provo	36,047
Clearfield	8,833	Roy	9,239
Kearns (unincorporated)	17,172	Salt Lake City (*capital*)	189,454
Layton	9,027	South Salt Lake	9,520
Logan	18,731	Springville	7,913
Murray	16,806	Tooele	9,133

Government.—Chief executive and judicial officers in 1962 included George D. Clyde (Republican), governor, serving a four-year term; Lamont F. Toronto, secretary of state; Sharp M. Larsen, treasurer; Sherman J. Preece, auditor; A. Pratt Kesler, attorney general; Marion Merkley, superintendent of public instruction; and Lester A. Wade, chief justice of the 5-member Supreme Court.

The Utah Legislature, which convenes in odd-numbered years, comprised 14 Democrats and 11 Republicans in the Senate in 1962 and 36 Democrats and 28 Republicans in the House of Representatives.

Finance.—In the 1961 fiscal year, revenue of $227,175,092 included $105,304,061 from state taxes and $49,298,004 in federal funds. Chief tax yields were the 2% general sales tax ($29,434,184) and taxes on individual incomes ($17,061,792) and motor fuels ($19,588,234). Spending of $243,100,636 included $84,520,513 for education, $30,114,325 for health, welfare, and safety, and $52,739,864 for highways.

Education.—In the fall of 1962, public elementary schools staffed by 5,123 teachers enrolled 152,923 pupils; secondary schools with 4,309 teachers enrolled 105,403; and (fall 1961) parochial schools with 147 teachers enrolled 4,812. College enrollment (fall 1961) totaled 35,574.

Estimated public school spending in the 1961–62 school year totaled $111 million, including current expenditures of $81.28 million ($347 per pupil) and capital outlays of $27 million. Revenue of $109,275,000 was drawn chiefly from state funds ($48 million) and local districts ($50 million). Teachers' salaries averaged $5,066 (high school, $5,100; elementary, $5,000). Actual spending for higher education (1961 fiscal year) amounted to $34,999,000.

Public Assistance.—In the 1962 fiscal year, public assistance payments to a monthly average of 31,489 persons totaled $18,035,121. This amount included $6,951,222 for dependent children and $6,634,821 for the aged.

Transportation and Communications.—With 316 miles of highway construction and reconstruction completed during 1961, *highways and roads on* Jan. 1, 1962, totaled 34,514 miles (19,118 surfaced). These served 461,445 *motor vehicles* (as registered Dec. 31, 1961), including 343,235 automobiles. Operating in the state were (1961) 8 *railroads* (using 1,759 line miles of track); (1962) 5 regularly scheduled *airlines;* and 48 commercial and municipal *airports and airfields.*

Communications media included (1962) 30 AM and 2 FM *radio stations;* 5 VHF *television stations;* 5 daily *newspapers* (circulation, 242,402) and 51 other newspapers (111,284); and (January 1) 111,800 business and 274,800 residential *telephones.*

Labor Force.—Nonagricultural employment in the state in 1961 averaged 273,500, compared with 264,800 for 1960. Of nonfarm employees in 1961, 23.9% were in government services, 22% in trade, and 18.2% in manufacturing. Insured unemployment averaged 7,000 in 1961, compared with 6,000 for 1960.

Manufacturing.—Manufacturing engaged 44,772 workers in 1960, including 29,639 in production, and provided a payroll of $244,264,000. Adjusted value added by manufacture totaled $544,644,000. The three leading industries in 1960 were primary metals (8,516 workers who received $59,033,000 in wages and added $196,194,000 in adjusted value by manufacture); food and kindred products (9,277; $38,963,000; $90,873,000); and transportation equipment (4,887; $32,891,000; $63,692,000).

Mining.—In 1961, Utah ranked 14th among the states in the value of its mineral output, with 2.24% of the national total. Metals accounted for 57% of the total value, of which copper supplied 31%. The state was second in output of asphalt, copper, gold, molybdenum, and vanadium; third in carbon dioxide, lead, potassium salts, and silver; and fourth in iron ore and uranium.

UTAH MINERAL PRODUCTION, 1961
(In short tons, except as noted)

Mineral	Quantity	Value
Asphalt (gilsonite)	...[1]	...[1]
Coal	5,159,000	$ 31,126,000
Copper (recoverable content of ores)	213,534	128,120,000
Gold (ounces)	342,988	12,005,000
Iron ore, usable (long tons)	3,533,000	25,493,000
Lead (recoverable content of ores)	40,894	8,424,000
Lime	142,000	2,626,000
Natural gas (million cu. ft.)	57,175	8,976,000
Petroleum (1,000 bbl.)	33,118[2]	91,075,000[2]
Salt (common)	249,000	3,187,000
Sand and gravel	14,060,000	8,448,000
Silver (ounces)	4,798,000	4,435,000
Stone	1,808,000	3,219,000
Uranium ore	1,098,783	25,734,000
Zinc (recoverable content of ores)	37,239	8,565,000
Other minerals	...	46,825,000
Total	...	$406,617,000[3]

[1] Figure withheld to protect individual company's confidential data. [2] Preliminary. [3] Total adjusted to eliminate duplication in the value of raw materials used in the manufacture of cement and lime. (Source: U.S. Bureau of Mines.)

Agriculture.—Cash farm income for the first nine months of 1962 (excluding government payments) totaled $110,622,000, compared with $106,843,000 for the corresponding period of 1961. For the full year 1961, income comprised $122,920,000 from livestock, $32,575,000 from crops, and $8,041,000 in government payments. Principal income sources in 1961 were cattle, $44,439,000; wholesale milk, $29,093,000; and turkeys, $14,163,000.

The state's 18,000 farms in 1959 had an acreage of 12,689,000 (1,062,000 in harvested cropland). Livestock on farms on Jan. 1, 1962, included 698,000 cattle, 1,258,000 sheep, and 1,678,000 chickens.

UTAH CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Apples (1,000 bu.)	386	200	430
Apricots (tons)	5,780	2,800	2,100
Cherries (tons)	5,460	4,200	6,600
Hay (1,000 tons)	1,307	1,287	1,371
Peaches (1,000 bu.)	482	210	290
Potatoes (1,000 cwt.)	1,530	1,530	1,305
Sugar beets (1,000 short tons)	454	323	412
Wheat (1,000 bu.)	6,879	4,328	5,446

(Source: U.S. Department of Agriculture.)

Events, 1962.—Republicans made a clean sweep of congressional and state offices in the elections of November 6. U.S. Sen. Wallace F. Bennett, conservative Republican, was reelected over opposition from Democratic Rep. David S. King. Earlier, Bennett had defeated Salt Lake City Mayor J. Bracken Lee, a leader of the far right, in the primary. Democrats lost both their seats in the U.S. House of Representatives. In the 2d District, state Sen. Sherman Lloyd replaced King by defeating Democrat Bruce Jenkins, and in the 1st District Laurence Burton scored over Democratic Rep. Blaine Peterson. In the other statewide contest, Attorney General A. Pratt Kesler was reelected.

The state consolidated its juvenile court system and placed all judges on a full-time basis. Under the new arrangement there are five courts with five judges; previously there were six courts, of which three had part-time judges. The Utah attorney general ruled that the state must provide elementary and high school education for Indians living on reservations, and also provide transportation to and from schools.

Salt Lake City decided to build a dam at Little Dell in Parley's Canyon without help from the federal government. The city found that it could build the structure for $1.5 million, compared with the city's share of $2.2 million if federal assistance were accepted. Work continued during the year on Flaming Gorge Dam in northeastern Utah (see also DAMS).

An earthquake on August 30 caused severe damage in Cache Valley in northern Utah, but no one was injured. Two earthquakes of lesser intensity shook the Salt Lake Valley area, alarming residents, but resulting in only minor damage. Two separate explosions, occurring about two months apart, killed 6 workers and injured 21 at the Backus works of the Hercules Powder Co.

State residents were disturbed over reports of an increase in radioactive iodine in the Salt Lake City milk supply. However, a marked decline in radioactive content each day after the first report prevented the rise of undue alarm.

Sterling M. McMurrin, who resigned as United

States commissioner of education on July 27, returned in September to the University of Utah as professor of philosophy.

A sidelight of the integration crisis at Oxford, Miss., occurred in Salt Lake City when the Hillcrest High School repealed its nickname of "Rebels" (the same as the University of Mississippi's) after the riots. The student council stated, "We found it highly unflattering, considering the actions of the student body at Oxford."

"Events" by: ELLSWORTH E. WEAVER,
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UTILITIES. See PUBLIC UTILITIES and the Index entry, *Public Utilities.*

V

VIETNAM—Using sampans belonging to local peasants, South Vietnamese soldiers hunt Communist guerrillas.

WIDE WORLD

VACCINES. See MEDICINE; and the Index entry, *Vaccines.*

VANADIUM. See MINERAL PRODUCTION.

VAN ALLEN RADIATION LAYERS. See the Index entry, *Van Allen Layers.*

VANCOUVER

Canada's third-ranking city and chief Pacific port, Vancouver, British Columbia, has a population of 384,522 (1961 census) in an area of 44 square miles. Greater Vancouver (pop. 790,165) includes North Vancouver, West Vancouver, Burnaby, Richmond, and the University of British Columbia, and accounts for nearly half the population of the province.

The city government is headed by a mayor and 10 aldermen elected for two-year terms. Mayor Thomas Alsbury completed his fourth year of office in 1962, and was succeeded by Alderman William Rathie.

The civic budget for 1961 totaled $61,571,876, the largest single expenditure being $16,768,754 for the public school system, which is supervised by a 9-member School Board headed by Edythe E. Quinnell. The superintendent of schools is Dr. R. F. Sharp. The cost of operating Vancouver's 25 kindergartens, 78 elementary schools, and 18 secondary schools, attended by a total of 64,196 day pupils, is shared by the provincial government. The city-operated adult day school attracted 1,156 students in its first year of operation, while an estimated 33,000 persons enrolled in night schools. The University of British Columbia had a registration of 12,950 full-time students in the 1961–62 year.

A 7-member Board of Parks and Public Recreation (chairman: E. W. Bowering) is elected for a two-year term. Its budget for 1961 totaled $1,942,836.

Vancouver's port facilities in 1961–62 were taxed to the utmost handling cargoes of lumber destined for the eastern seaboard of the United States, and vast shipments of grains for Japan and the People's Republic of China. As many as seven cargo vessels have lain idle awaiting their turn to enter the crowded docks for loading. Even tankers have been utilized to transport emergency shipments of grain to China. The Greek freighter *Sonic* broke the world's record for a single grain-cargo when she left port for Europe with 1,600,000 bushels of wheat, oats, and rye in her hold. The grain storage problem on the waterfront was eased somewhat by the construction of additional grain elevators to hold a total of 21.7 million bushels. About half of this capacity is owned by the National Harbors Board (Canadian government) and the rest by private firms.

This flourishing activity was stimulated even further by the recent construction of local bulk-loading facilities, thus enabling the port to handle low-priced ore concentrates and coal. Previously, Canadian coal and ores had been loaded for Japan in Seattle and Portland.

Lumber shipments also increased remarkably, largely because the depreciation of the Canadian dollar benefited British Columbia lumbermen at the expense of their Washington and Oregon competitors. Increased exports of grain and lumber and ores have made the Port of Vancouver the largest dry-cargo port on the Pacific coast of North America.

Money by-laws to purchase two large disused golf courses were defeated in the December elections by taxpayers opposed to rising property taxes. The same mood was responsible for the election of Alderman William Rathie, an economy-minded businessman, as mayor. The electorate voted overwhelmingly for the relaxation of Sunday blue laws, the end of which will see theaters, motion picture houses, and other places of entertainment made available to Vancouver citizens on Sunday for the first time.

The city's Fifth International Festival of the Arts opened on July 10 at the new civic-owned Queen Elizabeth Theatre. Much of its varied program was shared with the Seattle World's Fair, and included appearances by several foreign companies: the Comédie Française, of Paris; Japan's Bunraku Doll Theater; and the Bayanihan Philippine Dance Company. At the end of the season, Nicholas Goldschmidt, the artistic director of the

festival, resigned over a matter of program policy and was succeeded by Dino Yannopoulos.

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VATICAN CITY

The State of the Vatican City is the world's smallest sovereign state, having an area of 108.7 acres and a permanent population of about 1,000. The state is situated within the city of Rome, Italy, and exercises extraterritorial rights over 12 buildings in Rome outside of its boundaries, and over the papal villa in Castel Gandolfo. The Lateran treaties of 1929 and the Italian Constitution of 1947 recognized the Vatican as an independent state. The state maintains nuncios (accredited diplomatic representatives) or apostolic delegates (without diplomatic status) to more than 50 countries.

Pope John XXIII (elected on Oct. 28, 1958) exercises supreme executive, legislative, and judicial power. He is assisted in the government of the state by a pontifical commission headed by Amleto Cardinal Cicognani (appointed Aug. 14, 1961), who also serves as secretary of state. Vatican City has its own currency, postal system, army (Swiss Guards), railway station, observatory, radio station, and newspaper (the semiofficial daily, *L'osservatore romano*).

The Vatican is the administrative center of the Roman Catholic Church, and is the center of Roman Catholic higher education. More than 65 papal educational institutions are located in the state. The economy of the Vatican City is dependent on charitable contributions, supplemented by the sale of postage stamps and tourist mementos, and fees from religious museums and art galleries.

The first session of the 21st Ecumenical Council was held in Vatican City from Oct. 11 to Dec. 8, 1962. (See also JOHN XXIII; RELIGION—*Catholicism;* ROMAN CATHOLIC CHURCH.)

VEGETABLE OILS. See FATS AND OILS.

VEGETABLES

Production of vegetables in the United States in 1962 dropped slightly below the high 1961 level. Output of vegetables for processing rose 13% above that of 1961 to a new record, but production of vegetables for fresh market declined somewhat. Potato production dipped 9% below the 1961 peak, and the dry bean crop was 7% lower than in 1961. A sharp 40% increase was recorded in the production of dry peas, and sweet potato production was 20% higher than the small 1961 total. The index of vegetable production of the Statistical Reporting Service of the U.S. Department of Agriculture was 109 (1957–59 = 100), 2 points below 1961.

The ten principal processing crops reached a record total of 9,263,340 tons in 1962, compared with 8,176,250 in 1961 and the 1951–60 average of 6,958,050. Tomatoes increased 25% to a new high and accounted for 57% of the total for processing. Record crops of beets for canning, sweet corn, and asparagus also were produced. The ten crops were harvested from 316,150 acres. Value of production was $360,289,000, compared with $336,884,000 in 1961, and the 1951–60 average of $276,785,000.

California produced 37% of the processing vegetables in 1961. Other leading states were Wisconsin, 8%, and New York, Ohio, and Illinois, 5% each.

U.S. PRODUCTION OF COMMERCIAL VEGETABLES AND MELONS FOR FRESH MARKET
(1,000 cwt.)

	Average 1951–60	1961	1962
Vegetables:			
Artichokes	343	510	440
Asparagus	1,159	1,093	1,047
Green lima beans	403	409	400
Snap beans	4,946	4,620	4,429
Beets	608	483	421
Broccoli	2,075	2,361	1,940
Brussels sprouts	608	706	688
Cabbage	20,495	19,031	18,648
Carrots	15,567	15,867	16,972
Cauliflower	2,549	2,566	2,518
Celery	14,949	14,973	14,003
Sweet corn	11,979	13,316	13,364
Cucumbers	4,114	4,718	4,279
Eggplant	472	570	551
Escarole	769	1,002	975
Garlic	208	288	243
Kale	181	150	110
Lettuce	33,213	38,103	37,050
Onions	23,363	23,615	25,992
Green peas	383	244	225
Green peppers	2,957	3,984	3,750
Shallots	139	32	26
Spinach	1,771	1,325	1,209
Tomatoes	19,334	21,157	20,401
Total vegetables	162,585	171,123	169,681
Melons:			
Cantaloupes	12,208	12,892	13,556
Honeydew melons	1,456	1,337	1,164
Watermelons	29,726	28,983	29,040
Total vegetables and melons	205,975	214,335	213,441

(Source: Statistical Reporting Service, U.S. Department of Agriculture.)

U.S. PRODUCTION OF FROZEN VEGETABLES
(1,000 pounds)

Product	1960	1961
Asparagus	40,026	42,039
Lima beans	147,557	159,936
Snap beans	159,689	167,945
Broccoli	128,210	121,636
Brussels sprouts	39,261	40,057
Carrots	72,100	60,271
Cauliflower	48,742	41,117
Cut corn	130,460	168,960
Corn-on-cob	11,360	12,000
Mixed vegetables	46,095	54,691
Peas	295,227	346,069
Peas and carrots	27,883	31,757
Pumpkin and squash	23,447	15,894
Rhubarb	7,165	6,630
Spinach	118,595	116,504
Succotash	7,385	9,156
Kale	4,547	5,583
Okra	17,954	24,754
Blackeye peas	16,678	18,683
Potato products	551,392	579,162
Turnip greens	17,150	15,638
Miscellaneous vegetables	47,698	77,559
Total	1,958,621	2,116,041

(Source: National Association of Frozen Food Packers.)

Production of the 24 principal vegetables for the fresh market in 1962 totaled 169,681,000 cwt., below the 171,123,000 cwt. of 1961, but 4% above the 10-year average. Sweet corn was the only crop to set a new record. The 1962 produc-

U.S. PRODUCTION OF VEGETABLES FOR COMMERCIAL PROCESSING
(In tons)

Vegetable	Average 1951–60	1961	1962
Asparagus	111,490	129,650	133,900
Lima beans (shelled)	96,070	115,710	108,470
Snap beans	332,280	478,020	447,720
Beets (for canning)	154,990	181,560	209,190
Cabbage (for sauerkraut)	195,320	215,700	206,970
Sweet corn (in husk)	1,443,850	1,726,270	1,792,850
Cucumbers (for pickles)	328,170	426,650	402,080
Green peas (shelled)	477,320	510,510	527,120
Spinach	131,930	144,480	116,840
Tomatoes	3,686,610	4,247,700	5,318,200
Total, 10 crops	6,958,050	8,176,250	9,263,340

(Source: Statistical Reporting Service, U.S. Department of Agriculture.)

tion came from 1,281,140 acres, compared with 1,313,375 the preceding year. The 24 crops were valued at $767,191,000, compared with $733,298,000 in 1961 and the 10-year average of $687,597,000.

California was the leading state in production, with 32% of the United States total. Next in order were Florida, 14%; Texas, 9%; Arizona, 7%; and New York, 6%.

Potatoes.—Smaller acreage and lower yields reduced 1962 production to 268,280,000 cwt., or 9%, below the 1961 record, but 33,856,000 cwt. above the 1951–60 average. Yields averaged 193.7 cwt. per acre, second only to the 196.3 cwt. per acre recorded in 1961. The acreage harvested was 1,385,300, or 7% below 1961 and 1% below average. Production by seasons in 1962 was: winter, 4,160,000 cwt.; early spring, 3,433,000; late spring, 21,690,000; early summer, 12,620,000; late summer, 33,805,000; and fall, 192,572,000. Leading states in production were: Idaho, 47,883,000 cwt.; Maine, 38,955,000; California, 28,148,000; New York, 20,708,000; and North Dakota, 14,820,000.

Sweet Potatoes.—The 1962 crop of 18,451,000 cwt. was 21% larger than that of 1961 and 4% above average. Yields rose to a record 85.1 cwt., 7.8 cwt. above 1961 and 22.9 above average. The crop was harvested from 216,900 acres, compared with 196,700 acres in 1961, but 25% less than average. Louisiana harvested the largest crop among the states, 3,410,000 cwt. Other leaders were: North Carolina, 3,240,000 cwt.; Virginia, 2,667,000; New Jersey, 1,750,000; Texas, 1,530,000; and Georgia, 1,050,000.

Dry Beans.—Production of 18,827,000 bags (100 pounds clean basis) was below the 1961 record by 7%, but 11% above average. Farmers harvested the crop from 1,490,000 acres, 41,000 more than in 1961. The yield of 1,264 pounds per acre, although the third highest ever attained, was 136 pounds less than the 1961 record. Production by leading classes in 1926 was: Pea (navy), 7,006,000 bags; pinto, 4,105,000; Great Northern, 1,485,000; red kidney, 1,479,000; large lima, 950,000; and blackeye, 648,000. Michigan again led the states in production with 7,527,000 bags, followed by California, 3,435,000; Idaho, 2,300,000; Colorado, 1,718,000; New York, 1,274,000; and Nebraska, 1,012,000.

Dry Peas.—A sharp increase in yields and larger acreage pushed 1962 production 40% above that of 1961 and 44% above the 1951–60 average to 4,947,000 cwt. (clean basis). The yield averaged 1,464 pounds per acre, compared with 1,061 in 1961 and the average of 1,194. The 338,000 acres harvested was 4,000 more than in 1961 and 19% more than average. The crop included 2,291,000 bags of Alaska and other smooth green kinds, 1,189,000 bags of White Canada, First and Best, and other yellow and white kinds; and 1,467,000 bags of other peas. Austrian winter peas are not included in the totals. Six states produced the 1962 crop: Washington, 2,812,000 bags; Idaho, 1,821,000; Oregon, 184,000; Colorado, 77,000; North Dakota, 34,000; and Minnesota, 19,000.

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VENEREAL DISEASES

In the year ending June 30, 1962, state health departments reported 124,188 cases of syphilis, 260,468 cases of gonorrhea, and 2,239 cases of other venereal diseases to the U.S. Public Health Service.

Cases of syphilis in the recently acquired, highly infectious stage of the disease increased from 18,781 cases in the fiscal year 1961 to 20,084 cases in 1962. This is the greatest number of primary and secondary syphilis cases reported in the United States since 1950.

Cases of syphilis in the later stages of the disease numbered 104,104—approximately the same as in the preceding year. The 260,468 cases of gonorrhea reported in 1962 were slightly less than the number reported in the preceding year, and represent a reversal of the upward trend which began in 1957.

Venereal disease among young adults is a particularly acute problem. In 1961 the 142,817 cases of gonorrhea reported among persons 15–24 years of age accounted for 54% of all cases reported; 44% of infectious cases of syphilis were reported among persons aged 15–24. Gonorrhea and infectious syphilis cases per 100,000 population were 599.1 and 36.9, respectively, among persons aged 15–24, compared with rates of 145.8 and 11.0 per 100,000 in the total population.

Mortality and Insanity.—Deaths and insanity due to syphilis continued the declines which began after the establishment of the national venereal disease control program in 1937. Deaths due to syphilis decreased from 7,568 in 1950 to 3,070 in 1960, and first admissions to mental institutions with psychoses due to syphilis decreased from 3,454 to 742 in 10 years.

Disease Control.—In 1962, 6,296 of the 20,084 infectious syphilis cases reported were placed under treatment through the examination of sex contacts of infected persons. Another 4,727 cases of infectious syphilis were placed under treatment as a result of the follow-up of positive serologic tests for syphilis from health department, hospital, and private laboratories. Tracing of sex contacts of primary and secondary syphilis cases reported by private physicians has contributed significantly to disease control. In 1962, 1,419 such contacts with primary or secondary syphilis were brought to treatment as a result of interviews with patients reported by private physicians.

A total of 344,782 persons were examined for a venereal disease as a result of health department casefinding activity in 1962. Of the persons examined, one out of 5 was diagnosed as infected and treated for a venereal disease, and one out of 10 was given preventive treatment for exposure to an infectious venereal disease.

Research.—A simple, accurate, and rapid screening test for syphilis and other treponematoses, known as the RPR Card Test, has been developed. This test is accomplished without the use of usual laboratory equipment and lends itself to field or office use. A plasma collection slide is used for processing finger-stick blood and converting it to plasma. The plasma is then transferred to a plastic-coated card, where it is mixed with a stable antigen suspension containing charcoal. Results are read with the naked eye after the specimen has been shaken for a short time. Reactive tests must be confirmed by a standard serologic test.

An outstanding development was the demonstration that the chick embryo may be used to maintain and regain the infectiousness of *Neisseria gonorrhoeae* for man.

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VENEZUELA

The northernmost country of South America, the Republic of Venezuela has an area of 352,153 square miles, and a coastline on the Caribbean Sea and the Atlantic Ocean of 2,189 miles. Increasing at an annual rate of 3.36%, Venezuela's population (1962 est.) totals 7,788,000, of whom approximately 700,000 are foreigners (mainly Spaniards, Italians, Americans, and Portuguese). Principal cities and populations (1962 est.) are: metropolitan Caracas, 1,300,000; Maracaibo, 440,000; Barquisimeto, 198,000; and Valencia, 165,000. Ethnically the population consists of mestizos (65%), whites (20%), Negroes (8%), and Indians (7%). Principal regions, with percentages of total area and population are: the Guiana Highlands, with 45% of Venezuela's area and 2% of the population; the llanos or plains, 33% and 25%; the mountains, 12% and 65%; and the coastal zone, 10% and 8%. Spanish is the official language.

Government.—Venezuela's 26th constitution, promulgated on Jan. 23, 1961, reaffirmed a federal, republican form of government. The country is divided into 20 virtually powerless states, 3 federal territories, and 72 island dependencies. The president (Rómulo Betancourt, installed Feb. 13, 1959) is elected by a majority of the popular vote for a five-year term. The bicameral Congress is composed of a 51-member Senate indirectly selected by the state and territorial legislatures, and a 133-member Chamber of Deputies elected on the basis of one representative for each 50,000 persons. The term of office for both houses is 5 years. The majority party, Democratic Action (AD) is split into two factions: the Old Guard (supporting President Betancourt) and ARS (a more leftist element). The president's wing of the party governs by means of a coalition with the Christian Socialist Party (COPEI). Principal political parties and the number of seats held in the Chamber of Deputies: Democratic Action (Old Guard), 34; Democratic Action (ARS), 24; COPEI, 19; Democratic Republican Union (URD), 34; Movement of the Revolutionary Left (MIR), 15; and Communist, 7.

The highest court is the Supreme Court of Justice, whose nine judges are appointed by Congress for staggered nine-year terms.

Education and Religion.—School enrollment, 1961–62: 1,529,000, about 51% of the school-age population. Enrollment by type of school, 1961–62: primary, 1,324,000; secondary, 110,000; commercial and technical, 40,000; normal, 30,000; higher, 25,000. About 25% of the school population attends private schools, which are mostly under Roman Catholic auspices. The illiteracy rate was 26.8% in 1961, a drop of 30% from 1958. Principal religion: Roman Catholicism. Freedom of religion is constitutionally guaranteed.

Finance.—Government revenue, 1961: 3.288 billion bolívares (Bs); expenditure, Bs3.397 billion. At the official rate, 3.35 bolívares equal U.S.$1 (see below *Events, 1962*). Estimated revenue and expenditure for 1962 were balanced at Bs5.942 billion. Gold reserves: $401 million in June 1962 ($514 million in June 1961). Foreign exchange holdings: $100 million in June 1962 ($101 million in June 1961). National debt: Bs2.354 billion as of December 1961.

Transportation and Communications.—Transport networks (miles, 1962): railroads, 613 (77 of which are under construction); roads, 26,000, of which 8,500 are paved; roads completed (1959–61), 996 new and 1,145 paved; roads under construction (1962), 590 new and 1,058 being paved. Merchant marine, 1960: 320,000 gross registered tons. Air service is provided by Venezolana Internacional de Aviación, three smaller Venezuelan airlines, and nine foreign companies. Other communications data for 1960: passenger cars, 268,693; commercial vehicles, 198,000; telephones, 202,005; radio stations, 65; television stations, 13; radios, 1,250,000; and television sets, 263,000 (1962). There are 29 daily newspapers (7 in Caracas), and 65 weekly papers (8 in Caracas).

Economic Indicators.—The gross national product for 1961 totaled Bs26.8 billion, an increase of 1.4% over 1960. The rapid population increase, however, caused a decrease of 1.2% in per capita income. Changes in composition of the gross domestic product in 1961: petroleum growth remained steady at 8%; mining and construction declined by 28%; and manufacturing was up 9%. Consumer price index (1958 = 100): 106 in 1961 (109 in 1960). Cost-of-living index (1958 = 100): 103 in December 1961 (108 in December 1960). Index of mining production (1958 = 100): 112 in 1961 (115 in 1960). Index of manufacturing production (1958 = 100): 125 in 1961 (116 in 1960). About 12% of the labor force, or 280,000 persons, were unemployed in 1962.

Manufactures and Minerals.—Petroleum and other minerals account for 24% of the gross national product, and employ 2% of the labor force. Average daily oil production of the one government-owned and 17 foreign oil companies through August 1962: 3.2 million barrels (2.9 million barrels in same period in 1961). The largest producer is the Creole Petroleum Corporation, with a daily production of 1,274 million barrels. Total gross income from petroleum, 1959–61: Bs7.59 billion, from which the Venezuelan government derived Bs2.79 billion, or 66% of the total net income. Other chief mineral products (metric tons, 1961): coal, 30,960 (36,840 in 1960); iron ore, 14,568,000 (19,688,000); natural gas, 4,812 million cubic meters (4,584 million); and diamonds, 134,175 carats (63,309).

At Puerto Cabello, Venezuela, a priest supports a rifleman wounded in the revolt on June 2–4.

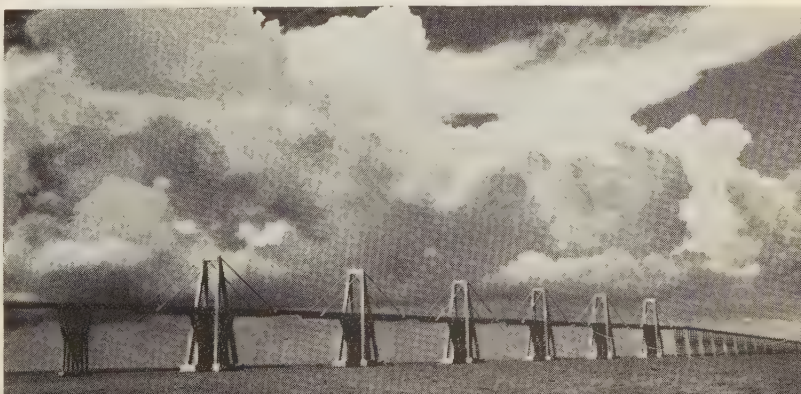
WIDE WORLD

Industrial output in 1961 was up 9% over 1960. New manufacturing investment in 1961 totaled $218 million, and 1,395 companies were formed. Chief industrial products (metric tons, 1961): cement, 1,512,000 (1,488,000 in 1960); cotton yarn, 8,580 (7,848); woven cotton fabrics, 33,720 (33,120); and electricity, 3,384,000 kw.-hr. (2,956,000).

Agriculture.—About 33% of the labor force is engaged in agriculture, which accounts for 6% of the gross domestic product. Of the 73 million acres of arable farmland, 10% is under cultivation. Since 1959, 3.5 million acres have been distributed to 52,251 farmers under the agrarian reform program. Beef is the principal farm product in terms of value and land use. Cattle in 1961 numbered 7.16 million. Chief crops (tons, 1962 est.): cacao, 14,650 (13,225 in 1961); coffee, 850,000 bags of 132.276 pounds each (850,000); tobacco, 11,765 (12,065); cotton, 35,000 bales (30,000); sesame, 28,212 (22,400); corn, 14,000 in 1961 (17,300 in 1960); sugar, 263,000 in 1961 (259,000).

Foreign Trade.—Total exports, 1961: Bs8.091 billion (Bs8.147 billion in 1960); imports, Bs3.474 billion (Bs3.552 billion in 1960). Principal exports: petroleum (Bs7.441 billion in 1961), iron ore, coffee, and cacao. Principal imports (with United States share in millions of dollars): vehicles, 207.8; metals and manufactures, 46.1; textile fibers, 31.4; and wood and paper, 23.0. The United States bought from Venezuela a total of $902.3 million in 1961 (49.1% of Venezuela's exports). West Germany (9.5%) and Great Britain (6.1%) were other leading trading partners.

Events, 1962. *Economic Developments.*—To obtain revenue to meet the cost of financing Alliance for Progress projects, the government in April decreed an end to the importation of all but 105 items purchasable at the favorable controlled rates of 3.35 bolívares to the U.S. dollar, making it necessary to import at the official "free" rate of 4.54 bolívares to the dollar. The decree aroused considerable criticism in business and labor circles, and resulted in the censure of Finance Minister Andrés Germán Otero by the Chamber of Deputies. The reform was expected to produce 200 to 300 million bolívares in government revenue. Other developments included the creation of a 10-member For-



Spanning Lake Maracaibo, the 5½-mile-long Rafael Urdaneta Bridge was officially opened in August.

EMBASSY OF VENEZUELA—INFORMATION SERVICE, WASHINGTON, D.C.

eign Trade Council to assist in planning a foreign commerce policy; the inauguration of a Loan Investment Control Commission to supervise the expenditure of public funds derived from foreign loans; the formation of Corporación de Turismo (with a capital of 50 million bolívares) to assist private enterprise in the development of the tourist industry; the establishment of Televenca to operate all telephone communications; and the announcement by the government that in line with its policy of "Venezuelization" of the oil industry it would grant no further petroleum concessions to foreign firms. The Chase Manhattan Bank of New York's offer to purchase 49% of the stock of Banco Mercantil y Agricolo was oversubscribed, and the Inter-American Development Bank opened its first Latin American branch in Caracas.

Military revolts and the exchange reform failed to impede industrial expansion. Several new industries backed by foreign capital were built in 1962, and the government-owned steel plant at Matanzas began to produce ingots in early July, processing ore from Cerro Bolívar. The Creole Petroleum Corporation announced it would increase its investment by 50% during 1962. President Betancourt's annual message to Congress in March projected a 4-year development plan (1962–65) which emphasized the need for 500,000 new jobs by 1965. Other 1965 goals were annual growth increases of 11.1% for industry and 9.8% for agriculture. Agrarian reform continued with the distribution of 157,556 acres to 8,000 families during the first half of 1962. A cooperative center for the raising of livestock by 5,000 families was set up in the state of Guárico. The Bank of Agriculture and Cattle announced plans to import $10 million worth of agricultural machinery.

International loans for the year included $50 million from the Inter-American Development Bank for urban housing, cattle breeding, water and sanitation; and $7.5 million from the Export-Import Bank of Washington for small industry. Venezuela's most pressing economic problems in 1962 were the lack of adequate housing (40% of the population were living in substandard dwellings) and chronic unemployment.

Political Developments.—President Betancourt's Democratic Action party has suffered two splits since he came to power in 1959. In 1960 a group of Marxist-oriented members left to form the Movement of the Revolutionary Left, and in 1962 other dissatisfied members formed a faction called ARS. Among other things, ARS condemned the partial suspension of the constitutional guarantees and the Democratic Action–Christian Socialist coalition. In separate conventions in January 1962, the Betancourt supporters (called the Old Guard) and ARS expelled each other. The party split was extended to the labor movement, as each faction sought (and claimed) to control the Venezuelan Federation of Labor, the state peasant leagues, and Fedepetrol, the oil workers union.

By November, two men had announced their candidacies for president in the elections scheduled for late 1963: Jovito Villabla supported by the Democratic Republican Union (URD), and Adm. Wolfgang Larrazábel, supported by the National Independent Electoral Movement and the Popular Democratic Front. President Betancourt cannot constitutionally succeed himself.

Constitutional guarantees were suspended during most of the year (as they have been since November 1960) as the government sought to deal with continued violence, terrorism, and guerrilla activity. The peace was disturbed in January when the government decreed compulsory public liability and property damage insurance (later repealed by Congress). Student participation in political demonstrations resulted in the closing of the schools for long periods. Two unsuccessful navy-led revolts, one on May 4–5 in Carúpano, the other on June 2–4 in Puerto Cabello, took over 400 lives. Power plants and pipelines of the Creole Petroleum Corporation were sabotaged by Communists in October and November during the Cuba crisis.

Congress convened in March 1962 in an atmosphere of hostility and tension. Although the ADCOPEI coalition maintained its control over the Senate, the ARS defection brought the Chamber of Deputies under the control of the opposition parties. Considerable discord between the two houses was generated over such matters as assigning responsibility for the two revolts and over the detention of several state legislators and a Communist deputy (Eloy Torres) for antigovernment activity. The opposition parties, solidly against the government and extremist in nature, inclined to irresponsible attacks upon it. Their continued agitation led President Betancourt on October 15 to ask the Supreme Court to rule on the legality of outlawing the MIR and the Communist parties.

In the wake of the Cuban crisis in October, the government was authorized to proclaim martial rule and call up reserves. These measures were rescinded on November 24.

Foreign Affairs.—In January the government renewed diplomatic relations with the Dominican Republic and El Salvador, but withdrew its embassy from Buenos Aires in March in protest over the military removal of Argentine President Arturo Frondizi. At the same time it notified the Organization of American States (OAS) that it would no longer recognize regimes which came to power through illegal means. In July it called on the OAS to convene a conference of foreign ministers to consider the military takeover in Peru. During the year, Venezuela joined in efforts to condemn a Cuban attempt to secure a ruling from the International Court of Justice on the legality of Cuba's ouster from the OAS, and it placed before the United Nations a 19th century claim to two thirds of the territory of British Guiana, which was seeking independence.

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VENUS. See Index entry.

VERMONT

A New England state of the United States, Vermont ranks 43d among the states in area (land, 9,276 square miles; inland water, 333) and 47th in population (390,000 on July 1, 1962, virtually unchanged from the 1960 census figure of 389,881). Cities, towns (T), villages (V), and unincorporated places (U) with populations above 7,000 in 1960:

Barre	10,387	Montpelier (*capital*)	8,782
Bennington T.	13,002	Rutland	18,325
Bennington V.	8,023	St. Albans	8,806
Brattleboro T.	11,734	St. Johnsbury T.	8,869
Brattleboro (U)	9,315	Springfield T.	9,934
Burlington	35,531	Winooski	7,420
Essex T.	7,090		

Government.—Chief executive and judicial officers in 1962 included F. Ray Keyser, Jr. (Republican), governor, serving a two-year term; Ralph A. Foote, lieutenant governor; Howard E. Armstrong, secretary of state; George H. Amidon, treasurer; David V. Anderson, auditor; Charles J. Adams, attorney general; A. John Holden, Jr., commissioner of education; and Benjamin N. Hulburd, chief justice of the 5-member Supreme Court.

The Vermont General Assembly, which convenes in odd-numbered years, comprised 23 Republicans and 7 Democrats in the Senate in 1962 and 190 Republicans, 52 Democrats, and 4 others in the House of Representatives.

Legislation, 1962.—Governor Keyser called a special session of the General Assembly for July 25, unsuccessfully attempting to limit its actions to reapportionment of the Senate (see below, *Events, 1962*). The secretary of state held that the session was a continuation, but after the House pronounced it a special session any bills could be introduced. Two weeks and a day later, the acrimonious session adjourned. A compromise bill granted Chittenden County one new senator at the expense of Rutland County, but limited the bill's effectiveness to Dec. 31, 1963, thus sustaining the issue for the January 1963 session.

Additional action was hastily taken on the following items: a legislative committee was appointed to investigate the closed Rutland Railroad and its problems, with a mandate to make a final report, including proposed legislation, by February 1963 (see below, *Events, 1962*); corrections were made in statutes granting tax exemptions to veterans and their widows and orphans; and monthly payments for old-age assistance, aid to the blind, and aid to the handicapped were raised to $80. No action was taken on the "time lock" for constitutional amendments, thus preventing change until 1971. Rural representatives prevented enactment of a liberalized bond voting procedure in large cities and towns.

Finance.—In the 1962 fiscal year, revenue of $112,520,652 included $49,457,805 from state taxes and $39,355,759 in federal funds. Chief tax yields were from individual and corporate incomes ($15,252,355), motor fuels ($9,278,746), and licensing ($9,391,607). Spending of $117,771,716 (including income from bond issues) was primarily for education ($15,105,590), health, welfare, and safety ($22,455,880), and highways ($45,242,041).

Education.—In the fall of 1962, public elementary schools staffed by 2,229 teachers enrolled 53,650 pupils; secondary schools with 1,308 teachers enrolled 24,428; and private and parochial schools (1961–62) enrolled 17,711. College enrollment (1961–62) totaled 10,302 in 17 institutions, including 3 junior colleges and 14 senior colleges and universities.

Estimated public school spending in the 1961–62 school year totaled $31,215,000, including current expenditures of $26,350,000 ($356 per pupil) and capital outlays of $4 million. Revenue of $38.5 million was drawn chiefly from state funds ($7 million) and local districts ($23.1 million). Teachers' salaries (1961–62) averaged $4,779.74 (high school, $5,120; elementary, $4,505). Actual spending for higher education (1961 fiscal year) totaled $11,239,000.

Public Assistance.—In the 1962 fiscal year, public assistance expenditures totaled $7,229,470, including $4,775,874 for the aged and $1,717,780 for dependent children.

Transportation and Communications.—A total of 186 miles of highway construction and reconstruction were completed in the 1962 fiscal year. *Highways and roads* on Jan. 1, 1962, totaled 13,656 miles (4,267 surfaced). These served 173,295 *motor vehicles* (as registered in fiscal 1962), including 141,834 automobiles. Operating in the state (1962) were 10 *railroads* (using 811 line miles of track); 2 regularly scheduled *airlines;* and 20 commercial and municipal *airports and airfields.*

Communications media included (1962) 1 FM and 15 AM *radio stations;* 1 VHF *television station;* 9 daily *newspapers* (circulation, 95,260) and 24 other newspapers (43,895); and (January 1) 37,100 business and 101,200 residential *telephones.*

Labor Force.—The state's labor force in mid-July 1962 included 22,300 agricultural workers. Nonagricultural wage and salary employees totaled 115,400, compared with 113,150 a year earlier and an average of 105,950 for the full year 1961. Of nonfarm wage and salary employees, 31.2% were in manufacturing, 18.9% in service industries, and 18.5% in trade. Total unemployment in mid-July 1962 stood at 7,500, compared with 9,300 a year earlier.

Manufacturing.—Manufacturing engaged 34,804 workers in 1961, including 26,796 in production, and provided a payroll of $158,993,000. Adjusted value added by manufacture totaled $283,693,000.

The leading industries in 1961 were nonelectrical machinery (5,727 workers who received $32,072,000 in wages and added $54,329,000 in adjusted value by manufacture); paper and products (2,811; $12,702,000; $28,983,000); and stone, clay, and glass products (3,535; $17,510,000; $23,221,000).

Mining.—In 1961, Vermont ranked 44th among the states in the value of its mineral output, with 0.13% of the national total. The total value of $24,283,000 increased 6% over that of 1960 due to the rise in value of sand and gravel and in the output of stone (valued at $18,715,000). Vermont was first in the production of asbestos.

WIDE WORLD

Philip H. Hoff and his wife read congratulatory telegrams at Burlington on November 7, the day after his election as the first Democratic governor of Vermont since 1854.

Agriculture.—Cash farm income for the first nine months of 1962 (excluding government payments) totaled $94,256,000, compared with $94,995,000 for the corresponding period of 1961. For the full year 1961, income comprised $111,478,000 from livestock, $15,045,000 from crops, and $1,907,000 in government payments. Principal income sources in 1961 were wholesale milk, $91,246,000, and cattle, $10,235,000.

The state's 12,000 farms in 1959 had an acreage of 2,945,000 (743,000 in harvested cropland). Livestock on farms on Jan. 1, 1962, included 445,000 cattle and 803,000 chickens.

VERMONT CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Apples (1,000 bu.)	914	950	1,200
Hay (1,000 tons)	1,179	1,201	1,096
Maple sirup (1,000 gal.)	565	554	441
Potatoes (1,000 cwt.)	480	455	432

(Source: U.S. Department of Agriculture.)

Events, 1962.—Many Vermonters were shaken to learn on November 7 that Philip Hoff had become the first Democratic governor-elect in 109 years. Hoff defeated incumbent F. Ray Keyser, Jr., after a long, hard-hitting campaign. So close was the balloting (the original tally showed Hoff leading by only 1,282 votes) that Keyser requested a recount. Not until Jan. 16, 1963, when a joint legislative canvassing board reported to the legislature, was Hoff officially confirmed the winner. The final vote was 61,383 to 60,035, a difference of 1,348 votes. Some observers thought that more ballots had been cast "against" Keyser than for Hoff, and independent Republicans for Hoff were probably a critical factor in the outcome. In the contest for the United States senatorship, Republican George D. Aiken was reelected to the seat he held since 1940, winning two thirds of the vote in his race against W. Robert Johnson. Incumbent Republican U.S. Rep. Robert Stafford won easily over the Democratic congressional candidate, Harold Raynolds.

When the General Assembly adjourned in August 1961 without taking action on senatorial reapportionment or constitutional amendments, a

suit to enjoin the county clerks of Chittenden and Rutland counties from preparing ballots for senatorial elections was filed at once. After a hearing in March 1962, the Superior Court judge granted the injunction and suggested a formula which gave one new senator, of the two claimed, to Chittenden County. On appeal, the Supreme Court upheld the action in late July. Governor Keyser was forced to call a special session at once in order to make possible a primary election in September in the two counties. A compromise bill gave Chittenden County its one senator (see above, *Legislation, 1962*).

A legislative investigation of the State Highway Department gave headlines to committee members, but an outside management survey largely vindicated the department. The strike-bound Rutland Railroad remained inoperative (since Sept. 26, 1961), and neither side showed signs of retreat as rails rusted and equipment deteriorated. Meanwhile, the western half of the state depended on other transportation, and the company asked for permission from the Interstate Commerce Commission to abandon the line.

Ski operators had a bonanza spring, but summer resorts reported a discouraging season. Spectacular autumn foliage attracted large numbers of tourists. On July 20–29, at Button Bay on Lake Champlain, 10,000 Girl Scouts met for the 10 days of their national roundup.

In November, burning plastic and solvents from an overturned truck in Essex Junction destroyed power cables and cut off power from a large section of northern Vermont.

The death of former Senator and UN Ambassador Warren R. Austin on Christmas Day ended the distinguished career of an illustrious Vermonter.

"Legislation" and "Events" by:
ANDREW E. NUQUIST,
Professor and Chairman, Department of Political Science, The University of Vermont.

VETERANS ADMINISTRATION

The Veterans Administration (VA), an independent agency of the United States government since 1930, administers the benefits prescribed by law for veterans and their dependents.

The nation's living veterans totaled 22,267,000 as of Aug. 1, 1962. More than 15.1 million of these served in World War II, including 1 million who also served in the Korean conflict. There were 5.6 million Korean conflict veterans and 2.4 million World War I veterans. Veterans of other wars and the regular military establishment totaled 145,000.

Education and Training.—Under the Korean GI training program, a veteran may be entitled to 1½ days of training for each day spent in the service during the Korean conflict. The maximum training allowed any veteran is 36 months. Present law requires that all training under the program be completed by Jan. 31, 1965.

A veteran in full-time school or college training receives an allowance of $110 a month. If he has one dependent, he receives an additional $25 each month, and for more than one dependent his additional allowance is increased to $50. Those in training less than full time, and those in on-the-job or on-the-farm training receive smaller allowances.

Some 2.37 million Korean War veterans have trained under the Korean readjustment training program. An additional 7.8 million World War II veterans have trained under the World War II readjustment training program.

Vocational Rehabilitation Training.—Some 685,000 disabled veterans had received training to enable them to overcome their handicaps in the VA's vocational rehabilitation training program by September 1961.

While in training and for two months thereafter, a disabled trainee receives a subsistence allowance ranging from $65 to $120 a month, depending on the type of training and the number of the trainee's dependents. This payment is in addition to his monthly compensation payments for his service-connected disability.

Disabled Korean veterans discharged before Aug. 20, 1954, must finish training by Aug. 20, 1963, and those discharged after Aug. 20, 1954, must complete their training within nine years from the date of their separation from the service, or before Jan. 31, 1964, whichever date comes first. Hardship cases are allowed an additional four years in which to complete their rehabilitation training.

The U.S. Civil Service Commission gives a 5-point preference to veterans and a 10-point preference to disabled veterans applying for jobs in the federal civil service. The points are added to the passing score on examinations for civil service positions.

War Orphans Education.—Children of veterans who die from disease or injury incurred or aggravated in the line of duty in wartime service and certain extra-hazardous peacetime service are eligible to participate in the War Orphans Education Assistance program. More than 40,000 students had been trained under this program by 1962, and participation in it continued to increase. The majority of students are enrolled in institutions of higher learning, but, if approved by counselors, eligible participants may train in technical and business schools, as well as in vocational or trade schools. With a few exceptions they are between the ages of 18 and 23. They may receive up to 36 months of training while they draw a monthly allowance of $110 for instruction not available in public schools.

GI Loans.—The World War II and Korean GI bills both provided for loan programs to veterans. Up to 60% of the total of home loans veterans secure from private lenders is guaranteed, provided the guaranty does not exceed $7,500. Other real estate loans may be guaranteed up to 50% with a $4,000 maximum guaranty, and business loans are guaranteed up to 50% with a $2,000 guaranty ceiling. Direct loans are made by the VA in areas where ordinary lending facilities are not available. As of July 1, 1962, some 6.1 million veterans had received these loans, with a face value of more than $55 billion. More than one third of these loans had been repaid in full.

Eligibility of World War II and Korean veterans is calculated according to a formula which allows 10 years after the veteran's discharge from active duty, plus one year for each three months of active wartime service. The deadline for World War II veterans does not extend beyond July 25, 1967, and the deadline for Korean veterans is Jan. 31, 1975.

Insurance.—The Veterans Administration conducts the third largest ordinary life insurance business in the nation, despite the fact that the only new policies currently issued are Service Disabled Veterans Insurance to veterans with service-connected disabilities. At the close of fiscal year 1962, 5.4 million veterans held GI insurance policies with a face value of more than $40 billion. They paid more than $562 million in premiums and received more than $337 million in dividends. The dividends were essentially a return to the veterans of part of their premium payments. The return was due them because the

death rate of veterans is lower than was estimated by the mortality tables on which their premium payments are computed by law.

Medical and Hospital Care.—The VA Department of Medicine and Surgery has 131,294 employees, and operates 169 VA hospitals, 93 outpatient clinics, and 18 domiciliaries. During the fiscal year 1962, more than half a million patients were discharged from VA hospitals. The average daily patient load was 110,884 in VA hospitals, and an additional 3,000 were being treated at the VA's expense in private hospitals. VA outpatient clinics received more than 3.7 million visits during the fiscal year 1962.

Veterans of all wars are eligible to receive VA medical and hospital care under the following priority: (1) veterans suffering from service-connected disabilities or injuries that resulted from or were aggravated by wartime service; (2) veterans with compensable, service-connected disabilities, who need treatment for non-service-connected ailments (these must wait until a bed is available); and (3) veterans who have no compensable, service-connected disability. The last are required to state under oath that they are unable to pay for private hospitalization, and they, too, are required to wait until a bed is available at the hospital. Peacetime veterans with service-connected disabilities are also eligible for hospital or clinic care.

The VA spends $75 million annually in building replacement hospitals and modernizing permanent hospital facilities. A significant part of the nation's medical research program is conducted in VA hospitals. Because half the veteran patients are being treated for mental illness, emphasis on the medical research program is in this area. Because the nation's veterans are getting past middle age on the average, the entire field of gerontology is also receiving special attention. More than 7,000 research projects are currently under way in all the major fields of disease and injury.

Veterans with compensable service-connected disabilities may receive necessary prosthetic appliances from the VA. This service includes fitting and training in the use of artificial limbs and eyes, braces, trusses, orthopedic shoes, hearing aids, special clothing, crutches, canes, wheelchairs and eyeglasses. The blind receive a VA guide dog and mechanical and electronic equipment to help them overcome their handicap. Severely disabled veterans receive "wheelchair" housing grants and automobiles with special controls.

Guardianship.—The VA provides guardianship service for incompetent veterans, minor dependents, and incompetent dependents. As of July 1, 1962, the total value of their estates amounted to more than $750 million.

JOHN S. GLEASON, JR.,
Administrator of Veterans Affairs.

VETERANS ORGANIZATIONS. See specific names of organizations under SOCIETIES AND ORGANIZATIONS.

VETERINARY SCIENCE

An international conference on diseases of wildlife was held in June, 1962, at High View, N.Y., under the auspices of the American Institute of Biological Sciences. The nature and control of diseases caused by parasites, viruses, and fungus infections, as well as the effects of radiation, were leading topics.

Research.—A million-dollar radiological research center, said to be the largest of its kind in the world, was awarded to the College of Veterinary Medicine of Colorado State University by the U.S. Public Health Service. Intensive study is planned of ways to protect animals and humans from the effects of radiation.

A report of a disease among workers in an Iowa abattoir was of great interest because the microorganism, *Brucella suis*, believed to be the cause of the sickness, was isolated from the air in a room used for slaughtering swine. Apparently this was the first report of this particular infection being carried by air.

A simplified diagnostic test for anaplasmosis in cattle was developed at the University of Illinois College of Veterinary Medicine and Agricultural Experiment Station.

Progress was reported during the year in research on comparative cardiology. More is now known concerning circulatory disturbances of the dog than of any other species except man. Three physicians and a veterinarian at Stanford University performed surgery on the heart removed from each of four dogs, kept outside the body as long as two hours, and then replaced. The dogs were still alive five to nine months following surgery. This technique may point the way to surgery on the human heart to correct certain abnormalities.

Infectious hepatitis has been thought to be a disease limited to man. Recently it was reported that people have become ill after contacts with monkeys, chimpanzees, and gorillas sick with liver infections. The reverse also occurred. Dogs are known to suffer from liver infections, but no conclusive evidence at this time indicates canine infectious hepatitis is capable of infecting people.

Education.—A comprehensive plan of integrating the study of health programs was approved at Michigan State University to improve the quality of instruction given to students enrolled in veterinary medicine, medical technology, nursing, and the basic sciences related to medicine.

The Ontario Veterinary College at Guelph, Ontario, celebrated its 100th anniversary. It is the oldest active veterinary college in North America and has over 6,000 graduates.

Equine Practice.—The passing of the horse as a draft animal from the farms of the United States continued during 1962, but use of the horse increased at race tracks, in movies and television, and for family pleasure. Riding clubs flourished in both rural and urban areas and registrations increased. Because of the high individual value of these horses and sentimental attachments, owners are anxious to keep them healthy. Frequent calls for a veterinarian have revived the importance of equine practice.

(See also AGRICULTURAL RESEARCH SERVICE; CHEMOTHERAPY.)

JESSE SAMPSON,
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VIETNAM

Forming the eastern part of the Indochinese Peninsula in Southeast Asia, Vietnam (area, 125,882 square miles; 1961 est. pop., 31 million) is divided approximately along the 17th parallel between the Western-aligned Republic of Vietnam (South Vietnam) and the Communist-controlled Democratic Republic of Vietnam (North Vietnam). South Vietnam's area of 66,000 square miles is slightly larger than that of Iowa; the population totals 14,647,000 (1962 est.). North Vietnam has a population of 16,400,000 (1960 est.). Principal cities in South Vietnam are Saigon, the capital (1962 est., 1,400,000); Tourane (110,500); and Hué (104,500). The capital of

WIDE WORLD

U.S. Army helicopters, together with American soldiers to operate and maintain them, have been an important form of military support given by the United States to the South Vietnamese in their fight against the Communist Vietcong guerrillas. (*Above*) An American acts as an observer of a ground action against guerrillas in the Mekong Delta area.

WIDE WORLD

(*Above*) A U.S. Army helicopter takes off after transporting three South Vietnamese soldiers to a strategic point near Hung My, in February. Several helicopters have been shot down in action. (*Below*) The last person to leave a crashed helicopter, an American, escapes safely before it is blown up to prevent capture by the enemy, in December.

WIDE WORLD

North Vietnam is Hanoi (1960 census pop., 642,576); the largest port is Haiphong (369,248). The official language is Vietnamese; minority languages include Chinese, Thai, and French.

South Vietnam

Government.—Although the constitution promulgated in October 1956 proclaims democratic ideals, individual liberty, and equal rights, legal opposition to the government is not permitted. The president of the republic is elected for 5 years by direct universal suffrage; Ngo Dinh Diem assumed the presidency on Oct. 26, 1956, and was elected to a second 5-year term on April 6, 1961. The National Assembly of 123 deputies was elected to a 3-year term by universal suffrage in 1959; elections scheduled for 1962 were postponed by the Assembly (see below, *Events, 1962*). A Constitutional Court passes on the legality of laws, decrees, and administrative directives. There are two political parties: the Party for the Change of Workers' Condition, led by Ngo Dinh Nhu, a brother of President Ngo Dinh Diem; and the Movement of the National Revolution, controlled by friends of the president.

Education and Religion.—Number of national Vietnamese schools (with enrollments, 1961): 4,286 primary (1,068,956); 82 secondary (74,437); 43 technical (5,723); 10 collegiate (11,708). Private schools (with enrollments): 2,084 primary (252,520); 322 secondary (120,000); 130 technical (4,716). French schools enrolled 13,110 students. Higher education is provided by universities in Saigon, Hué, and Dalat. Principal religions are Confucianism, Taoism, and Buddhism. There is an influential Roman Catholic minority of about 1.5 million persons who live chiefly in the south. Other religious sects are Cao Dai and Hoa Hao.

Finance.—The monetary unit is the piastre (VN$), which as of Jan. 1, 1962, was devalued from the official exchange rate of VN$35 to the U.S. dollar to a new rate for all trade transactions of VN$60 to the dollar. A supplementary budget of VN$1,615 million was added in late 1961 to the regular estimated budget of VN$14,985 million for the fiscal year 1961. Some 38.7% of total expenditure was for defense. United States military aid in 1961 totaled about VN$4,515 million.

Transportation.—Transport networks (miles, 1960): state-owned railways, 987; main roads, 2,175; secondary, 1,800 (asphalted). Air Vietnam provides local service, and several foreign airlines stop at Saigon. Passenger cars (1961 est.): 36,000.

Production.—Gross national product, 1960 est.: U.S.$2 billion. In 1961 an estimated 1.3 million of the 1.6 million farmers were landowners. Agriculture accounts for over 90% of total export value. Rubber (76,600 metric tons produced in 1960) earns over 60% of all foreign exchange. Rice is the chief food crop; output in the 1961–62 crop year was 4.7 million metric tons. Other crops are corn, copra, sugar, tobacco, manioc, peanuts, and hard fibers. Small-scale manufactures include cotton cloth, chemicals, matches, footwear, soap, and building materials. Small deposits of coal are mined. Electric power, 1960: 293 million kw.-hr.

Foreign Trade.—Total exports, 1961: VN$2,478 million (down 17% from 1960); imports, VN$8,928 million (up 5%). Chief exports, 1961: rubber, VN$1,534 million; rice, VN$514 million. Chief imports are foods, petroleum products, minerals, textiles, metal manufactures, and drugs. South Vietnam's principal customers are France and Great Britain; chief suppliers are the United States, France, and Britain.

Events, 1962.—The deadlocked war in South Vietnam continued between the South Vietnamese Army, which numbered 205,000 regular troops at the end of 1962, and the Communist-led Vietcong rebels, who comprised an estimated 20,000 guerrillas. In an attempt to isolate the rebels and protect the rural population, President Ngo Dinh Diem's government put into operation the so-called Delta Plan, under which thousands of peasants were relocated in about 2,000 fortified "strategic hamlets" in the Mekong River delta. The army conducted successful large-scale operations against the Vietcong in the Plain of Reeds, situated about 60 miles west of Saigon, and won many minor engagements in other areas. In the first nine months of the year an estimated 12,000 Vietcong rebels were killed by government forces, which in the same period reported losses of about 3,000 troops. Rebel resistance reportedly had been contained by the end of 1962.

The government's military operations were supported by the U.S. Military Assistance Command, Vietnam, which was established in Saigon in February, under the command of Gen. Paul D.

Harkins. There were in South Vietnam in early 1962 an estimated 4,000 United States military advisers who trained regular and irregular troops, and actively supported Vietnamese forces engaged in combat missions. United States servicemen exchanged fire with Vietcong rebels while serving in combat as troop advisers or as airplane pilots and observers. U.S. Army helicopters carrying Vietnamese troops and piloted by Americans were shot down on several occasions. Casualties suffered by United States officers and enlisted men totaled 34 killed and 85 wounded from December 1961 to November 1962.

The United States, which since 1954 has contributed more than $2 billion in aid to South Vietnam, accelerated both its military and economic assistance to President Ngo Dinh Diem's government. Economic aid distributed by the U.S. Operations Mission in South Vietnam was valued at about $200 million in 1962. United States officials declared their firm support for the Vietnamese government. U.S. Attorney General Robert F. Kennedy, during a brief stopover at Saigon airport on February 18, said that United States forces would remain in the country until the Communist-led rebels were defeated.

South Vietnam and the United States jointly announced on January 4 an 11-point economic and social program to increase the country's living standards, develop agriculture and industry, and expand education and public health facilities. The government on January 8 inaugurated a consultative 55-member National Economic Council, but the National Assembly later modified the constitution in order to postpone scheduled elections until 1963. The latter action tended to increase apparent popular dissatisfaction with the government, which has been accused of being authoritarian and repressive.

President Ngo Dinh Diem escaped an assassination attempt by two rebellious fighter pilots who strafed and bombed the presidential palace in Saigon on February 27.

South Vietnam's troubled relations with neighboring Cambodia, Laos, and North Vietnam deteriorated further during the year. The government on April 23 charged that Cambodian troops had attacked a village inside the Vietnamese border and had killed 52 persons. South Vietnam in late July filed a protest with the three-nation International Control Commission against the alleged infiltration from Laos of North Vietnamese guerrillas, who reportedly carried arms and ammunition that had been manufactured in Communist China.

North Vietnam

Government.—The Communist-type Democratic Republic of Vietnam is ruled by the leaders of the Lao Dong (Worker's Party). The constitution of 1960 provides for a National Assembly of 450 members elected for 4 years by universal suffrage. The Assembly elects a Standing Committee to exercise legislative powers when it is not in session. In 1960, Ho Chi Minh was re-elected president to a 4-year term, and Pham Van Dong was renamed premier and foreign minister.

Education.—The Communist regime claims that illiteracy is practically nonexistent. School enrollment, 1960–61 school year: primary, 2,386,000; technical, 35,500; and higher, 17,900. An additional 3,000 students reportedly attended universities in other Communist countries.

Transportation.—Internal transport is chiefly by means of the Red River and its tributaries. Railways at the end of 1960 aggregated 485 miles of track, mostly radiating from Hanoi. War-damaged roads have been largely rebuilt with Communist Chinese aid. The state airline provides internal service; the Chinese airline connects Hanoi with China.

Economy.—About 40% of all peasant families were organized in state cooperatives in 1961. Rice is the chief crop; output of paddy was 4.5 million metric tons in 1960. Secondary crops are sugarcane (441,800 metric tons in 1960), maize, tea, and cotton. The principal mineral is coal, production of which totaled 2.6 million metric tons

UPI

In an effort both to isolate guerrillas of the Communist Vietcong and to prevent further inroads in sparsely populated rural areas, the South Vietnamese government began a program of relocating villagers to fortified strategic hamlets. (*Above*) Peasants carrying their belongings are escorted to their new home by government troops in August.

UPI

(*Above*) South Vietnamese soldiers, searching for Vietcong Communists in the Darlac Plateau in November, cross a creek under a bridge that was dynamited by the guerrillas. (*Below*) Aerial view of a well-guarded village near Kontum, South Vietnam, in which anti-Communist mountain tribesmen were resettled for protection against Vietcong guerrillas.

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in 1960. Other minerals include phosphates, salt, tin, and chromite. Recent industrialization, mainly in the Hanoi area, has resulted in the expansion of the metallurgical, chemical, textile, rubber, building materials, and artificial fertilizer industries, and industrial production is planned to be more than doubled under the first 5-year plan (1961–66). Electric power output was 254 million kw.-hr. in 1960. North Vietnam's trade is predominantly with Communist China and other Communist countries.

Events, 1962.—North Vietnam was guilty of "subversion and aggression" in South Vietnam, according to a report of the International Control Commission issued in May. The Communist regime denied the charges and again claimed that a people's "war of liberation," not subversion, was occurring in South Vietnam. The North Vietnamese government admitted publicly for the first time that it actively supported the Vietcong rebels, for on January 18 it announced the formation of the Vietnam People's Revolutionary Party for the purpose of overthrowing the government of South Vietnam. The Communist regime on June 23 ordered an intensified struggle by the Vietnamese people to destroy strategic hamlets in South Vietnam.

In an effort to counter United States large-scale aid to South Vietnam, North Vietnam reportedly received increased military assistance from Communist China. It was reported early in the year that about 3,500 Chinese soldiers were acting as advisers to the North Vietnamese Army, and that many of the estimated 16,000 North Vietnamese guerrillas operating in South Vietnam had been trained by Chinese soldiers.

In September there were reports that North Vietnam had begun to build a bamboo wall along its 38-mile border with South Vietnam, apparently to keep refugees from escaping and to prevent infiltration by South Vietnamese agents.

(See also FAR EAST.)

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VIRGIN ISLANDS, British. See BRITISH VIRGIN ISLANDS.

VIRGIN ISLANDS OF THE UNITED STATES

Constituting an organized but unincorporated insular territory of the United States, the Virgin Islands of the United States are located approximately 1,400 miles southeast of New York, N.Y., and 40 miles east of Puerto Rico. They form part of the island chain extending between the Caribbean Sea and the Atlantic Ocean. Purchased from Denmark for $25 million in 1916 and formally transferred to the United States on March 31 of the following year, the islands are under the jurisdiction of the U.S. Department of the Interior.

Area and Population.—Having an area of 133 square miles, the Virgin Islands territory comprises three main islands (St. Thomas, 32 square miles; St. Croix, 82; and St. John, 19) and approximately 50 small islets and cays (most uninhabited), included statistically with the larger islands. According to the 1960 census, the population is 32,099 (St. Croix, 14,973; St. Thomas, 16,201; and St. John, 925). The chief cities are Charlotte Amalie, the capital (12,880), on St. Thomas, and Christiansted (5,137) and Frederiksted (2,177), on St. Croix.

Government.—The basic law of the Virgin Islands is known as the Organic Act. Since its revision on July 22, 1954, legislative power has been vested in a unicameral Legislature composed of 11 members elected for two-year terms, five representing the three legislative districts into which the islands are divided and six being members at large. Sessions are 60 consecutive calendar days in duration, and special sessions totaling not more than 30 days annually may be called by the governor.

During its regular 1962 session the Legislature considered 111 proposals, of which 90 bills, including 8 resolutions, were enacted or adopted. Of those enacted, 77 received executive approval. (See also below, *Events, 1962.*)

Executive powers are vested in the governor of the Virgin Islands, who is appointed by the president of the United States, subject to confirmation by the U.S. Senate. Principal territorial officials in 1962 were: Ralph M. Paiewonsky, governor (April 5, 1961); Cyril E. King, government secretary (May 4, 1961); Walter I. M. Hodge, president of the Legislature; Walter A. Gordon, judge of the U.S. District Court; and Almeric Christian, United States attorney. There are 10 executive departments, each administered by a commissioner, and a department of law headed by an attorney general. All are appointed by the governor with the advice and consent of the Legislature.

Judicial functions are carried out by the District Court of the Virgin Islands, the court of record, and by the Municipal Court of St. Thomas–St. John and the Municipal Court of St. Croix. The district court judge is appointed by the president of the United States, and the municipal court judges are appointed by the governor with the advice and consent of the Legislature for terms of eight years.

Finance and Banking.—Total revenue for the fiscal year ending June 30, 1962, from real property taxes, income taxes, miscellaneous revenues, matching funds, grant-in-aid funds, and miscellaneous federal contributions amounted to $20,748,311.62. Major expenditures by departments were: Health, $3,777,710.41; Education, $2,790,820.43; Public Works, $2,391,652; and Welfare, $1,260,811.

The islands are served by the Virgin Islands National Bank and by four branches of the Chase Manhattan Bank. A branch of the First Federal Savings and Loan Bank of Puerto Rico, specializing in long-term mortgages, was established in 1962.

Education.—School attendance is compulsory between the ages of 5½ and 16, inclusive. In 1962 the three major islands had 29 public schools, consisting of 6 kindergartens, 11 rural schools, 9 city elementary schools, 1 junior high school, and 2 junior-senior high schools. Public school enrollment totaled 7,624 at a per capita cost of $339.02 (exclusive of adult education, school lunch, and community services costs). There were also 9 parochial and 2 private schools enrolling 3,115. Public funds available for education in the 1961–62 fiscal year totaled $3,064,008.

Industry, Tourism, and Trade.—The most important industries of the Virgin Islands are agriculture and the production of rum and spirituous liquors, and the chief business activity is tourism.

There are approximately 376 farms in the islands which cover 36,533 acres and which had 28,637 acres in crops that were harvested during the fiscal year 1960. The growing of sugarcane, the processing of raw sugar, and the breeding of livestock are the main supports of the economy of St. Croix.

On St. Thomas, tourism has supplanted rum production as the principal source of revenue. During the year ending June 30, 1962, total income from tourists in the islands was estimated at $35,100,000. An estimated 234,389 tourists visited the Virgin Islands during the fiscal year 1962.

In the 1961 calendar year the total value of merchandise exports from the Virgin Islands was $9,133,124, of which $8,317,418 went to the United States. Imports totaled $50,208,444, of which $38,725,786 was from the United States.

Transportation and Communications.—Daily air service is provided between the Virgin Islands and Puerto Rico, and between St. Thomas and St. Croix. Daily mail and passenger service by boat is furnished between St. Thomas and St. John. In 1961–62, 131 large cruise ships made St. Thomas a port of call.

St. Croix has 180 miles of highways serving the island's 3,354 motor vehicles; on St. Thomas and St. John, 106 miles of roads serve 4,015 motor vehicles.

Communications media and facilities include three daily and two triweekly newspapers. There are two cable offices on St. Thomas, and one on St. Croix, one radio station on each of these islands, two television stations on St. Thomas, and approximately 4,000 telephones. Work is nearing completion on a dial telephone system.

Events, 1962.—Tourism continues to be the economic backbone of the Virgin Islands. The newly created Department of Commerce expanded its activities to promote tourism and trade. Considerable progress was made in planning for diversification of industries when an act ratifying an agreement making facilities available for the establishment of a large alumina processing plant on St. Croix was passed by the Legislature.

Housing construction, the islands' most important problem, was speeded up. An act creating the Department of Housing and Community Renewal was passed in 1962, as well as a homestead exemption act and a zoning and subdivisions law.

The Legislature also passed an act to establish the College of the Virgin Islands, and plans have been made to open the college in July, 1963.

A jet airport and a deep-water pier were completed on St. Croix, and direct commercial jet

service between the United States and St. Croix was initiated from Miami on June 10 and from New York on Dec. 21, 1962. Extension of the airport in St. Thomas was completed to accommodate turboprop planes.

The U.S. National Park Service expanded and improved its facilities on St. John, and established the Buck Island Underseas Park. The Legislature authorized transfer to the National Park Service of Buck Island, off St. Croix, for administration as a national monument.

RALPH M. PAIEWONSKY,
Governor of the Virgin Islands.

VIRGINIA

A South Atlantic state of the United States, Virginia ranks 36th among the states in area (land, 39,838 square miles; inland water, 977) and 14th in population (4,177,000 on July 1, 1962, a 5.3% increase from the 1960 census figure of 3,966,949). As of Jan. 1, 1963, the state was divided politically into 96 counties and 34 independent cities. Urban places with populations above 15,000 in 1960:

Alexandria	91,023	Norfolk	305,872
Arlington County[1]	163,401	Petersburg	36,750
Bristol	17,144	Portsmouth	114,773
Charlottesville	29,427	Richmond (*capital*)	219,958
Danville	46,577	Roanoke	97,110
Hampton	89,258	Salem	16,058
Hopewell	17,895	South Norfolk	22,035
Lynchburg	54,790	Staunton	22,232
Martinsville	18,798	Waynesboro	15,694
Newport News	113,662	Winchester	15,110

[1] Both a county and an urban township.

Government.—Chief executive and judicial officers in 1962 included Albertis S. Harrison, Jr. (Democrat), governor, serving a four-year term; Mills E. Godwin, Jr., lieutenant governor; Martha Bell Conway, secretary of state; Lewis H. Vaden, treasurer; J. Gordon Bennett, auditor; Robert Y. Button, attorney general; Woodrow W. Wilkerson, superintendent of public instruction; and John W. Eggleston, chief justice of the 7-member Supreme Court of Appeals.

The Virginia General Assembly, which convenes in even-numbered years, comprised 38 Democrats and 2 Republicans in the Senate in 1962 and 94 Democrats, 5 Republicans, and 1 Independent in the House of Delegates.

Legislation, 1962.—The General Assembly approved a biennial budget (general fund) amounting to $573,500,000, 15% more than the budget adopted in 1960. Concern over the increased budget led to the creation of a 15-member State Tax Study Commission. Pending completion of the study of state and local revenues and expenditures, the Assembly agreed to defer proposed changes in the tax structure. The temporary taxes of 1960 on cigarettes, tobacco, and alcoholic beverages were continued. In addition, a withholding tax plan was adopted, to go into effect in 1963. It was estimated that the withholding plan would bring in more than $6 million in the biennium through more efficient collection, in addition to a one-time windfall of more than $20 million. Sales tax proposals, which had badly split the Assembly in 1960, were voted down by large majorities.

Reapportionment of the membership of the House and Senate brought a suit to require further redistricting (see below, *Events, 1962*). The Assembly provided for a two-year moratorium on local annexations, awaiting a comprehensive study of urban-rural problems by the Virginia Advisory Legislative Council. Certain pending cases, such as the Richmond annexation suits against Henrico and Chesterfield counties, were exempted from the moratorium.

Appropriations for public schools were increased significantly and a new formula was worked out for distributing state funds. The salary range for public school teachers was increased to $3,400–$4,900, compared with the existing scale of $3,000–$4,200. The Assembly also provided substantial increases for operating expenses of the several public institutions of higher learning, including about $4 million in the next biennium for faculty salary increases. Norfolk College and Richmond Professional Institute were separated from their parent body, William and Mary College; the three will now exist as independent institutions.

The Assembly transferred responsibility for industrial development from the Department of Conservation and Economic Development to the governor's office. After considerable debate and a variety of suggestions, the Assembly adopted a daylight saving time (DST) bill. From Memorial Day to Labor Day the whole state, with the exception of Bristol, will be on DST.

A measure was passed permitting statewide bank mergers by repealing the 25-mile radius limitation in the existing law. Also passed was the "implied consent" law, under which a driver is presumed to have consented to taking a blood test if charged with drunken driving. A bill was passed to implement the Kerr-Mills hospitalization program for the aged with an appropriation of $250,000 to begin the program in the second year of the biennium.

Finance.—In the 1961 fiscal year, revenue of $685,959,596 included $370,239,891 from state taxes and $108,100,932 in federal funds. Chief tax yields were from individual incomes ($81,340,014), motor fuels ($90,384,444), and licensing ($51,918,163). Spending of $636,026,613 included $195,455,940 for education, $86,555,724 for health, welfare, and safety, and $150,985,621 for highways.

Education.—In the fall of 1962, public elementary schools staffed by 20,501 teachers enrolled 611,208; secondary schools with 14,925 teachers enrolled 294,532; and (fall 1961) parochial schools with 1,030 teachers enrolled 35,577. College enrollment totaled 61,908.

In the 1961–62 school year, operating expenditures for public schools totaled $241,141,494 ($290.42 per pupil) and outlays for construction and improvement amounted to $59,435,694. Revenue was drawn chiefly from state funds ($104,125,513) and local districts ($117,576,092). Teachers' salaries averaged $4,640 (high school, $4,778; elementary, $4,512). Operating expenditures for higher education totaled $28,443,726 and outlays for construction and improvements amounted to $13,218,217.

Public Assistance.—In the 1961 fiscal year, public assistance payments to a monthly average of 70,619 persons totaled $26,607,531. This amount included $11,092,461 for dependent children and $8,815,718 for the aged.

Transportation and Communications.—With 380 miles of highway construction and reconstruction completed during the 1961 fiscal year, *highways and roads* on June 30, 1961, totaled 56,581 miles (54,841 surfaced). These served 1,512,654 *motor vehicles* (as registered on Sept. 30, 1961), including 1,147,135 automobiles. Operating in the state in 1961 were 26 *railroads* (using 2,789 line miles of track); 5 regularly scheduled *airlines;* and 66 commercial and municipal *airports and airfields.*

Communications media included (1961) 100 AM and 26 FM *radio stations;* 11 VHF *television stations;* 32 daily *newspapers* (circulation, 885,313) and 105 other newspapers (310,723); and (Jan. 1, 1962) 395,100 business and 1,000,800 residential *telephones.*

Labor Force.—The state's labor force in July 1962 included 147,350 agricultural workers. Nonagricultural employees numbered 1,062,300, compared with 1,027,700 for the previous July and an average of 1,030,000 for the full year 1961. Of nonfarm employees, 27.1% were in manufacturing, 20.4% in trade, and 18.7% in government services. Unemployment in July 1962 stood at 50,950, compared with 66,100 a year earlier.

Manufacturing.—Manufacturing engaged an average of 275,100 workers in 1961, including 226,500 in production, and provided a payroll of $1,192,197,000. Value added by manufacture totaled $2,540,388,000.

LEADING VIRGINIA MANUFACTURES, 1961[1]

Industry group	Average no. of employees	Salaries and wages (in thousands)	Value added by mfr.[2] (in thousands)
Chemicals and products	33,000	$194,303	$516,845
Food and kindred products	32,100	123,332	302,014
Tobacco manufactures	13,300	58,131	292,147
Textile mill products	35,200	122,235	223,258
Transportation equipment	23,100	146,184	217,820
Paper and allied products	11,300	61,950	139,549
Furniture and fixtures	16,700	62,389	114,238
Lumber and wood products (except furniture)	22,800	60,730	104,202
Electrical machinery	9,800	53,954	100,226
Apparel and related products	24,000	64,230	96,855

[1] Preliminary estimates. [2] Value of product less cost of materials, supplies, fuel, electric energy, and contract work. (Source: Virginia Department of Labor and Industry.)

Mining.—In 1961, Virginia ranked 19th among the states in the value of its mineral output, with 1.22% of the national total. Increases in production of coal, lead, and zinc brought the total up 9% over 1960. Fuels provided 57% of the total value; nonmetals, 39%; and metals, 4%. Virginia was the sole producer of aplite, first in output of kyanite, and third in pyrites and titanium.

WIDE WORLD

Albertis S. Harrison, Jr. (left), is sworn in as governor of Virginia by Chief Justice John Eggleston, January 13.

VIRGINIA MINERAL PRODUCTION, 1961
(In short tons, except as noted)

Mineral	Quantity	Value
Clays	1,406,000	$ 1,332,000
Coal	30,332,000	126,121,000
Coke	307,833	4,777,000[1]
Lead (recoverable content of ore)	3,733	769,000
Lime	739,000	8,596,000
Natural gas (1,000 cu. ft.)	2,466,000	668,000
Sand and gravel	9,839,000	14,697,000
Stone	22,934,000	39,206,000
Zinc (recoverable content of ore)	29,163	6,726,000
Other minerals	...	28,414,000
Total	...	$221,835,000[2]

[1] Value of processed minerals not included in total. [2] Total adjusted to eliminate duplication in the value of clays and stone. (Source: U.S. Bureau of Mines.)

Agriculture.—Cash farm income for the first nine months of 1962 (excluding government payments) totaled $273,660,000, compared with $266,926,000 for the corresponding period of 1961. For the full year 1961, income comprised $250,929,000 from livestock, $229,880,000 from crops, and $12,699,000 in government payments. Principal income sources in 1961 were tobacco, $92,396,000; wholesale milk, $79,138,000; cattle, $66,051,000; and eggs, $34,480,000.

The state's 98,000 farms in 1959 had an acreage of 13,126,000 (2,858,000 in harvested cropland). Livestock on farms on Jan. 1, 1962, included 1,422,000 cattle, 628,000 hogs, 284,000 sheep, and 6,755,000 chickens, and (1961) 52,331,000 commercial broilers. An average of 149,000 family and 54,000 hired workers engaged in farming in 1961.

VIRGINIA CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Apples (1,000 bu.)	9,505	10,500	9,800
Corn for grain (1,000 bu.)	28,650	28,885	32,040
Peaches (1,000 bu.)	1,470	1,500	1,500
Peanuts (1,000 lb.)	213,031	192,400	239,200
Potatoes (1,000 cwt.)	3,622	4,784	3,732
Soybeans (1,000 bu.)	4,467	7,749	7,974
Sweet potatoes (1,000 cwt.)	1,545	1,730	2,667
Tobacco (1,000 lb.)	156,219	147,686	172,506
Wheat (1,000 bu.)	6,852	7,122	4,117

(Source: U.S. Department of Agriculture.)

Events, 1962.—Albertis S. Harrison, Jr., was inaugurated governor on January 13, succeeding J. Lindsay Almond, Jr. The quarrel in U.S. Sen. Harry Byrd's Democratic organization which developed in 1959 over the abandonment of massive resistance to school desegregation, and which reached a climax in the Democratic primaries of 1961, was not a major political factor in 1962. In contrast to 1960, the session of the General Assembly was generally harmonious (see above, *Legislation, 1962*).

The most important political development of the year dealt with reapportionment. The Assembly reallocated two state Senate seats and three House seats, but suit was brought in the spring, on the basis of the U.S. Supreme Court's *Baker* v. *Carr* decision, calling for more representation for urban areas. In the fall a special federal court, in a 2–1 divided opinion, found the current apportionment of seats unconstitutional. There was some speculation that the Assembly might be called to enact a new redistricting bill, but Governor Harrison appealed the decision to the U.S. Supreme Court, and a stay of the lower court's order was granted. Arguments were not to be heard until 1963. The matter was of special importance at this time because in 1963 all 40 Senate seats and the 100 House seats will be up for election.

Public school desegregation, in its fourth year, advanced slowly with token integration prevailing in the desegregated areas. Desegregation came to 11 new school districts, raising the total to 31, while 103 districts remained without any desegregation. The number of desegregated schools rose from 75 to 140, and the number of Negroes in such schools increased from 536 to 1,230. However, 99.4% of all Negro public school children continued to attend segregated schools. As in the past, no serious incidents occurred in connection with school desegregation. At the college and university level, fewer full-time Negro students (45 to 50) enrolled in desegregated institutions than in 1961 (56).

Threatened school desegregation in Powhatan County aroused considerable interest during the summer. County authorities indicated that they would close schools rather than desegregate. A desegregation suit in behalf of 65 Negro children was filed on August 17, but no Powhatan schools were desegregated in September and the suit was pending.

Public schools remained closed for the fourth consecutive year in Prince Edward County. When the school year began, some 1,300 white children enrolled in the private schools operated by the Prince Edward School Foundation. As in 1961–62, the county was prohibited by Federal District Judge Oren R. Lewis from issuing tuition grants so long as public schools remained closed. Except for 130 or more Negro students who attended schools outside the county, there were no schools for Negroes.

Litigation in the Prince Edward case proceeded in both federal and state courts during the year, but without conclusive results. On March 5, the state Supreme Court of Appeals ruled that Virginia's constitution did not require the county to operate public schools. The case then returned to federal court. On July 26, Judge Lewis issued an opinion stating that the public schools of the county could not be closed to avoid desegregation while schools elsewhere in Virginia remained open, and he ordered the school board to prepare a plan for admitting pupils to the public schools. On October 26 he postponed issuing an order requiring compliance with this decision in order to allow time for an appeal. The decision was appealed to the U.S. Fourth Circuit Court and arguments were set for Jan. 9, 1963.

"Legislation" and "Events" by: PAUL M. GASTON,
Assistant Professor of History,
The University of Virginia.

VIRUSES. See Index entry.
VISION. See OPHTHALMOLOGY.
VITAL STATISTICS. See Index entry.
VITAMINS. See Index entry.
VOCATIONAL EDUCATION. See EDUCATION.
VOCATIONAL GUIDANCE AND REHABILITATION. See Index entry, *Vocational Guidance.*

VOICE OF AMERICA. See UNITED STATES INFORMATION AGENCY.
VOLCANOLOGY. See Index entry.
VOLLEYBALL. See SPORTS, GAMES, AND SHOWS.
VOLTAIC REPUBLIC. See UPPER VOLTA.
VOSTOK MANNED SATELLITES. See SPACE FLIGHT.

WORLD HEALTH ORGANIZATION—Congolese at Kasonga gather around a WHO doctor, the first physician to visit them in a year.

UPI

WAGES AND HOURS

Average weekly hours for production workers in manufacturing industries in the United States varied from an average 40.6 hours per week in November 1961 to 39.7 hours per week in January 1962, and remained fairly stable during 1962. The average in November 1962 was 40.4 hours per week. Gross average weekly earnings for production workers reached an all-time high of $97.36 in November 1962, compared with $95.82 in November 1961.

As shown in Table 1, average gross weekly earnings increased in 38 classifications and decreased in 8 classifications. The decrease in average earnings was generally accompanied by a decrease in the average hourly workweek. Increases varied from 4 cents per week in the leather and leather products industry to $9.23 per week in the transport equipment industry. Losses in average weekly earnings varied from 19 cents in the apparel industry to $15.78 among workers employed in the dealing and exchange of securities.

Table 1—AVERAGE WEEKLY HOURS AND GROSS EARNINGS OF PRODUCTION WORKERS, BY INDUSTRY[1]

Industry group and industry	Average weekly hours in October 1962[2]	Average weekly hours in October 1961	Average weekly earnings in October 1962[2]	Average weekly earnings in October 1961
Mining	41.3	41.8	$111.51	$111.19
Metal mining	40.9	42.1	115.75	117.88
Coal mining	36.8	37.8	114.08	117.18
Bituminous	36.7	37.9	114.87	118.63
Crude petroleum and natural gas	41.9	42.5	108.94	107.95
Quarrying and nonmetallic mining	46.0	45.7	111.32	106.48
Contract construction	38.3	38.2	127.16	123.00
General building contractors	36.7	36.8	117.44	112.98
Heavy construction	42.4	42.5	128.05	127.08
Special trade contractors	37.3	37.2	133.16	127.97
Manufacturing (total)	40.3	40.4	96.72	94.54
Durable goods	41.0	41.2	105.37	102.66
Ordnance and accessories	41.2	41.4	117.01	115.92
Lumber and wood products (except furniture)	40.1	40.5	79.80	81.41
Furniture and fixtures	41.4	41.3	81.14	80.12
Stone, clay, and glass products	41.4	41.3	100.60	97.88
Primary metal industries	39.4	40.3	116.62	119.29
Fabricated metal products	41.2	41.1	105.88	102.75
Machinery	41.4	41.3	112.61	109.03
Electrical equipment and supplies	40.7	40.7	98.49	96.05
Transportation equipment	42.6	41.3	126.52	117.29
Instruments and related products	40.9	41.1	100.21	98.64
Miscellaneous manufacturing industries	39.9	40.2	78.60	76.78
Nondurable goods	39.4	39.8	85.89	84.77
Food and kindred products	40.7	41.4	91.17	89.84
Tobacco manufactures	39.3	40.8	67.60	69.36
Textile-mill products	40.5	40.9	68.45	67.08
Apparel and related products	35.9	35.8	59.95	60.14
Paper and allied products	42.5	43.0	103.28	101.91
Printing, publishing, and allied industries	38.1	38.3	107.44	105.71
Chemicals and allied products	41.3	41.6	110.68	108.58
Petroleum refining and related industries	41.6	41.7	126.88	125.93
Rubber and miscellaneous plastic products	40.9	40.7	101.02	98.49
Leather and leather products	36.3	36.7	62.80	62.76
Transportation and public utilities:				
Class I railroads	...	42.1	...	112.41
Local and suburban transportation	41.9	42.9	100.14	98.24
Motor freight transportation and storage	41.4	42.3	113.02	111.67
Pipeline	39.7	40.3	128.63	133.80
Telephone	40.0	40.1	100.00	96.64
Telegraph[3]	41.6	41.9	107.74	104.33
Electric, gas, and sanitary services	40.9	41.2	118.20	114.95
Wholesale and retail trade[4]	38.5	38.6	75.46	73.34
Wholesale trade	40.6	40.6	97.03	94.60
Retail trade[4]	37.6	37.8	66.55	64.64
Finance, insurance, and real estate:				
Banking	37.3	37.1	72.74	70.12
Security dealers and exchanges	...	...	108.93	124.71
Insurance carriers	...	...	93.78	90.34
Services and miscellaneous:				
Hotels, tourist courts, and motels[5]	38.7	39.9	46.83	47.08
Laundries, cleaning and dyeing plants	39.1	39.1	50.83	50.05
Motion-picture filming and distributing	...	...	118.10	114.80

[1] For mining, manufacturing, laundries, cleaning and dyeing plants data refer to production and related workers; and for the remaining industries to nonsupervisory workers. [2] Preliminary. [3] Data relate to nonsupervisory employees, except messengers. [4] Except eating and drinking places. [5] Money payments only; additional value of board, room, uniforms, and tips not included. (Source: U.S. Department of Labor, Bureau of Labor Statistics.)

Hourly earnings for production workers in manufacturing (excluding premium overtime) averaged $2.32 in October 1962, an increase of 6 cents per hour from October 1961. In October 1962, gross average hourly earnings reached a high of $2.40, with the rate in durable goods averaging $2.57 per hour and in nondurable goods averaging $2.19 per hour.

Table 2—AVERAGE GROSS HOURLY EARNINGS IN MANUFACTURING[1]

Industry	Average hourly earnings in month of October			
	1962	1961	1960	1959
All manufacturing	$2.40	$2.35	$2.27	$2.18
Durable goods	2.57	2.51	2.43	2.34
Ordnance and accessories	2.84	2.81	2.70	2.60
Lumber and wood products (except furniture)	1.99	2.01	1.92	1.92
Furniture and fixtures	1.96	1.93	1.89	1.84
Stone, clay, and glass products	2.43	2.37	2.31	2.24
Primary metal industries	2.96	2.97	2.78	2.62
Fabricated metal products	2.57	2.51	2.45	2.34
Machinery	2.72	2.64	2.56	2.50
Electrical equipment and supplies	2.42	2.36	2.29	2.22
Transportation equipment	2.97	2.83	2.79	2.68
Instruments and related products	2.45	2.39	2.34	2.34
Miscellaneous manufacturing industries	1.97	1.92	1.89	1.90
Nondurable goods	2.18	2.14	2.06	1.99
Food and kindred products	2.24	2.18	2.10	2.02
Tobacco manufactures	1.72	1.73	1.58	1.55
Textile-mill products	1.69	1.65	1.61	1.58
Apparel and related products	1.67	1.69	1.62	1.61
Paper and allied products	2.43	2.37	2.28	2.21
Printing, publishing, and allied industries	2.82	2.77	2.69	2.62
Chemicals and allied products	2.68	2.62	2.53	2.44
Petroleum refining and related industries	3.05	3.04	2.87	2.86
Rubber and miscellaneous plastic products	2.47	2.41	2.35	2.29
Leather and leather products	1.73	1.70	1.65	1.60

[1] For coverage, see footnote 1 to Table 1.

Weekly gross earnings for production workers ranged from $59.95 in the apparel and related products industry to $126.88 in petroleum refining and related industries. Including the nonmanufacturing industries, the highest earnings in October 1962 were recorded in the special trades of the contract construction industry, averaging $133.16 for an average 42.4 hour workweek. The lowest average earnings for industries recorded in Table 1 for October 1962 were $46.83 per week in the hotel and motel industry, with the workweek averaging 38.7 hours.

J. L. L.

WAKE ISLAND. See PACIFIC ISLANDS.

WALES

Forming a peninsula in western Great Britain, Wales comprises 13 counties (including Monmouthshire) with a total area of 8,017 square miles, and a population (1961 provisional census) of 2,640,632. Chief county boroughs and populations (1961 provisional census): Cardiff, 256,270; Swansea, 166,740; Newport, 108,107; Rhondda, 100,314; and Merthyr Tydfil, 59,008. About 26% of the population speak Welsh.

Wales returns 36 members to the House of Commons, and the British government includes a minister of state for Welsh affairs (Lord Brecon, appointed in 1957). The Council for Wales and Monmouthshire advises the national government on matters affecting the area, including the increasing unemployment and depopulation of the rural areas. The four constituent colleges of the University of Wales had 6,975 students in 1961–62.

Wales produces approximately 90% of Britain's sheet steel and 30% of its crude steel, provides virtually all of its tinplate, accounts for 40% of its coal exports, and supplies about 40% of its aluminum. Agriculture employs about 80,000 persons

The first Atlantic College was opened near Cardiff on Oct. 3, 1962. The college enrolled 56 boys, aged 16 to 19, from 10 countries. The international school is the first of a group of pre-university schools that are planned to provide a cooperative environment for various nationalities.

WALLIS AND FATUNA ISLANDS

Situated west of Samoa and northeast of Fiji in the South Pacific, this French overseas territory comprises two archipelagoes: Fatuna or Hoorn (area, 44 square miles; 1961 est. pop., 7,000), and Wallis (area, 61 square miles; est. pop., 2,900). Matu-Utu, on Uvea (area, 24 square miles), is the capital. The population is mainly Polynesian.

This overseas territory, which was established on July 29, 1961, is administered by a French-appointed high commissioner (Jean Perie). He is assisted by a 6-member Territorial Council (which includes the three kings of the islands) and a 20-member Territorial Assembly. The economy of the islands is primarily one of subsistence agriculture, supplemented by fishing. The principal food crops are taro, arrowroot, cassava, yams, and bananas. The chief cash crop is copra (731 metric tons in 1960).

WALNUTS. See NUTS.

WALTER, Bruno

German–U.S. conductor: b. Berlin, Germany, Sept. 15, 1876; d. Beverly Hills, Calif., Feb. 17, 1962.

Bruno Walter (originally, Bruno Walter Schlesinger) was one of the great orchestra conductors of his time. Intellectual without being pedantic, individual without being eccentric, he was at home with almost every composer in the symphonic repertoire, and his operatic interpretations were superlative. Walter's knowledge and sure command of his art, along with his quiet, nonauthoritative manner, made him a favorite with musicians and audiences alike.

He began to study piano in early childhood, and by the age of eight had won a scholarship to the Singakademie in Berlin. He later attended the Stern Conservatory, also in Berlin. In 1893 he went to Cologne as opera coach, and in the following year he had his debut as conductor there. Shortly afterward he became opera coach at the Hamburg Stadttheater, where he came under the influence of the composer Gustav Mahler, then the conductor at Hamburg. This association, later continued in Vienna, had a profound effect on Walter, and he was destined to become Mahler's greatest interpreter.

His reputation by now established, Walter served as second conductor of the Breslau opera (1896–97), and first conductor of the operas at Pressburg (1897–98), Riga (1898–1900), and Berlin (1900–01). He was named second conductor, under Mahler, of the Imperial Opera in Vienna in 1901, and, following Mahler's death in 1911, first conductor. During the 1913–14 season he went to Munich, where he remained until 1922. He later was chief conductor of the Berlin opera (1925–29) and the Leipzig Gewandhaus Orchestra (1930–33). Meanwhile, he was frequently a guest conductor throughout Europe and in the United States, having first appeared in the latter in 1923.

Walter, who was a Jew, was forced to leave Germany in 1933. From 1936, following a series of highly successful guest appearances, until 1938, when Germany annexed Austria, he was artistic adviser and chief conductor of the Vienna State Opera.

In 1939, after a year in France, Walter took up residence in the United States, of which he subsequently became a citizen. His principal American conducting engagements were with the NBC Symphony, the New York Philharmonic, and the Metropolitan Opera. He was the author of three books, *Gustav Mahler* (1937; Eng. tr. 1941); *Theme and Variations* (1946); and *Of Music and Music-Making* (1957; Eng tr. 1961).

WARSAW PACT. See Index entry, *Council for Mutual Economic Assistance.*

WASHINGTON. City, District of Columbia. See DISTRICT OF COLUMBIA.

WASHINGTON

A Northwestern state of the United States, Washington ranks 20th among the states in area (land, 66,709 square miles; inland water, 1,483) and 23d in population (3,006,000 on July 1, 1962, a 5.4% increase from the 1960 census figure of 2,853,214). Urban places with populations above 15,000 in 1960:

Aberdeen	18,741	Seattle	557,087
Bellingham	34,688	Spokane	181,608
Bremerton	28,922	Tacoma	147,979
Everett	40,304	Vancouver	32,464
Longview	23,349	Walla Walla	24,536
Olympia (*capital*)	18,273	Wenatchee	16,726
Renton	18,453	Yakima	43,284
Richland	23,548		

Government.—Chief executive and judicial officers in 1962 included Albert D. Rosellini (Democrat), governor, serving a four-year term; John A. Cherberg, lieutenant governor; Victor A. Meyers, secretary of state; Tom Martin, treasurer; Cliff Yelle, auditor; John J. O'Connell, attorney general; Louis Bruno, superintendent of public instruction; and Robert C. Finley, chief justice of the 9-member Supreme Court.

The Washington Legislature, which convenes in odd-numbered years, comprised 26 Democrats and 13 Republicans in the Senate in 1962 and 59 Democrats and 40 Republicans in the House of Representatives.

Finance.—In the 1962 fiscal year, revenue of $895,490,876 included $515,701,303 from state taxes and $125,392,299 in federal funds. Chief tax yields were the 4% general sales tax ($199,449,503), motor fuel taxes ($74,981,394), and licensing ($37,014,980). Spending of $834,703,231 included $289,398,701 for education, $174,720,941 for health, welfare, and safety, and $103,847,776 for highways.

Education.—In the fall of 1962, public elementary schools staffed by 14,815 teachers enrolled 399,887 pupils; secondary schools with 11,553 teachers enrolled 284,959; and (fall 1961) parochial schools with 1,473 teachers enrolled 47,756. College enrollment (fall 1961) totaled 70,743.

Estimated public school spending in the 1961–62 school year totaled $354.25 million, including current expenditures of $275.5 million ($450 per pupil) and capital outlays of $63 million. Revenue of $370.3 million was drawn chiefly from state funds ($206.5 million) and local districts ($112 million). Teachers' salaries averaged $5,915 (high school, $6,095; elementary, $5,750). Actual spending for higher education (1961 fiscal year) totaled $91,149,000.

Public Assistance.—In the 1962 fiscal year, public assistance payments to a monthly average of 133,395 persons totaled $90,653,480. This amount included $36,853,175 for the aged and $26,288,627 for dependent children.

Transportation and Communications.—A total of 438 miles of highway construction and reconstruction were completed in the 1961 fiscal year. *Highways and roads* on Jan. 1, 1961, totaled 60,362 miles (20,752 surfaced). These served 1,545,204 *motor vehicles* (as registered on Jan. 1, 1961), including 1,103,122 automobiles. Operating in the state were (1962) 18 *railroads* (using, Jan. 1, 1961, 4,987 line miles of track); (1961) 11 regularly scheduled *airlines;* and 96 commercial and municipal *airports and airfields.*

Communications media included (1961) 91 AM and 21 FM *radio stations;* 11 VHF and 3 UHF *television stations;* 26 daily *newspapers* (circulation, 988,285); and (Jan. 1, 1962) 365,300 business and 911,200 residential *telephones.*

Labor Force.—The state's labor force in July 1962 included 145,200 agricultural workers. Nonagricultural employees numbered 850,800, compared with 835,600 a year earlier and an average of 832,200 for the 12 intervening months. Of nonfarm employees, 28.3% were in manufacturing, 21.6% in trade, and 19.7% in government services. Unemployment in July 1962 stood at 53,300, compared with 60,700 a year earlier.

Manufacturing.—Manufacturing employed an average of 217,541 workers in 1961 and provided a payroll of $1,354,987,000. Estimated value added by manufacture amounted to $2,506,726,000.

LEADING WASHINGTON MANUFACTURES, 1961

Industry group	Average no. of employees	Salaries and wages (in thousands)	Est. value added by mfr.[1]
Aircraft and parts	62,200	$446,217	$825,501
Lumber and wood products	41,300	218,536	404,292
Food and kindred products	26,800	144,106	266,596
Paper and allied products	18,000	109,837	203,198
Chemicals and allied products	10,800	84,726	156,743
Smelting, refining, casting	9,400	64,000	118,400
Fabricated metals	6,400	40,846	75,565
Nonelectrical machinery	5,400	34,625	64,056
Stone, clay, glass products	4,900	30,151	55,779
Ship & boat bldg. & repair	4,600	29,786	55,104

[1] Value of product less cost of materials, supplies, fuel, electric energy, and contract work. (Source: Bureau of Business Research and Services, University of Washington.)

Fisheries.—The commercial fish and shellfish catch in 1961 totaled 120,379,000 pounds valued at $18,714,000. Leading species were salmon (29,896,000 pounds valued at $9,008,000), halibut (19,370,000; $3,448,000), and oysters (8,658,000; $1,652,000).

Mining.—In 1961, Washington ranked 33rd among the states in the value of its minerals, with 0.40% of the national total. The state was first in the output of olivine, second in magnesite, third in diatomite and peat, fourth in gold, and fifth in carbon dioxide.

WASHINGTON MINERAL PRODUCTION, 1961
(In short tons, except as noted)

Mineral	Quantity	Value
Aluminum	331,264	$168,921,000[1]
Clays[2]	145,000	138,000
Coal	191,000	1,381,000
Copper (recoverable content of ores)	66	40,000
Lead (recoverable content of ores)	8,053	1,659,000
Lime[3]	349,000	8,481,000
Peat	55,543	359,000
Sand and gravel	18,994,000	16,145,000
Stone	11,464,000	14,758,000
Uranium ore	175,327	3,582,000
Zinc (recoverable content of ores)	20,217	4,650,000
Other minerals	...	23,731,000
Total	...	$ 73,006,000[1,4]

[1] Value of processed minerals not included in total. [2] Excludes certain clays, value of which is included in "Other minerals." [3] Excludes recycled lime, value of which is included in "Other minerals." [4] Total has been adjusted to eliminate duplication in value of clays and stone. (Source: U.S. Bureau of Mines.)

Agriculture.—Cash farm income for the first nine months of 1962 (excluding government payments) totaled $401,657,000, compared with $395,-

WASHINGTON CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Apples (1,000 bu.)	22,630	16,900	22,000
Apricots (tons)	12,230	8,500	11,500
Barley (1,000 bu.)	18,220	28,560	26,708
Cherries (tons)	18,140	21,700	21,050
Cranberries (bbl.)	62,420	139,000	55,000
Grapes (tons)	41,200	50,200	52,000
Hay (1,000 tons)	1,641	1,800	1,786
Hops (1,000 lb.)	25,153	20,096	25,380
Mint (1,000 lb.)	1,054	2,440	1,663
Peaches (1,000 bu.)	1,646	1,750	2,300
Pears (1,000 bu.)	4,824	4,750	4,200
Peas, dry field (1,000 bags)	1,759	2,057	2,812
Potatoes (1,000 cwt.)	8,762	12,890	11,640
Prunes (tons)	17,160	19,200	23,500
Strawberries (1,000 lb.)	36,481	46,920	47,450
Sugar beets (1,000 short tons)	685	1,290	1,330
Wheat (1,000 bu.)	71,315	55,272	66,825

(Source: U.S. Department of Agriculture.)

184,000 for the corresponding period of 1961. For the full year 1961, income comprised $358,874,000 from crops, $207,266,000 from livestock, and $12,141,000 in government payments. Principal income sources in 1961 were wheat, $111,973,000; wholesale milk, $81,088,000; cattle, $61,213,000; and apples, $50,324,000.

The state's 52,000 farms in 1959 had an acreage of 18,717,000 (4,412,000 in harvested cropland). Livestock on farms on Jan. 1, 1962, included 1,268,000 cattle and 5,700,000 chickens and (1961) 15,815,000 broilers. An average of 74,000 family and 37,000 hired workers engaged in farming in 1961.

Events, 1962.—The principal event of the year for the State of Washington was the Seattle World's Fair, which attracted an attendance of nearly 9.7 million to preview the advancements which science promises for the 21st century. Unlike most world's fairs, which consist primarily of temporary buildings, the Seattle fair left a legacy of imposing permanent structures to form the Seattle Center. The fair also left a record of being the first officially sanctioned world's fair in history to return a profit in a single season. But by year's end these happy consequences were being obscured by the political, civic, and commercial infighting over disposition of the fair's profits and over management and control of the Seattle Center. (See also CENTURY 21 EXPOSITION.)

In what most observers considered a surprise move, Congress reversed its earlier position and authorized the Atomic Energy Commission to produce and sell steam created from nuclear energy at its Hanford installation, near Richland, to the Northwest Public Power Association. Under the authorization, the association would produce and distribute electric energy to the Bonneville Power Administration for sale to Bonneville customers.

Although the Columbia River treaty providing for the cooperative development of the resources of the Columbia River was signed in 1961, the treaty's implementation still had not commenced by the end of 1962 because of continuing policy differences between the Province of British Columbia and the Canadian government over the exporting of power and financing arrangements. The treaty provides that Canada build three dams in British Columbia, which will, among other things, even the water flow of the Columbia and permit American power stations to generate more power, one half of which additional power is to be delivered to Canada.

Construction of the Evergreen Point Bridge, the second floating span over Lake Washington, continued during the year with the completion of both approaches. By year's end the pontoons were being towed into position for anchoring. Construction of the bridge, much delayed in earlier years by skirmishes between the state and Seattle over its location and feasibility, was once again delayed by a prolonged ironworkers' strike.

Three new multipurpose dams were completed and placed in operation during the year. Ice Harbor, on the Snake River, was dedicated on May 9; Priest Rapids, on the Columbia, was dedicated on June 2; and the dedication of Rocky Reach, also on the Columbia, was postponed until 1963.

In an otherwise lackluster political campaign, Democratic U.S. Sen. Warren G. Magnuson fended off a surprisingly strong challenge by the Rev. Richard G. Christensen, a former Lutheran minister and newcomer to politics, to win reelection on November 6. One Democratic and five Republican members of the U.S. House of Representatives were returned to their seats; incumbent Democrat Don Magnuson, however, was defeated by Republican K. W. Stinson.

"Events" by: WARREN W. ETCHESON,
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WATCHES. See JEWELRY AND WATCHES.
WATER SPORTS. See SPORTS, GAMES, AND SHOWS.
WATER SUPPLY. See CONSERVATION OF NATURAL RESOURCES; SANITARY ENGINEERING; and the Index entry, *Water.*
WATSON, James Dewey. See NOBEL PRIZES.
WEALTH. See INCOME.
WEAPONS. See Index entry.
WEATHER. See METEOROLOGY AND CLIMATOLOGY.
WEIGHTLIFTING. See SPORTS, GAMES, AND SHOWS.
WELFARE. See CHILDREN AND YOUTH; OLD AGE; SOCIAL WELFARE.

WEST INDIES FEDERATION

The ten-member West Indies federation (officially The West Indies), an autonomous British dependency in the Caribbean Sea, came into being on Jan. 3, 1958, and was officially dissolved as of May 31, 1962. Dissolution occurred after Jamaica, and then Trinidad and Tobago (qq.v.), decided to withdraw from the federation and become independent states. The remaining eight members tentatively agreed to form a new federation (see below, *Events, 1962*).

The original federation included a chain of Caribbean islands extending in an arc from the Bahamas to Venezuela, with a total land area of 8,018 square miles and an aggregate population of 3,209,000 (est. 1961–62). Members of the proposed eight-member federation have a combined area of 1,598 square miles, and a total population of 703,000 (est. 1961–62). These British territories are as follows: Barbados; Leeward Islands (Antigua, Montserrat, and St. Christopher-Nevis-Anguilla); and Windward Islands (Dominica, Grenada, St. Lucia, and St. Vincent). In addition, the Cayman Islands and the Turks and Caicos Islands formerly were administered under the governor of Jamaica and had a special relationship with the federation. The seat of government of the ten-member federation was Port of Spain, Trinidad.

Statistics in this article pertain to the ten-member federation. Data on the British colonies formerly within the federation are presented separately below.

Government.—Until its dissolution on May 31, 1962, the federation was administered by a governor general (Lord Hailes), who appointed a cabinet of 10 ministers and a prime minister (Sir Grantly Adams) from among the legislators. The federal legislature consisted of a Senate of 19 nominated members (one from Montserrat and two from each of the other territories); and a House of Representatives of 45 elected members (Jamaica was represented by 17 members; Trinidad and Tobago by 10; Windward Islands, 8; Leeward Islands and Barbados, 5 each).

Education.—Education was the responsibility of the federation members, but the federal Ministry of Education promoted the training of teachers and administrators. Higher education for students from member territories was provided by the University College of the West Indies (now the University of the West Indies), Jamaica; the college enrolled 695 students in 1960.

Finance.—Federal revenues, 1961 est.: BWI$13,965,598; expenditures, BWI$13,944,505. (The British West Indian dollar equals U.S.$0.5833.) The main source of revenue was a mandatory levy on the unit territories not exceeding BWI$9,120,000 annually. British grants-in-aid for the Leeward and Windward groups totaled BWI$8,274,900 in 1960.

Transportation.—The federal government operated an interisland shipping service and an interisland air service. Many international airlines serve the region. British West Indian Airways, which is owned by the government of Trinidad and is operated in cooperation with Jamaica, Antigua, and Barbados, initiated nonstop service twice a week between Antigua and New York in February 1962.

Economy.—The economy of the ten-member federation was based on the production of sugar and bananas, the mining of bauxite (in Jamaica) and of petroleum (in Trinidad), and the growing tourist industry. In addition to sugar and bananas, crops grown for export included cocoa beans, coconuts, nutmegs, tomatoes, cotton, tobacco, and citrus fruits. Manufacturing was limited largely to the processing of sugar products, chiefly molasses and rum, and of other agricultural products. Minor industries included forestry and fishing.

Foreign Trade.—Total exports, 1961: £204.9 million; imports, £231.8 million. Jamaica and Trinidad in 1961 supplied 91% of the federation's total exports (chiefly sugar, petroleum, and bauxite), and received 85% of its total imports (principally foodstuffs, textiles, machinery, and vehicles). Chief trading partners were Great Britain and the United States.

Events, 1962.—The West Indies federation was dissolved on May 31 after the West Indies Bill providing for dissolution received its third and final reading in the British Parliament on April 2. The breakup of the four-year-old, ten-member federation followed Jamaica's decision (in a referendum of Sept. 19, 1961) to withdraw from the federation, and Trinidad and Tobago's announcement (Jan. 14, 1962) that it would also secede and become independent. The remaining eight members held a constitutional conference in London from May 9 to 24, and announced their intention of forming a new federal association to be called The West Indies Federation. It was agreed that the new eight-member federation would eventually become independent after a period of trial, that it would seek membership in the Commonwealth of Nations on attaining independence, and that its capital would be in Barbados. Common services of the old federation were to be maintained until permanent common service arrangements could be established to replace them. The London conference set up an advisory council of ministers from the eight colonies to draft a constitution, which would then have to be approved by the island legislatures before a final constitutional conference could be called to establish the proposed federation.

Formation of the new federation was complicated by the political situation in Grenada, where Herbert A. Blaize's National Party won the legislative elections of September 13 on a platform advocating Grenada's alliance in a unitary state with Trinidad and Tobago. Great Britain on June 18 had dismissed the Grenada government following an official inquiry into alleged financial irregularities. Eric Gairy, leader of the United Labour Party and former chief minister, had supported Grenada's inclusion in a new federation. Late in the year Grenada began talks with Trinidad and Tobago on their suggested alliance. There was speculation that some of the other Windward Islands, particularly Dominica and St. Lucia, might also consider joining Trinidad and Tobago, and that Antigua and St. Christopher-Nevis-Anguilla of the Leeward group might form an alliance with Jamaica.

W. R. F.

Barbados

The most easterly of the islands in the West Indies, Barbados (166 square miles) lies 102 miles east of St. Vincent (Windward Islands). The population (1962 est.) is 242,000, of which over 90% is Negro. Barbados has one of the highest population densities in the world—about 1,450 persons per square mile. Bridgetown (1960 pop., 11,289) is the capital and chief port.

Barbados has had full internal self-government since Oct. 16, 1961. The British-appointed governor (Sir John M. Stow, appointed in 1959) is assisted by a cabinet, a Privy Council, a 14-member appointed Legislative Council, and a 24-member elected House of Assembly. In the elections of December 1961, the Democratic Labour Party won 14 seats; the Labour Party, 5 seats; the National Party, 4 seats; and one seat was won by an independent.

Government revenue, 1962–63 est.: BWI$25,543,778; expenditure, BWI$27,895,967. In 1962 the government inaugurated a 3-year development program estimated to cost BWI$50.2 million. In 1960–61 there were 116 primary and 15 secondary schools, with an aggregate enrollment of 47,010 pupils. All-weather roads aggregate 675 miles. Barbados is served by 12 major shipping lines and 7 international airlines.

The economy is based on the production of sugar (158,458 tons in 1962, a slight decrease from 1961). Industries include sugar-processing plants, molasses factories, rum distilleries, iron works, a cigarette factory, and a brewery. The important tourist industry attracted 37,060 persons in 1961 (35,535 in 1960), and earned BWI$15,939,481. Tourist facilities include 57 hotels and guest houses, capable of accommodating 2,000 tourists at one time. Total imports, 1961: BWI$80,282,100; exports, BWI$43,176,800, including sugar, BWI$27,199,057; molasses, BWI$3,602,507; and rum, BWI$2,199,057.

Cayman Islands and the Turks and Caicos Islands

These island groups lying northwest and northeast of Jamaica were formerly under the administration of the governor of Jamaica. After May 31, 1962, they were directly under control of the British Colonial Office, but continued to be served by the joint services of the former West Indies federation.

Cayman Islands.—Lying about 150 miles northwest of Jamaica, the Cayman Islands (area, 100 square miles; 1960 pop., 8,511) comprise the islands of Grand Cayman (1960 pop., 7,025), Little Cayman, and Cayman Brac. The capital is Georgetown (pop., 2,705), on Grand Cayman. The islands are under an administrator (Jack Rose), who is assisted by a 5-member Executive Council selected from the 18-member Legislative Assembly, which is elected by universal suffrage. Free education is provided by 10 elementary schools (1,014 pupils in 1961) and 2 private secondary schools. Government revenue, 1961: £229,542; expenditure, £218,061.

Fishing is the principal occupation. About 2,000 live turtles are shipped annually to the United States. An important cottage industry is the manufacture of rope from thatch palm. Total exports, 1960: £31,807; imports, £750,000. The growing tourist industry attracts many visitors from the United States.

Turks and Caicos Islands.—Comprising some 30 islands (8 inhabited) lying southwest of the Bahamas and 450 miles northeast of Jamaica, the Turks and Caicos Islands have an area of 166 square miles, and a population (1960 census) of 5,716. Grand Turk (est. pop., 2,180) is the seat of the government, and the site of a cable relay station, a guided missile observation post, and a naval facility. An administrator is assisted by a Legislative Assembly of 15 members (including 9 elected) and an advisory Executive Council of 5 members (2 elected). Government revenue, 1961: £256,916; expenditure, £239,027. Free education is provided by 13 government schools (1,049 pupils in 1961). Exports, 1960: £88,462; imports, £216,602. Chief exports are salt (produced by solar evaporation), sisal, crawfish, and conchs.

Leeward Islands

The Leeward Islands lie east and southeast of Puerto Rico and north of the Windward Islands. The four British colonial presidencies in the Leeward group formed a federation until 1958, when the territories, excepting the British Virgin Islands (q.v.), joined the West Indies federation as independent units. The population is predominantly Negro.

	Area (sq. mi.)	Population[1]	Capital
Antigua[2]	170.5	54,354	St. John's (13,500[3])
St. Kitts-Nevis-Anguilla[4]	152	56,630	Basseterre (15,747[1])
Montserrat	32.5	12,157	Plymouth (2,500[3])
Total[5]	355	123,141	

[1] Census of April 7, 1960. [2] Antigua (108 sq. mi.) and dependencies: Barbuda (62 sq. mi.) and Redonda (0.5 sq. mi.). [3] 1956 est. [4] St. Kitts or St. Christopher (68 sq. mi.), Nevis (50 sq. mi.), and Anguilla (34 sq. mi.). [5] Excludes the British Virgin Islands.

The constitutional changes promulgated for the Leeward Islands as a result of the conference held in London on June 19–22, 1961, did not take effect because of the dissolution of the West Indies federation in 1962. The constitutional arrangements in 1962 remained largely unchanged from those introduced on Jan. 1, 1960. Each of the territories is headed by an administrator appointed by the British crown. Exercising general control of the government, the administrator is president of the Executive Council and appoints the chief minister.

Antigua.—The administrator (Ian G. Turbott) is assisted by a 6-member Executive Council and a 14-member Legislative Council, 10 of whom are elected. In the elections held on Nov. 28, 1960, the Trades and Labour Union Party won all 10 seats. The estimated budget for 1961 was balanced at BWI$9,400,895. There are 43 primary schools and 8 secondary schools.

Production of sugar, the chief crop, totaled 21,054 tons in 1961, valued at an estimated BWI$4,623,500. Rum and molasses are important by-products. The cotton crop in 1961 totaled 244,535 pounds. Total exports, 1961:

BWI$4,552,095; imports, BWI$19,525,703. Main roads aggregate 64 miles; secondary roads, 85 miles. Coolidge Airfield, which was expanded in 1961 to accommodate jet aircraft, serves Pan American World Airways, British West Indian Airways, Leeward Island Air Transport, and Trans-Canada Airlines. Tourists numbered 25,380 in 1960.

Montserrat.—An administrator (Donald A. Wiles) is assisted by a 6-member Executive Council and a 10-member Legislative Council, 7 of whom are elected. In elections of March 2, 1961, the Montserrat Labour Party won 5 seats, and the United Workers Movement, 2 seats. The estimated budget for 1961 was balanced at BWI$2,149,391. There are 15 primary schools and one secondary school.

Montserrat's main crop is cotton. In 1961, exports of cotton lint totaled 260,122 pounds; cottonseed cake, 163,475 pounds. Minor export crops include bananas, tamarinds, and vegetables. Total exports, 1961: BWI$307,214; imports, BWI$2,140,325. Economic development has been concentrated on improving banana cultivation and water supplies, and on building roads. Ship arrivals in 1961 totaled 590. Asphalted public roads aggregate 60 miles; secondary roads, 58 miles. Blackburne Airfield is located on the east coast.

St. Kitts (or St. Christopher)-Nevis-Anguilla.—The administrator (Lt. Col. H. A. C. Howard) is assisted by an 8-member Executive Council and a 14-member Legislative Council (10 elected members). In elections on Nov. 17, 1961, the Labour Party won 7 seats; the United National Party, 2 seats; and one seat was won by an independent. Estimated government revenue, 1960: BWI$6,759,921; expenditure, BWI$7,163,309. In 1960 there were 40 primary schools (with 13,806 pupils) and 5 secondary schools.

Principal products, 1960: sugar, 48,648 tons (BWI$9,388,106); cotton lint, 35,567 pounds (BWI$33,784); and molasses, 1,342,666 gallons (BWI$85,681). Total exports, 1960: BWI$10,417,000; imports, BWI$12,300,000. Sugar companies on St. Kitts operate 36 miles of railroad. Highways aggregate 79 miles. The territory is served by British West Indian Airways, Leeward Islands Air Transport, and KLM Royal Dutch Airways, which use the airport 2 miles north of Basseterre. There were 6,315 visitors in 1960.

Windward Islands

Lying between Guadeloupe and Trinidad, the Windward group comprises the islands of Dominica, Grenada, St. Lucia, and St. Vincent. The four British colonial presidencies formed a federation until 1958 when they joined the West Indies federation as independent units. About 95% of the population is Negro.

	Area (sq. mi.)	Population[1]	Capital (with pop.[1])
Dominica	290	59,864	Roseau (10,422)
Grenada[2]	133	88,677	St. George's (25,894)
St. Lucia	238	86,194	Castries (17,505)
St. Vincent	150	79,948	Kingstown (15,981)
Total	811	314,683	

[1] Census of April 7, 1960. [2] Including the Grenadines, administered in part by Grenada and in part by St. Vincent; Carriacou (area, 13 sq. mi.; 1961 pop. est., 6,646), largest island in the Grenadines, is administered by Grenada.

The constitutional changes promulgated for the Windward Islands as a result of the conference held in London on June 19–22, 1961, were shelved in 1962 as a result of the dissolution of the West Indies federation. The constitutional arrangements in 1962 remained largely unchanged from those of Jan. 1, 1960. Each of the islands is governed by an administrator appointed by the British crown.

Dominica.—The administrator (Col. Alec Lovelace) is assisted by an Executive Council and a 15-member Legislative Council, of whom 11 members are elected. In elections of Jan. 17, 1961, the Labour Party won 7 seats; the United People's Party, 3 seats; and one seat was won by an independent. The estimated government budget for 1960 was balanced at BWI$5,634,441, including Colonial Development and Welfare grants of BWI$1,176,491. The territory has 49 primary and 4 secondary schools.

Total exports, 1961: BWI$7,303,589; imports, BWI$10,639,447. Main exports included bananas, BWI$4,783,904; lime juice, BWI$890,654; lime oil, BWI$379,181; copra, BWI$492,727; cocoa beans, BWI$82,436; and bay oil, BWI$235,763. There are 169 miles of surfaced roads, and 160 miles of secondary roads. Air arrivals numbered 2,726 in 1961. A new airfield was built at Melville Hall in northeast Dominica, approximately 30 miles from Roseau.

Grenada.—The administration is headed by an administrator (James M. Lloyd), who is assisted by an Executive Council and a 14-member Legislative Council, 10 of whom are elected. Following the suspension of the constitution on June 18, 1962, new elections were held on Sept. 13, 1962, in which the National Party won 6 seats and the United Labour Party, 4 seats (see above, *Events, 1962*). Estimated government revenue, 1962: BWI$8,789,869, including BWI$142,001 in Colonial Development and Welfare grants; expenditure, BWI$8,881,465. In 1961 there were 12 government and 44 grant-aided primary schools (aggregate enrollment, 23,706), and 6 secondary schools.

Total exports, 1961: BWI$5,770,907; imports, BWI$16,022,961. Main exports included cocoa (44,389 cwt.), BWI$2,298,584; nutmegs (7,659 cwt.), BWI$1,272,956; mace (1,564 cwt.), BWI$532,834; bananas (934,806 stems), BWI$1,465,917; and cotton (944 cwt.) BWI$47,591. There are 495 miles of roads, of which 400 are surfaced. Grenada is served by British West Indian Airways and Leeward Islands Air Transport. In 1961 the island was visited by 19,712 tourists, who spent an estimated BWI$1.8 million.

St. Lucia.—The administrator (Gerald J. Bryan) is assisted by an Executive Council and a 13-member Legislative Council, 10 of whom are elected. In elections on April 14, 1961, the St. Lucia Labour Party won 9 seats; the People's Progressive Party, 1 seat. Government budget estimates for 1961 were balanced at BWI$5,985,033. As of Dec. 31, 1961, there were 52 grant-aided primary schools, 1 government school, and 2 grant-aided secondary schools. In 1962, a program for the construction of 8 new primary schools was started; a secondary school was under construction; and a teacher-training college, for which the United States contributed $64,000, was built.

Total exports, 1960: BWI$5,604,582; imports, BWI$11,995,381. The chief export was bananas (3.5 million stems valued at BWI$5,313,214). Other exports included edible oils, rum, and lime juice. The island has 399 miles of roads and 2 airports.

St. Vincent.—The administrator (Samuel H. Graham) is assisted by an Executive Council and a 13-member Legislative Council, 9 of whom are elected. In elections on April 20, 1961, the People's Political Party won 6 seats; the Labour Party, 3 seats. The estimated government budget for 1962 was balanced at BWI$6,415,998, including BWI$1,117,000 in British grants in aid. There were 54 primary schools (with 15,336 pupils) in 1961, and 4 secondary schools.

Total exports, 1961: BWI$5,778,200; imports, BWI$12,631,200. Chief exports included bananas (46,497,574 pounds), BWI$2,637,326; arrowroot (6,057,932 pounds), BWI$1,316,694; copra (6,122,288 pounds), BWI$913,540; nutmegs (93,696 pounds), BWI$174,747; sweet potatoes (3,831,699 pounds), BWI$112,195; and sugar (500 tons), BWI$103,774. The island has 136 miles of paved roads and 260 miles of gravel roads. The airport at Arnos Vale, two miles from Kingstown, has been modernized. A deep-water harbor was under construction in 1962 at Kingstown.

J. L. L.

WEST NEW GUINEA

Comprising the western half of the Pacific island of New Guinea, West New Guinea is a territory temporarily administered since Oct. 1, 1962, by the United Nations. Formerly a dependency of the Netherlands, it is called West Papua by the Papuans, and West Irian, or Irian Barat, by the Indonesians. Including offshore islands, the area is estimated at 160,000 square miles, most of which comprises relatively inaccessible mountains, swamps, and jungles. The population of 750,000 (mid-1961 est.) consists largely of Papuan, Negrito, and Melanesian tribesmen, many of whom are primitive, and includes 18,000 nonindigenous Asians and some Europeans. The capital and chief port is Hollandia (1960 pop., 14,095).

Government.—The territory is under the administration of a United Nations Temporary Executive Authority (UNTEA) established by and under the jurisdiction of the United Nations secretary general. The chief executive officer is the United Nations administrator (Djalal Abdoh, appointed Oct. 22, 1962). In accordance with the Netherlands-Indonesia agreement of Aug. 15, 1962, the administration is to be transferred to Indonesia after May 1, 1963. The New Guinea Council, a consultative local representative body installed under Dutch rule in 1961, continued to function during the interim period of United Nations administration. The territory's annual budget deficit is to be shared equally by Indonesia and the Netherlands during the period of UNTEA rule.

Education and Religion.—School enrollment, 1959: 39,048 (16% of the school-age population). Enrollment by level of education: primary 37,574; secondary, 750; technical, 271; and teacher-training, 453. Animism is predominant; about 300,000 persons are classified as Christians.

Economy.—Chief subsistence crops (tons, 1960 est.): yams, sweet potatoes, and taro (180,000); sago (90,000); corn; rice; peanuts; bananas; and vegetables. Chief cash crops: copra (5,800 tons exported in 1960), nutmeg, mace, and cocoa. There is some stock raising and fishing. Production of crude petroleum, the principal export (248,504

metric tons in 1960), was valued at $3.2 million in 1960. Other mineral deposits include nickel, copper, bauxite, lead, zinc, cobalt, coal, gold, and silver. Production of timber and sawn lumber, 1960: 63,000 cubic meters. Total exports in 1960 were valued at $7,228,000; imports, $22,417,410. Motor roads total 470 miles.

Events, 1962.—The more than 350 years of Dutch rule in West New Guinea was terminated on Oct. 1, 1962, when the United Nations Temporary Executive Authority (UNTEA) took over control of the territory. The transfer of authority was carried out in accordance with the Netherlands-Indonesia agreement of Aug. 15, 1962, which calls for a period of interim rule by the United Nations before administration is transferred to Indonesia. Concluded under the auspices of the United Nations and the good offices of the United States, the agreement also provides for the eventual exercise of the right of self-determination by the people of the territory before the end of 1969.

Shortly before the conclusion of the agreement, tension between the Netherlands and Indonesia had reached a high pitch when two new Indonesian landings on the territory were reported in early August. By October, most Dutch women and children had left the territory in anticipation of the transfer of authority, and only about 500 of the original 2,700 Dutch officials agreed to remain.

Because of a lack of knowledge of local customs, the biggest problem facing the UNTEA was the administration of remote interior areas. In an attempt to prepare Indonesia for its administration of the territory, the UNTEA adopted a policy of relying on an increasing number of Indonesian officials. This policy, however, was criticized by the Dutch as having the effect of prematurely imposing Indonesia's political presence on the territory. Toward the end of 1962 there were indications that Djakarta might attempt annexation without the promised plebiscite. To forestall agitation, the United Nations administrator reiterated the determination of UNTEA to stand strictly by the terms of the August agreement.

(See also FAR EAST; INDONESIA; NETHERLANDS.)

F. R. H.

WEST PAPUA. See WEST NEW GUINEA.

WEST VIRGINIA

A South Atlantic state of the United States, West Virginia ranks 41st among the states in area (land, 24,079 square miles; inland water, 102) and 33d in population (1,773,000 on July 1, 1962, a 4.7% decrease from the 1960 census figure of 1,860,421). Urban places with populations above 15,000 in 1960:

Beckley	18,642	Morgantown	22,487
Bluefield	19,256	Moundsville	15,163
Charleston (*capital*)	85,796	Parkersburg	44,797
Clarksburg	28,112	St. Albans	15,103
Fairmont	27,477	South Charleston	19,180
Huntington	83,627	Weirton	28,201
Martinsburg	15,179	Wheeling	53,400

Government.—Chief executive and judicial officers in 1962 included William W. Barron (Democrat), governor, serving a four-year term; Joe F. Burdett, secretary of state; John H. Kelly, treasurer; Denzil L. Gainer, auditor; C. Donald Robertson, attorney general; Chauncey Browning, Jr., superintendent of free schools; and Frank C. Haymond, president of the 5-member Supreme Court.

The West Virginia Leglislature, which convenes annually, comprised 25 Democrats and 7 Republicans in the Senate in 1962 and 82 Democrats and 18 Republicans in the House of Delegates.

Legislation, 1962.—Governor Barron's call to the short session of the Legislature contained 30 items—one for each day allotted for consideration of the budget plus high-priority matters—but from the first it was obvious that much of the time would be spent in consideration of:

WIDE WORLD

Dutch Governor Pieter Platteel of West New Guinea (right) leaves Hollandia on September 28, two days before the assumption of authority by the United Nations, represented by Brig. Gen. Said-Uddin Khan (l.) and José Rolz-Bennett.

(1) extending an insurance premium tax and the third cent of the state's 3-cent sales tax past the expiration date of June 30, 1962; (2) acting on apportionment of representation among those counties whose population has dwindled greatly; and (3) deciding what West Virginia's position should be on a revolutionary industrial idea—the mixing of finely powdered coal and water into "slurry" and shipping it via an interstate pipeline to east coast markets.

A record budget of $142.8 million was approved for the fiscal year 1962–63. Both taxes mentioned above were re-extended to June 30, 1963; Public Service Commission jurisdiction was expanded to cover the new slurry concept —but only after a 3½% tax was levied on net earnings from such shipments; and a constitutional amendment was proposed which would guarantee representation to every county, regardless of how small its population. Three other amendments (see below, *Events, 1962*) were readied for submission to the electorate in November (in addition to a liquor-by-the-drink proposal drafted by the 1961 session). Tentative steps were taken toward providing job training for the alarming numbers of high school drop-outs.

Finance.—In the 1961 fiscal year, revenue of $364,516,000 included $185,763,000 from state taxes and $74,414,000 in federal funds. Chief tax yields were from general sales and gross receipts ($85,808,000), motor fuels ($33,242,000), and licensing ($30,848,000). Spending of $360,002,000 included $104,256,000 for education, $47,475,000 for health, correction, and public welfare, and $83,699,000 for highways.

Education.—In the fall of 1962, public elementary schools staffed by 8,611 teachers enrolled 255,053 pupils; secondary schools with 6,728 teachers enrolled 180,979; and (1961–62) parochial schools with 590 teachers enrolled 16,202. College enrollment (fall 1961) totaled 31,587 in 37 institutions, including 3 junior colleges and 34 senior colleges and universities.

Operating expenditures for public schools in the 1961–62 school year totaled $116,250,182 ($279.87 per pupil) and outlays for construction and improvement amounted to $16,328,989. Revenue of $121,769,280 was drawn chiefly from state funds ($67,051,118) and local districts ($51,507,223). Teachers' salaries averaged $4,432. Spending for higher education (fiscal 1961) amounted to $36,545,000.

Public Assistance.—In the 1962 fiscal year, public assistance payments to a monthly average of 152,236 persons totaled $51,520,189. This amount included $37,306,970 for dependent children and $8,978,385 for the aged.

Transportation and Communications.—With 1,380 miles of highway construction and reconstruction completed during 1961, *highways and roads* on Jan. 1, 1962, totaled 36,274 miles (11,812 surfaced). These served 643,297 *motor vehicles* (as registered during 1961), including 483,546 automobiles. Operating in the state were (1961) 21 *railroads* (using 3,692 line miles of track); (1962) 6 regularly scheduled *airlines;* and 35 commercial and municipal *airports and airfields.*

Communications media included (1961) 53 AM and 7 FM *radio stations;* 9 VHF *television stations;* 31 daily *newspapers* (circulation, 483,161) and 89 other newspapers; and (Jan. 1, 1962) 127,000 business and 408,700 residential *telephones.*

Labor Force.—The state's labor force in mid-July 1962 included 46,400 agricultural workers. Nonagricultural employment totaled 438,100, compared with 444,500 a year earlier and an average of 444,700 for the full year 1961. Of nonfarm employees, 28% were in manufacturing, 18.7% in trade, and 14.2% in government services. Unemployment in mid-July 1962 stood at 66,900, compared with 77,800 a year earlier.

Manufacturing.—Manufacturing engaged 116,545 workers in 1960, including 90,159 in production, and provided a payroll of $629,330,000. Adjusted value added by manufacture totaled $1,401,341,000.

LEADING WEST VIRGINIA MANUFACTURES, 1960

Industry group	Total employees	Total payroll (in thousands)	Adjusted value added by mfr.[1]
Chemicals and products	22,212	$148,857	$511,182
Primary metals	23,055	157,952	350,511
Stone, clay, glass products	21,049	107,026	176,988
Food and kindred products	8,478	36,407	80,040
Fabricated metals	7,030	34,493	69,575
Printing and publishing	3,504	15,949	24,415
Lumber and wood products	7,188	16,765	23,282
Transportation equipment	1,876	11,649	17,440

[1] For definition, see footnote 1 in the article *Industrial Production.* (Source: *1960 Annual Survey of Manufactures.*)

Mining.—In 1961, West Virginia ranked seventh among the states in the value of its mineral output, with 3.80% of the national total. Coal supplied 81% of the total value, 5% less than in 1960. West Virginia was first in output of coal, third in calcium-magnesium chloride, and fifth in bromine.

WEST VIRGINIA MINERAL PRODUCTION, 1961
(In short tons, except as noted)

Mineral	Quantity	Value
Clays	475,000	$ 2,193,000
Coal	113,070,000	558,525,000
Coke	...[1]	...[1]
Natural gas (1,000 cu. ft.)	210,556,000	57,692,000
Natural gasoline (1,000 gal.)	34,095	2,296,000
Petroleum (1,000 bbl.)	2,703[2]	11,190,000[2]
Petroleum gases (1,000 gal.)	342,646	17,826,000
Salt, common	899,000	3,510,000
Sand and gravel	4,882,000	10,152,000
Stone	7,628,000	13,244,000
Other minerals	...	13,386,000
Total	...	$687,903,000[3]

[1] Figure withheld to avoid disclosure of individual company's confidential data. [2] Preliminary. [3] Total adjusted to eliminate duplication in the value of clays and stone. (Source: U.S. Bureau of Mines.)

Agriculture.—Cash farm income for the first nine months of 1962 (excluding government payments) totaled $65,960,000, compared with $69,745,000 for the corresponding period of 1961. For the full year 1961, income comprised $78,741,000 from livestock, $23,673,000 from crops, and $3,510,000 in government payments. Principal income sources in 1961 were cattle, $23,371,000; wholesale milk, $20,576,000; and broilers, $11,087,000.

The state's 44,000 farms in 1959 had an acreage of 6,063,000 (832,000 in harvested cropland). Livestock on farms on Jan. 1, 1962, included 530,000 cattle, 261,000 sheep, and 2,082,000 chickens, and (1961) 23,126,000 broilers. An average of 56,000 family and 13,000 hired workers engaged in farming in 1961.

WEST VIRGINIA CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Apples (1,000 bu.)	4,773	5,500	5,000
Corn for grain (1,000 bu.)	6,351	4,240	3,763
Hay (1,000 tons)	948	955	819
Peaches (1,000 bu.)	699	750	650
Potatoes (1,000 cwt.)	798	585	520
Tobacco (1,000 lb.)	4,041	3,237	3,915
Wheat (1,000 bu.)	905	598	432

(Source: U.S. Department of Agriculture.)

Events, 1962.—With much of the nation's sociological and economic attention still fixed on underdeveloped areas of the Appalachians in 1962, West Virginia (in many respects the typical Appalachian state) continued to receive a lion's share of the effort directed toward the mountains, their people, and their dilemma. One inevitable result of this study and attention was that developments followed with such rapidity and of such magnitude in 1962 that a state accustomed to a leisurely appraisal of events was alternately cheered, discouraged, and confused.

As in much of the Appalachians, surveys showed the general economy up, employment improving, new industries appearing, and commerce index ratings encouraging. But at the same time, West Virginia's declining labor force continued its downward drift, cash farm income hit an all-time low, and unemployment continued to be a nagging reality. To counteract these conditions, West Virginia University announced plans in midsummer for an Appalachian Center for Resource Development, and by early December was readying a detailed prospectus. President Kennedy conferred in March with Governor Barron on federal aid to West Virginia, and in September campaigned in the state and promised continued attention to West Virginia's economic problems.

In the face of legislative approval of the controversial "slurry" concept (see above, *Legislation, 1962*), a group of the East's biggest electric power companies, including several operating in West Virginia, announced plans for a $58 million production plant just south of the Pennsylvania border. Included in the scheme is a 20-year contract for some 30 million tons of coal—"coal-by-wire," the proponents of slurry termed the plan, by which pulverized coal and water would be piped out of the state.

In July, the Defense Department dealt a heavy blow to the state's economy when the Sugar Grove radiotelescope project (in which more than $41 million already had been spent) was summarily closed. At year's end, the state's representatives in Washington still were attempting to find some profitable application for the extensive installations already completed in the mountain village.

General election interest centered around five proposed constitutional amendments—dealing essentially with the power of a governor to succeed himself, the power of a county sheriff to do likewise, the reapportionment of representation in the Legislature, certain powers and functions of the Legislature, and the legalizing of liquor-by-the-drink in what remains a 3.2% beer state. All amendments were decisively defeated. In the only closely contested congressional race, Republican Arch A. Moore, Jr., defeated Rep. Cleveland M. Bailey, a veteran of eight House terms, in a contest brought about by reapportionment. Four incumbent Democrats won easily—Mrs. Elizabeth Kee, Harley O. Staggers, John M. Slack, Jr., and Ken Hechler.

"Legislation" and "Events" by: DONOVAN H. BOND,
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WESTERN EUROPEAN UNION. See EUROPE.

WESTERN PACIFIC ISLANDS, British

The Western Pacific High Commission administers the following British island groups in the western Pacific Ocean: British Solomon Islands Protectorate; Gilbert and Ellice Islands Colony; and the New Hebrides condominium. The British high commissioner for the territories (David C. C. Trench, appointed in 1961) has his headquarters at Honiara on Guadalcanal.

Areas and populations of the principal island groups are as follows:

Territory	Area (sq. mi.)	Population[1]	Capital
British Solomon Islands Protectorate	11,500	127,000	Honiara
Gilbert and Ellice Islands Colony	369	48,000	Tarawa
New Hebrides (condominium)	5,700	61,000	Vila
Total[2]	17,569	236,000	

[1] 1961 est. [2] Separate islands under the jurisdiction of the Western Pacific High Commission but not included in the above groups are Starbuck, Malden, Flint, Caroline, Vostok, and other West Pacific Islands not administered by the governor of Fiji, or by Australia, New Zealand, and other nations.

British Solomon Islands Protectorate.—Extending over an ocean area of 375,000 square miles, the protectorate includes the Solomon Islands (except Bougainville and Buka), and the Santa Cruz Islands. The principal islands are Guadalcanal, the largest island (area, 2,500 square miles); and Malaita, the most populous island (1958 pop. est., 46,000). Other important islands are Florida, Tulagi, San Cristobal, Rennell, New Georgia, Santa Isabel, Choiseul, and Ontang Java. The population consists chiefly of Melanesians (1959 pop. est., 118,000).

The protectorate is administered by the British high commissioner, who is assisted by a Legislative Council and local government councils. Estimated government revenue in 1962 was £A1,904,505, including a British grant in aid of £A512,435 and Colonial Development and Welfare grants totaling £A336,720 (the Australian pound equals U.S.$2.24). School enrollment, 1959: 15,183 (38% of the school-age population), most of whom were enrolled in primary schools. There is a government secondary school on Malaita, and a teacher and vocational training center on Guadalcanal.

Exports in 1961 totaled £A1,866,484; imports, £A2,045,663. Chief exports are copra (valued at £A1,696,192 in 1961), timber, trochus shell, and crocodile skins. Small quantities of cocoa were also exported in 1961–62. Rice is cultivated on a limited and experimental basis. Airfields near Honiara which were constructed on Guadalcanal during World War II are used by Trans-Australia Airlines and Fiji Airways. Honiara also has wharfage facilities. There is a broadcasting service for the islands.

Gilbert and Ellice Islands Colony.—The islands of the colony are scattered over an area of about 1 million square miles. Principal island groups (with district headquarters) are: Gilbert Islands (Tarawa), Ellice Islands (Funafuti), Phoenix Islands (Canton), Line Islands (Christmas Island), and Ocean Island. Canton and neighboring Enderbury (area, 27 square miles; 1960 pop., 320) have constituted since 1939 an Anglo-American condominium, created for the purpose of administering aviation and communications, including the Canton international airport.

A resident commissioner (Valdemar J. Andersen) administers the colony. Estimated government revenue in 1962 totaled £A664,017; expenditure, £A752,567. About two thirds of the school-age population is enrolled in government and mission schools. In 1961 there were 27 government primary schools (with 1,485 pupils), 219 grant-aided mission schools, and 7 secondary schools. Exports of copra, the chief crop, totaled 6,187 tons in 1961; phosphate, 335,600 tons. There are about 200 miles of roads, including 40 miles of all-weather roads.

New Hebrides.—A 400-mile chain of 37 islands situated west of Fiji and northeast of New Caledonia, the New Hebrides are an Anglo-French condominium. The largest islands are Espiritu Santo and Malekula. The capital is Vila, on Efate (Vaté). The territory is administered by a British and a French resident commissioner, who are responsible, respectively, to the British high commissioner for the Western Pacific Islands and the French high commissioner (who is also the governor of New Caledonia, q.v.). Condominium revenue in 1959 totaled £603,820; expenditure, £552,123. Education is provided by 22 British and 15 French mission schools, and 3 French government and one British government-built school. French schools enrolled 2,322 primary pupils in 1960. Chief exports are copra (35,067 metric tons in 1959), coffee, cocoa, and frozen fish. Total exports, 1959: £2,666,424 (mostly to France); imports, £2,036,020 (mostly from Australia).

J. L. L.

WESTERN SAMOA

The Independent State of Western Samoa comprises a group of islands in the South Pacific, situated some 2,200 miles south of Hawaii. The total land area is 1,130 square miles. Savai'i (area, 703 sq. mi.) and Upolu (430 sq. mi.) are the principal islands. The population (Sept. 25, 1961, census) is 114,427, of which 101,288 are Samoans, 11,813 part-Samoans, 688 Europeans, and 522 other Pacific islanders. Upolu has a population of 82,479; Savai'i, 31,948. Apia (pop., 21,699), on Upolu, is the capital and chief port.

Government.—A former United Nations trust territory administered by New Zealand from 1946, Western Samoa became an independent state on Jan. 1, 1962. The representatives of the two royal families of Tupua (Tupua Tamasese Mea'ole) and Malietoa (Malietoa Tanumafili II) serve jointly as head of state. The executive branch of government is headed by a prime minister (Fiame Mata'afa Faumuina Mulinu'u II), who heads a cabinet of eight members. The Legislative Assembly consists of 41 members representing Samoan constituencies and 5 members representing European voters.

Finance.—Government revenue, 1961: £NZ1,539,870; expenditure, £NZ1,763,077. The Samoan and New Zealand pound have the same value; one pound equals about U.S.$2.80.

Education.—In 1961, 34,828 pupils attended government and mission schools. Facilities for higher education are provided by Samoa College in Apia, St. Mary's College (a Roman Catholic institution) at Vaimoso, and Avele Agricultural College in Apia. Government expenditure on education totaled £NZ265,561 in 1961, and New Zealand contributed an additional £NZ80,000.

Transportation and Communications.—The road network aggregates 400 miles, including 300 miles of main roads. Western Samoa is linked with Tahiti, Fiji, and Tonga (and through them with New Zealand) by steamship and air passenger services. Daily flights to Tutuila, in American Samoa, are provided by Polynesian Airlines.

Production.—The economy is based on subsistence agriculture and fishing. The principal food crops are taros, bananas, and coconuts. Principal exports, 1961; copra, 12,922 tons (valued at £NZ672,899); bananas, 560,422 cases (£NZ644,495); and cocoa, 4,101 tons (£NZ597,592). Total exports, 1961: £NZ1,962,531; imports, £NZ2,536,188. Chief imports are meat, sugar, and cotton goods. Most of Western Samoa's trade is with New Zealand and Great Britain.

Events, 1962.—Western Samoa became an independent state on Jan. 1, 1962, after 47 years of administration by New Zealand. Its independence was quickly recognized by many countries of the world, including the United States and the Soviet Union. New Zealand offered the new state £45,000 annually over a five-year period for the strengthening of Samoa's administrative system, in addition to the annual subsidy for education.

WHALING. See Fisheries Industry.
WHEAT. See Agriculture; Grains.

WHITE, Byron Raymond

U.S. Supreme Court justice: b. Fort Collins, Colo., June 8, 1917.

Son of a lumberman and Republican mayor of Wellington, Colo., where he grew up, Byron R. ("Whizzer") White graduated first in his class in 1938 from the University of Colorado at Boulder, where he also excelled in sports and was named on the All-American football team as a halfback in 1937. He attended the University of Oxford on a Rhodes scholarship in 1939, then received his law degree (*magna cum laude*) from Yale University. Before and during his attendance at Yale, he played professional football with Pittsburgh and Detroit to help finance his education, and was named to the National Football Hall of Fame in 1952. Serving as a naval intelligence officer on an aircraft carrier during World War II, he won two bronze stars. He was law clerk to Chief Justice Fred M. Vinson of the Supreme Court (1946–47), then returned to Colorado and became a partner in a Denver law firm, proving his versatility in corporate, tax, and contract legal practice.

White had met John F. Kennedy in London in 1939, and again in the Solomon Islands in 1943 when both were in the Navy. A Democrat, he headed the Colorado Kennedy Committee in the 1960 primary and became the national chairman of Citizens for Kennedy in the campaign. White was appointed deputy attorney general of the United States by President Kennedy in January 1961.

President Kennedy nominated White on March 30, 1962, to be associate justice of the U.S. Supreme Court, replacing Charles Evans Whittaker of Missouri. White's nomination was confirmed by the Senate on April 11 and he was seated on the court on April 16, the first U.S. Supreme Court justice from Colorado and the youngest member of the present court. On August 13 he was named winner of the 1962 Gold Medal Award by the National Football Foundation.

WHOLESALE SELLING

The United States economy in 1962 continued its moderate recovery from the early 1961 recession, and wholesalers participated in the increased activity. Wholesalers' sales in the first six months of 1962 totaled over $76 billion, or 6% higher than in the corresponding period of 1961. There was a similar increase in the physical volume of goods passing through wholesale channels.

Wholesalers' inventory book values totaled $13.5 billion in mid-1962, an increase of only $200 million in the preceding year. Inventories did not rise as much as sales during this period, so that the stock-sales ratio declined to a relatively conservative level.

WHOLESALERS' SALES, 1960–62
(In millions of dollars)

Category	Full year		First 6 months	
	1960	1961	1961	1962
All wholesale trade[1]	147,993	150,675	72,658	76,176
Durable goods establishments	53,334	51,412	24,705	26,631
Nondurable goods establishments	94,659	99,263	47,953	49,545
Merchant Wholesalers: Selected Categories				
Total[1]	137,281	139,549	67,021	70,978
Durable goods[1]	56,803	56,905	27,184	29,604
Automotive	7,883	7,803	3,840	4,043
Electrical, electronics, and appliances	8,660	8,630	3,980	4,368
Furniture, home furnishings	2,910	2,931	1,390	1,461
Hardware, plumbing, heating goods	6,422	6,299	2,992	3,160
Lumber, construction material	6,680	6,562	3,123	3,203
Machinery, equipment, supplies	14,287	14,404	6,935	8,154
Metals, metalwork (except scrap)	5,708	5,851	2,818	3,152
Scrap, waste material	3,296	3,446	1,687	1,647
Nondurable goods[1]	80,447	82,645	39,838	41,375
Grocery, confectionery, meat	27,661	28,690	14,130	14,939
Beer, wine, distilled spirits	7,424	7,636	3,505	3,686
Drugs, chemicals	5,370	5,485	2,691	2,803
Tobacco	4,164	4,279	2,060	2,189
Dry goods and notions	2,298	2,400	1,185	1,222
Apparel and footwear	2,859	2,925	1,314	1,422
Paper	4,153	4,275	2,078	2,203
Coal	802	778	384	392
Farm supplies	1,941	1,995	1,151	1,127

[1] Totals include data for some kinds of business not shown separately. (Source: U.S. Department of Commerce.)

Virtually every important line of wholesale trade contributed to the overall sales advance; the only exceptions were poultry and iron and steel scrap. There was a tendency, however, for sales of producers' machinery and equipment to show the largest relative gains, and construction materials the smallest, while the consumer goods market rose in line with the overall average.

Wholesalers of durable goods reported generally increasing sales in the opening months of 1962. For the first half-year, shipments were valued at $26.6 billion, 9% above the corresponding period of 1961. This compared with an increase of less than 4% among wholesalers of nondurable goods.

By major kinds of durable goods trades, the best sales performances in the first half of 1962 were the 25% increases reported by suppliers of industrial machinery and equipment and of construction machinery. Deliveries by metal distributors and by the electrical appliances, television, radio, and electronics group were also above average—12 and 9%, respectively, higher than in the first half of 1961.

Furniture wholesalers' sales fell appreciably in the early months of 1962, but recovered somewhat in the spring. For the first half year, sales were up about 3% from a year earlier. Home furnishings sales were 6% higher over this period, as were shipments of hardware, plumbing and heating supplies.

Merchant wholesalers dealing primarily in nondurable commodities registered sales totaling $41.4 billion in the first half of 1962, a 4% increase from the first 6 months of the previous year. Chemicals and apparel showed the largest relative gains over this period—11 and 8%, respectively. Tobacco, paper products, and food wholesalers each reported 6% increase. In the latter group, however, there was a considerable diversity in sales performance among the several component trades. Meat distributors registered a 15% advance from the first 6 months of 1961 and fruit and vegetable sales rose 7%, while wholesalers of groceries showed a sales increase of only 3%, and shipments of poultry and poultry products declined by 6%.

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WILDLIFE. See CONSERVATION OF NATURAL RESOURCES; HUNTING AND FISHING.

WILHELMINA

Queen of the Netherlands (1898–1948): b. The Hague, the Netherlands, Aug. 31, 1880; d. Apeldoorn, Nov. 28, 1962.

News of Wilhelmina's birth was greeted with great joy among the Dutch people. Her father, William III, had had two sons by his first wife but by 1880 both were dead and the king was 63 years old. When William III died on Nov. 23, 1890, the 10-year-old princess immediately succeeded to the throne under a regency exercised by her mother, Queen Emma.

Wilhelmina (1880–1962)

M. C MEYBOOM, AMSTERDAM

On Sept. 6, 1898, at the age of 18, Wilhelmina (whose full name was Wilhelmina Helena Pauline Maria) was inaugurated queen. (Sovereigns of the Netherlands are not crowned; they take an oath of allegiance.) The young queen was married on Feb. 7, 1901, to Vladmir Albert Ernst, Duke of Mecklenburg-Schwerin. (The queen's consort was given the title Prince Hendrik of the Netherlands but, despite her wishes, was never granted a money allowance or made first prince of the realm. He died on July 3, 1934.) The royal couple's only child, Princess Juliana, was born on April 30, 1909.

Wilhelmina's influence is generally credited with having kept her country neutral during World War I. During the inter-war period, the pious, frugal, hardworking queen not only performed her royal duties with distinction but in private life earned a reputation as a good businesswoman in managing the considerable fortune of the House

of Orange. Her court was simple and unpretentious.

When the Nazi blitzkrieg overwhelmed Dutch resistance in World War II, Queen Wilhelmina sailed to England on May 13, 1940. Establishing her wartime residence in London, she became a symbol of Dutch resistance to the Nazi occupation and the Japanese conquest of the Netherlands' rich Far Eastern empire.

In 1948, Wilhelmina announced her decision to abdicate in favor of her daughter, Princess Juliana, explaining that a younger person was needed to perform the royal duties. Her retirement became effective on Sept. 5, 1948, ending a reign of exactly 50 years. Assuming the title Princess Wilhelmina of the Netherlands, she lived quietly in retirement until her death.

WILKINS, Maurice H. F. See NOBEL PRIZES.

WINDWARD ISLANDS. See WEST INDIES FEDERATION.

WINE

World production of wine, which increased from 5.113 billion gallons in 1950 to 6.382 billion gallons in 1960, dropped to 5.729 billion gallons in 1961. United States production in 1961 was 169,328,000 gallons, of which 146,078,000 gallons, or 86.3%, came from California.

Lowered tariffs among countries of the European Economic Community (Common Market) resulted in a great increase in the demand for and price of French premium wines, particularly those of the Bordeaux region. There was apprehension among American wine growers that prospective lowering or abolishing of United States tariffs on imported European low-priced wines might seriously affect the industry.

The 1961 vintage in France was reported to have been of exceptionally high quality.

California vintners shipped 134,800,000 gallons of wine into distribution channels in 1961, compared with the previous record high of 131,739,000 gallons in 1961. In the first nine months of 1962, 91,014,900 gallons were shipped, and year-end estimates were that the total 1962 shipments would be about the same as in 1961. There were no available estimates of the 1962 New York State wine shipments, but the grape crop was estimated at 99,000 tons, compared with 124,000 tons in 1961 and 83,000 tons a year for the 1950–59 seasons. (The average annual New York State wine production in the 1952–61 decade was 4,500,000 gallons.)

About 25% of the 1961 California dessert wine production was set aside by growers in an effort to halt a decrease in prices caused by overproduction. United States consumption of table wines has been increasing, but that of dessert wines, such as sherry and port, has been decreasing. Consumption of so-called flavored natural wines, of which almost none were consumed in 1956, increased to 13,272,971 gallons in 1961. (This wine is usually sweet, mildly flavored with herbs, and usually fortified to an alcohol content of 20%.)

WORLD WINE PRODUCTION, 1960 AND 1961

Region	Production (in gallons) 1960	1961
World	6,382,339,500	5,729,262,984
Algeria	167,040,895	414,248,000
Argentina	469,244,033	441,083,437
France	1,619,221,311	1,286,646,550
Germany, West	196,980,880	94,223,620
Hungary[1]	78,334,000	78,334,000
Italy	1,464,927,000	1,398,140,000
Portugal	316,420,597	200,669,315
Rumania[1]	159,000,000	159,000,000
Spain	563,300,837	534,870,223
USSR	196,762,500	195,040,000
United States	166,541,000	169,328,000[1]
California	143,269,000	134,078,000
Yugoslavia	93,757,000	108,890,000

[1] Estimated.

Among important recent developments in wine technology are cold fermentation, control of color by the use of activated carbons, increased use of ferrocyanide to remove traces of heavy metals, and the use of ion-exchange resins to prevent deposits of cream of tartar in bottled wines.

Wine production statistics are shown in the accompanying table, compiled with the help of the Office International de la Vigne et du Vin, Paris.

W. V. CRUESS,
Professor of Food Technology, Emeritus, University of California, Berkeley.

WINNIPEG

The capital of Manitoba, Winnipeg is the seventh most populous city and the fourth-ranking urban area in Canada (1961 census population: city proper, 265,429; Metro Winnipeg, 474,374). It lies 760 feet above sea level at the confluence of the Red and Assiniboine rivers. The city has an area of 15,723 acres of land and 469 acres of waterways, with 103 public parks, squares, and athletic fields.

The municipal government is carried on under a special provincial charter of incorporation granted in 1873 and revised and consolidated in recent years. The City Council comprises a mayor (Stephen Juba, re-elected on Oct. 24, 1962) and 18 aldermen (3 elected annually from each of the 3 city wards). All serve 2-year terms.

Legislation for Greater Winnipeg metropolitan government was passed at the 1960 session of the Manitoba Legislature. The government of Manitoba appointed the first chairman, Richard H. G. Bonnycastle. On Oct. 26, 1960, 10 councilors were elected to represent the 10 divisions of Metro Winnipeg, which has an area of about 600 square miles and encompasses all or part of 19 municipalities.

Metro Winnipeg is the industrial center of the Canadian prairie provinces. Its manufactures include flour, processed foods, printed matter, railway rolling stock, clothes, malt products, furniture, furs, and cotton goods.

Among the transportation lines serving Winnipeg are the Canadian Pacific Railway and Canadian National Railways, which have western headquarters in the city; the Soo Line Railroad, Great Northern Railway, and Northern Pacific Railway, from the United States; Trans-Canada Air Lines, Transair Limited, and (from the United States) Northwest Orient Airlines. A new terminal for Winnipeg International Airport is expected to be completed in 1963. There are four radio and two television stations in Winnipeg broadcasting in English; one French television station; and a French radio station in adjoining St. Boniface.

Construction permits in the Metro area totaled $33 million for the first six months of 1962. The Manitoba Legislature approved legislation to permit provincial assistance for slum clearance and urban renewal. Construction of Winnipeg's $7 million city hall was under way in 1962, and the new Memorial Park (facing the Legislative Building) was officially opened in October. In the same month, work was begun on the Greater Winnipeg Floodway diversion project.

CLEMENTINE COMBAZ,
Reference Librarian, Manitoba Provincial Library.

WIRTZ, W(illiam) Willard. See biographical sketch under UNITED STATES.

WISCONSIN

A North Central state of the United States, Wisconsin ranks 26th among the states in area (land, 54,705 square miles; inland water, 1,449) and 16th in population (4,092,000 on July 1, 1962, a 3.6% rise from the 1960 census figure of 3,951,777). Urban places with populations above 15,000 in 1960:

Appleton	48,411	Neenah	18,057
Beloit	32,846	New Berlin	15,788
Brookfield	19,812	Oshkosh	45,110
Cudahy	17,975	Racine	89,144
Eau Claire	37,987	Sheboygan	45,747
Fond du Lac	32,719	Shorewood	15,990
Green Bay	62,888	South Milwaukee	20,307
Greenfield	17,636	Stevens Point	17,837
Janesville	35,164	Superior	33,563
Kenosha	67,899	Waukesha	30,004
La Crosse	47,575	Wausau	31,943
Madison (*capital*)	126,706	Wauwatosa	56,923
Manitowoc	32,275	West Allis	68,157
Menomonee Falls	18,276	Whitefish Bay	18,390
Milwaukee	741,324	Wisconsin Rapids	15,042

Government.—Chief executive and judicial officers in 1962 included Gaylord A. Nelson (Democrat), governor; Warren P. Knowles, lieutenant governor; Robert C. Zimmerman, secretary of state; Mrs. Dena Smith, treasurer; John W. Reynolds, attorney general; Angus B. Rothwell, superintendent of public instruction; and Timothy Brown, chief justice of the 7-member Supreme Court, who succeeded Grover Broadfoot after the latter's death on May 18.

The Wisconsin Legislature, which convenes in odd-numbered years, comprised (1962) 20 Republicans and 12 Democrats (with 1 vacancy) in the Senate, and 55 Republicans and 45 Democrats in the Assembly.

Legislation, 1962.—The Legislature was called into special session on June 18 to consider the reapportionment of the state's legislative and congressional districts, and adjourned on July 31 after having passed bills to accomplish this task. The governor, however, vetoed these bills. This special session was made necessary by the initiation of cases in the courts by Attorney General John W. Reynolds to force reapportionment according to constitutional mandate. (See below, *Events, 1962.*)

Finance.—Total general fund receipts (1961–62 fiscal year), $483,144,384; total expenditures, $484,492,193; and general fund deficit, $1,347,809. State tax revenues totaled $490,152,803, including $53,821,538 from corporate income taxes, $144,448,248 from individual income taxes, $120,482,698 from motor vehicle taxes, and $171,400,319 from special sales and use taxes, occupational licenses, inheritance and gift taxes, and public utility taxes.

Education.—In the 1960–61 school year, public elementary schools staffed by 19,998 teachers enrolled 523,766 pupils; secondary schools with 9,719 teachers enrolled 198,597. In the fall of 1961, 81,773 students were enrolled for credit in institutions of higher learning.

Expenditures for public elementary and secondary education in the 1960–61 school year totaled $379,459,298 ($378.81 per pupil). Overall expenditures for public education, including higher education, amounted to $505,780,847. Salaries of public elementary and high school teachers averaged $5,317 (elementary, $5,049; secondary, $5,868).

Public Assistance.—In the 1962 fiscal year, public assistance payments to a monthly average of 109,229 persons totaled $83,358,357. This amount included $37,383,842 for the aged and $23,662,518 for dependent children.

Transportation and Communications.—State and federal funds spent for highways in the 1961–62 fiscal year totaled $119,863,082, and county and local expenditures amounted to $13,138,451. State aid to counties and municipalities for roads totaled $55,920,578.

Highways and roads on Jan. 1, 1962, totaled 98,423 miles. By Sept. 1, 1962, there were 240 miles of the controlled-access Interstate System completed or under construction. Registered *motor vehicles* numbered 1,670,545 (1961–62), including 1,357,457 passenger cars. In 1962 the state's *railroads* covered 6,292 miles; there were 6 regularly scheduled *airlines*, 120 *airports and airfields*, and 8 seaplane bases.

Communications media included (1962) 80 AM and 39 FM *radio stations;* 16 *television stations;* (1961) 38 daily *newspapers* (circulation 1,173,229); and (Jan. 1, 1962) 414,663 business, 994,627 residential, and 192,818 rural *telephones.*

Labor Force.—The civilian labor force in September 1962 numbered 1,631,900, including 195,300 agricultural workers. Nonagricultural employment (including self-employed, unpaid family workers, and domestic workers in private households), totaled 1,385,600, compared with an average of 1,341,500 for the 12 preceding months. There were 47,400 unemployed workers in September 1962, compared with 56,800 a year earlier.

Manufacturing.—During 1961, manufacturing establishments in Wisconsin employed an estimated 318,300 production workers who received $1,616,429,256 in wages and who averaged $97.66 for an average workweek of 40.6 hours. In September 1962, wages had risen to $103.85 for an average workweek of 41.8 hours.

MAJOR WISCONSIN MANUFACTURES, 1960

Industry Group	Total employees	Total payroll	Adjusted value added by mfr.[1]
		(in thousands)	
Total	465,784	$2,552,198	$4,680,279
Nonelectrical machinery	81,210	501,289	827,207
Food and kindred products	63,658	306,506	705,387
Transportation equipment	45,363	286,327	565,723
Paper and allied products	35,956	209,317	461,417
Electrical machinery	44,476	245,577	454,584
Fabricated metal products	34,211	187,371	327,619
Primary metal industries	26,830	156,977	248,363
Printing and publishing	21,799	121,323	189,676

[1] For definition, see footnote 1 in the article *Industrial Production.*
(Source: *1960 Annual Survey of Manufactures.*)

Mining.—Mineral output in 1961 was valued at $72,886,000 (6% below the record year of 1960), accounting for 0.40% of the national total and ranking Wisconsin 34th among the states. More than half of the total value was provided by sand and gravel ($28,457,000), of which the state is a leading producer, and stone ($19,686,000). Other important minerals were iron ore and cement.

Agriculture.—Cash farm income for the first nine months of 1962 (excluding government payments) totaled $864,428,000, compared with $866,746,000 for the corresponding period of 1961. For the full year 1961, income comprised $1,002,398,000 from livestock and livestock products, $134,986,000 from crops, and $40,003,000 in government payments. Principal income sources in 1961 were dairy products, $610,754,000, including receipts for 282,977,000 pounds of creamery butter and 469 million pounds of American cheese; cattle, $159,269,000; hogs, $107,266,000; eggs, $46,472,000; and corn, $19,588,000.

The state's 131,215 farms had an acreage of 21,156,223 (9,599,094 in harvested cropland). Livestock on farms (Jan. 1, 1962) included 4,339,000 cattle (2,402,000 milk cows), 1,857,000 hogs, and 10,211,000 chickens, excluding commercial broilers. An average of 244,000 family and 29,000 hired workers engaged in farming during 1961.

WISCONSIN CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Apples, commercial (1,000 bu.)	1,313	1,800	1,400
Barley (1,000 bu.)	2,845	1,395	1,290
Cabbage (1,000 cwt.)	1,879	1,796	1,596
Corn for grain (1,000 bu.)	99,261	120,377	103,422
Corn for canning (tons)	312,570	374,800	362,100
Cranberries (bbls.)	313,300	462,000	430,000
Flaxseed (1,000 bu.)	93	50	51
Hay, tame (1,000 tons)	8,459	9,160	9,534
Lima beans for canning (1,000 lbs.)	11,020	13,300	11,880
Oats (1,000 bu.)	131,530	130,032	122,248
Peas for canning (1,000 lbs.)	261,200	254,260	292,500
Potatoes (1,000 cwt.)	7,509	11,515	9,100
Snap beans for canning (tons)	27,250	47,200	59,000
Tobacco (1,000 lbs.)	21,111	22,464	20,460

(Source: U.S. Department of Agriculture.)

Events, 1962.—The November general elections provided a graphic example of the erratic behavior of Wisconsin voters. The Democratic candidate for governor, Attorney General John W. Reynolds, campaigning on a "no-sales-tax" theme, defeated his Republican opponent, Philip G. Kuehn, by a

narrow margin of 637,491 votes to 625,536. He thus became the only Democratic constitutional officer in the state capitol at the inauguration on Jan. 7, 1963. Reynolds will face a Legislature again controlled by Republicans (Assembly, 53 to 47; Senate, 22 to 11). The state's representation in the U.S. House of Representatives remained the same (6 Republicans, 4 Democrats). However, veteran Republican Sen. Alexander Wiley lost his Senate seat to Democratic Gov. Gaylord A. Nelson by a vote of 662,342 to 594,846.

A year-long dispute between Governor Nelson and the Republican-controlled Legislature over the issue of reapportionment highlighted the political scene. A series of legal moves by Attorney General John W. Reynolds to force redistricting failed, including a suit filed in federal court on April 13. The court held that the Legislature should do the apportioning. When the lawmakers failed to act, however, the three-judge federal panel asked Governor Nelson to call a special session, which was convened on June 18.

On July 2, the deadline set by the court for legislative action, Governor Nelson vetoed two bills passed by the Legislature, denouncing the measures as a "shameless partisan gerrymander." The next day the court appointed former state Supreme Court Justice Emmert L. Wingert as a special master to produce a plan for consideration by the panel. After Wingert found that there was not "a case for equitable relief at this time," the federal court dismissed the case without prejudice on August 14. Despite further wrangling the state was not reapportioned, and it remained to be seen what would be done by the 1963 Republican-controlled Legislature and Democratic Governor Reynolds. (See also REAPPORTIONMENT AND REDISTRICTING.)

Wisconsin's controversial parochial school bus law, which was to take effect on July 1, was declared unconstitutional by the state Supreme Court on June 5. The law would have compelled the state's 1,129 school districts to furnish bus transportation for private and parochial students (an estimated 60,000 in all).

The University of Wisconsin named a new president, Dr. Fred H. Harrington, on August 1. He succeeded Dr. Conrad Elvehjem, who died July 27. The Very Rev. William F. Kelley became president of Marquette University on February 18, replacing the Very Rev. Edward J. O'Donnell, who was named to the new post of university chancellor.

(See also MILWAUKEE.)

ANTON JACOBSON,
Research Associate,
Office of the Attorney General of Wisconsin.

WOLFRAM. See MINERAL PRODUCTION—*Tungsten.*
WOOD. See LUMBER.
WOOD PULP. See PAPER INDUSTRY.

Wisconsin Governor Gaylord Nelson and his wife smile over November 6 election returns giving him the U.S. Senate seat long held by Alexander Wiley.

WIDE WORLD

WOOL

The 1962–63 world wool clip was expected to decline 35 million pounds to 5,633 million pounds, greasy basis. Smaller numbers of sheep in the United States were expected to reduce production (for the second consecutive year) to 306 million pounds.

Merino and crossbred wools used in textiles account for four fifths of the world's wool, and other types used in carpets for the rest. United States wool is not used in carpets.

World wool consumption expanded 19% from 1958 to 1961, reaching a total of 3,301 million pounds, clean basis, in 1961. In 1962, consumption was expected to be about the same as in 1961.

The United States consumed 418 million pounds in 1961, or 13% of total world consumption. Wool textiles took 263 million pounds, carpets 147 million, and other uses 8 million. From January through November 1962, United States textiles and carpet mills consumed 5% more wool than in the corresponding 1961 period.

WORLD PRODUCTION OF VIRGIN WOOL
(In millions of pounds, greasy basis)

Country and type	Average 1951–52 to 1955–56	1961–62	1962–63 Forecast	Percentage distribution
Australia	1,261	1,700	1,670	30
Argentina	393	413	385	7
New Zealand	434	587	605	11
Republic of South Africa	286	334	331	6
United States	296	318	306	5
Uruguay	199	185	185	3
USSR	484	760	780	14
Other countries	1,188	1,371	1,371	24
Total	4,541	5,668	5,633	100
Of which:				
Merino (fine)	1,725	2,327	2,300	41
Crossbred (medium)	1,680	2,078	2,083	37
Total apparel-type	3,405	4,411	4,383	78
Carpet type	1,136	1,257	1,250	22

(Source: Commonwealth Economic Committee.)

There was a possibility that apparel wool prices in 1962 would exceed 1961 levels as a result of broadening world demand in relation to available supplies. United States trade stocks were exceptionally low and required a one-third increase over 1961 imports to satisfy rising demand. Carpet wool prices were lower, reflecting a decrease in demand and a lower level of imports because of competition from synthetic fibers.

United States imports of wool products continued to supplement domestically manufactured wool products at a rising rate, but it was expected that international trade negotiations would attempt to stem this increase.

Retail supplies of easy-care all-wool products, including permanently creased slacks, permanently pleated skirts, machine-washable and -dryable blankets and sweaters, and permanently moth-proofed products, increased steadily.

(See also TEXTILE INDUSTRY.)

RUTH JACKENDOFF,
Director, Department of Economics and Statistics, The Wool Bureau, Inc.

WORLD BANK. See INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT.
WORLD COURT. See the Index entry, *International Court of Justice.*

WORLD HEALTH ORGANIZATION

The World Health Organization (WHO), an agency of the United Nations, aims at the attainment by all peoples of the highest possible level of health.

Membership and Assembly.—The membership of WHO increased to 117 states in 1962. Tanganyika, an associate member, became a full member after having attained independence. The Mongolian People's Republic, Western Samoa, and Algeria joined as full members, and Uganda and Jamaica as associate members. Ruanda-Urundi, an associate member, became two independent states, Rwanda and Burundi, both of which were admitted to full membership.

The Fifteenth World Health Assembly met in Geneva, Switzerland, in May and adopted a budget of nearly $30 million for 1963. On May 24 in Geneva, the president of the Assembly, Sergei V. Kurashov of the USSR, laid the foundation stone of the new WHO headquarters building.

World Health Day was observed in many countries on April 7, 1962, with the theme, "Preserve sight, prevent blindness." By conservative estimate, the world has 10 million blind persons, of whom 650,000 are children. As M. G. Candau, director-general of WHO, pointed out, over half the world's blindness is preventable.

Control of Diseases.—In the worldwide malaria-eradication campaign, outstanding advances were achieved in many countries—for example in India, where areas inhabited by over 148 million people entered the consolidation phase in which house-to-house insecticide spraying has been stopped and the emphasis is on investigating every case of fever. To win support for malaria eradication, a philatelic campaign was launched by WHO in which some 100 postal administrations took part under the slogan "The world united against malaria."

In many countries, tuberculosis is recognized as the greatest public health hazard. In internationally assisted campaigns against this disease, 345 million persons were tuberculin-tested and 130 million were given a preventive vaccination of BCG between 1951 and 1961 in 41 countries. In 1962, some 25 countries with a combined population of about 750 million received WHO assistance for their control activities.

Notifications of quarantinable diseases for 1961 were well above the figures for 1960 for smallpox, plague, cholera, and yellow fever, but comparison with earlier years shows a marked decline in these diseases. For smallpox eradication, WHO continued to provide assistance and advice to a great many countries. Cholera research was stepped up following the outbreaks of El Tor cholera in 1961.

Research and Education.—Cancer research received much attention, particularly the epidemiological approach to the study of lung cancer. WHO sponsored studies of large samples of the population in Ireland, for example.

In cardiovascular diseases, the discovery of the causes of high blood pressure, ischemic heart disease, and other conditions continued to receive the main emphasis. WHO's mental health program was increasingly focused on incorporating mental health activities within the framework of public health services.

WHO assistance was continued in the Republic of the Congo (Léopoldville). With nearly 200 staff members in the country, this became the largest and most comprehensive health operation ever carried out by WHO in a single country. The professional Congolese staff being trained are starting to fill the ranks of their own health service. At a ceremony in Geneva on Oct. 18, 1962, the first five male nurses from the Congo to qualify as laboratory technicians were handed their diplomas.

(See also CHILDREN AND YOUTH.)

R. L. COIGNEY,
Director, Liaison Office with United Nations.

WORLD POLITICS. See list of references under the Index entry, *World Politics.*

WRESTLING. See SPORTS, GAMES, AND SHOWS.

WYOMING

A Western state of the United States, Wyoming ranks 9th among the states in area (land, 97,411 square miles; inland water, 503) and 48th in population (365,000 on July 1, 1962, a 10.7% increase from the 1960 census figure of 330,066). Urban places with populations above 5,000 in 1960:

Casper	38,930	Riverton	6,845
Cheyenne (*capital*)	43,505	Rock Springs	10,371
Laramie	17,520	Sheridan	11,651
Rawlins	8,968	Worland	5,806

Government.—Chief executive and judicial officers in 1962 included Jack R. Gage, acting governor and secretary of state; C. J. Rogers, treasurer (died, May 18); Mrs. Minnie A. Mitchell, auditor; Norman B. Gray, attorney general; Velma Linford, superintendent of public instruction; and Fred H. Blume, chief justice of the 4-member Supreme Court.

The Wyoming Legislature, which convenes in odd-numbered years, comprised 17 Republicans and 10 Democrats in the Senate in 1962 and 35 Republicans and 21 Democrats in the House of Representatives.

Finance.—In the 1962 fiscal year, revenue of $120,846,262 included $44,000,000 from state taxes. Chief tax yields were the 2% general sales tax ($12,413,000), motor fuel taxes ($8,932,000), and licensing ($14,557,000). Spending of $111,347,982 included $21,809,228 for education, $5,275,042 for health, welfare, and safety, and $46,005,960 for highways.

Education.—In the fall of 1962, public elementary schools staffed by 2,153 teachers enrolled 50,763 pupils; secondary schools with 1,766 teachers enrolled 32,274; and parochial schools (1961–62) with 126 teachers enrolled 3,451. College enrollment (fall 1962) totaled 7,547 in 5 junior colleges and the University of Wyoming.

Estimated public school spending in the 1961–62 school year totaled $46,450,000, including current expenditures of $35,750,000 ($475 per pupil) and capital outlays of $9,500,000. Revenue of $45.6 million was drawn chiefly from state funds ($16.6 million) and local districts ($20 million). Teachers' salaries averaged $5,252 (high school, $5,550; elementary, $5,110). Actual spending for higher education (1961 fiscal year) totaled $13,008,000.

Public Assistance.—In the 1962 fiscal year, public assistance payments to a monthly average of 7,059 persons totaled $4,518,209. This amount included $2,218,177 for the aged and $1,237,500 for dependent children.

Transportation and Communications.—With 404 miles of highway construction and reconstruction completed in 1961, *highways and roads* on Jan. 1, 1962, totaled 60,139 miles (7,001 surfaced). These served 240,629 *motor vehicles* (as registered on Jan. 1, 1962), including 141,567 automobiles. Operating in the state were (1961) 6 *railroads* (using 3,171 line miles of track); (1962) 2 regularly scheduled *airlines;* and 36 commercial and municipal *airports and airfields.*

Communications media included (1961) 24 AM *radio stations;* 3 *television stations;* (1962) 10 daily *newspapers* (circulation, 76,059) and 30 other newspapers (53,603); and (Jan. 1, 1962) 43,400 business and 96,600 residential *telephones.*

Labor Force.—The state's labor force on June 30, 1962, included 26,000 agricultural workers. Nonagricultural employment totaled 118,000, compared with 115,000 a year earlier and an average of 99,800 for the 12 intervening months. Of nonfarm employees, 24.6% were in government services, 21% in trade, and 12.2% in transportation, communication, and other utilities. Unemployment on June 30, 1962, stood at 7,258, compared with 7,465 for the previous June 30.

Manufacturing.—Manufacturing employed an average of 8,485 workers in 1962 and provided a payroll of $48,263,288. In 1960 workers numbered 6,992, including 5,021 in production; the payroll amounted to $35,475,000; and adjusted value added by manufacture totaled $72,662,000.

The two leading industries in 1960 were petroleum and coal products (2,318 workers who received $15,214,000 in wages and added $37,369,000 in adjusted value by manufacture) and food and kindred products (1,492; $5,911,000; $14,753,000).

Mining.—In 1961, Wyoming ranked 10th among the states in the value of its mineral output, with 2.58% of the national total. Mineral fuels (of which petroleum provided 76%) accounted for 86% of the total value; nonmetals, 7%; and metals, 7%. Wyoming was first in output of sodium carbonate, second in uranium, third in sodium sulfate and vermiculite, and fourth in vanadium.

WYOMING MINERAL PRODUCTION, 1961
(In short tons, except as noted)

Mineral	Quantity	Value
Clays[1]	859,000	$ 10,301,000
Coal	2,529,000	8,573,000
Iron ore, usable (long tons)	...[2]	...[2]
Natural gas (million cu. ft.)	194,674	24,334,000
Natural gasoline (1,000 gal.)	76,349	4,705,000
Petroleum (1,000 bbl.)	142,589[3]	356,473,000[3]
Petroleum gases (1,000 gal.)	132,831	5,451,000
Phosphate rock (long tons)	...[2]	...[2]
Sand and gravel	6,669,000	5,356,000
Stone	2,594,000	3,315,000
Uranium ore	1,521,064	28,218,000
Other minerals	...	21,151,000
Total	...	$466,983,000[4]

[1] Excludes certain clays, value of which is included in "Other minerals." [2] Figure withheld to protect individual company's confidential data. [3] Preliminary. [4] Total adjusted to avoid duplication in the value of clays and stone. (Source: U.S. Bureau of Mines.)

Agriculture.—Cash farm income for the first nine months of 1962 (excluding government payments) totaled $89,724,000, compared with $85,764,000 for the corresponding period of 1961. For the full year 1961, income comprised $118,920,000 from livestock, $30,438,000 from crops, and $10,182,000 in government payments. Principal income sources in 1961 were cattle, $86,007,000, and sheep, $14,292,000.

The state's 10,000 farms in 1959 had an acreage of 36,200,000 (1,679,000 in harvested cropland). Livestock on farms on Jan. 1, 1962, included 1,126,000 cattle and 2,220,000 sheep.

WYOMING CROP STATISTICS

Crop (and unit of production)	Average 1951–60	1961	Est. 1962
Barley (1,000 bu.)	3,435	3,399	4,144
Beans, dry edible (1,000 bags)	833	930	602
Hay (1,000 tons)	1,370	1,406	1,563
Sugar beets (1,000 short tons)	518	706	614
Wheat (1,000 bu.)	5,911	4,908	4,551

(Source: U.S. Department of Agriculture.)

Events, 1962.—The efficient machine of the state Republican Party won a sweeping victory in the November 6 elections. In the U.S. Senate race, former Gov. Milward L. Simpson defeated incumbent Joseph J. Hickey, Democrat, by 69,043 votes to 50,329. For the state's lone seat in the U.S. House of Representatives, incumbent Republican William Henry Harrison, a grandson of President Benjamin Harrison, easily defeated Louis A. Mankus.

The Republicans won all five of the elective executive positions in the state government. In the race for the governorship, Clifford P. Hansen, Jackson cattleman, bested Acting Gov. Jack R. Gage; Mrs. Thyra Thomson was elected secretary of state over Frank L. Bowron; Mrs. Minnie A. Mitchell, incumbent auditor, defeated John E. Purcell; Everett T. Copenhaver won the treasurer's office from Robert Adams; and Cecil M. Shaw, in a very close contest, defeated the incumbent Velma Linford for state superintendent of public instruction.

In the contest for the Legislature, Republicans retained control of the Senate, 16 seats to 11, and of the House of Representatives, 37 to 19.

In general, cattlemen, sheepmen, and farmers prospered as a result of good precipitation in spring and summer. An unusually dry, warm fall favored crop harvesting and permitted full use of pasturage by livestock.

Production of raw materials flourished. Crude oil production exceeded 140 million barrels, as in 1961. The Stauffer Chemical Company began production at its new $10 million trona mine and soda ash refinery 20 miles northwest of Green River. The U.S. Steel Corporation began shipping iron ore pellets from its $60 million mine and mill in South Pass to its Columbia-Geneva division steel mill at Provo, Utah.

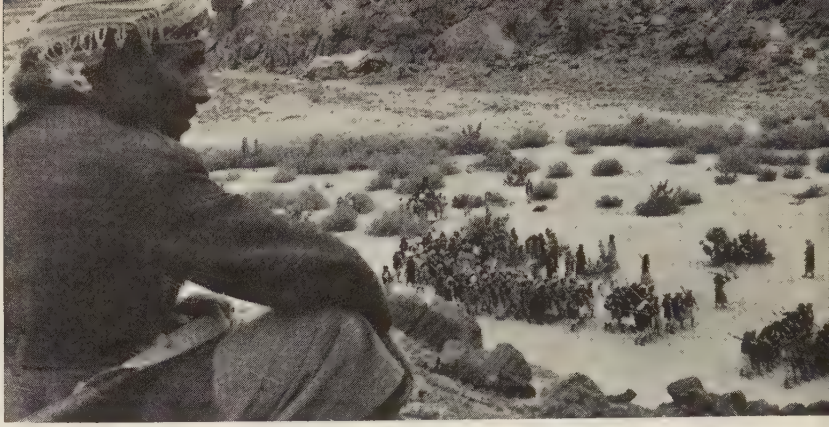
The tourist business was good, owing largely to record numbers of visitors to Yellowstone and Grand Teton national parks.

The federal government announced plans to make Warren Air Force Base, Cheyenne, the center of 200 Minuteman missile sites, to be constructed in the next three years in southeastern Wyoming, northeastern Colorado, and western Nebraska. Work on the first site east of Cheyenne began in December. Total cost of the 200 sites is expected to exceed $150 million.

Former U.S. Senators Frank A. Barrett, Republican, and Joseph C. O'Mahoney, Democrat, died during the year (Barrett on May 30 and O'Mahoney on December 1).

"Events" by: T. A. Larson,
Head, Department of History, University of Wyoming; Author of "Wyoming's War Years 1941–1945."

X·Y·Z



YEMEN—Confident of returning the imam to power, Yemeni royalist troops undergo training in November.

LONDON DAILY EXPRESS

X-RAY

The year 1962 was particularly significant for X-ray science as the 50th anniversary of one of the crucial and fruitful discoveries in history—the experimental proof by the German physicist, Max von Laue, of the diffraction of X-rays by crystals. This clarified the fundamental natures of the radiation and of the crystalline state, and opened the door to spectrometric analysis of elemental composition and diffractometric analysis of crystal structures. The discovery was commemorated in an international celebration at Munich in July 1962.

A new encyclopedia[1] devoted to radiation contains articles by nearly 300 radiation specialists from all over the world, with information on such significant advances in X-ray science as those related below.

Radiation Research.—The sun is known as one source of X-rays. In June 1962, X-rays from two cosmic sources in interstellar space were detected for the first time by the instruments on an Aerobee sounding rocket. Such X-rays may have a relationship with electrons in the Van Allen radiation belt. (See also ASTRONOMY; ATMOSPHERE RESEARCH.)

Flash radiography and cineradiography have been improved with field emission tubes. Each multiple-pulsed tube produces intensities of 10^9 roentgens per second and enables motion pictures to be taken at a rate of 16,000 frames per second. Such motion pictures demonstrate the distortion and displacement of the internal organs of animals moving under accelerations of 30 G's (gravities). Astronauts going into or out of orbit may experience similar, though less pronounced, effects.

Great progress has been made in the design of diffraction equipment to operate at very high and low temperatures for study of phase transformations, stability, and reactions of crystalline materials under conditions like those met by satellites in space. Patterns with changing temperature are continuously recorded on moving film.

The skilled experimental manipulation by Burton L. Henke and his associates at Pomona College of extremely soft X-rays up to 45 angstroms in wavelength in such processes as microscopy and spectrometry was outstanding.

Electric Data Processing and Control.—Computers are now widely used for processing all kinds of X-ray data, derived from programmed automatic spectrometers, diffractometers, and other radiation instruments. On-stream process control by fluorescence spectrometry has become established practice in the cement industry for continuous analysis of the calcium, aluminum, silicon, magnesium, and iron content, and for control of the zinc coating of sheet metal.

Radiation Detection and Protection.—Dosimeters in many new designs based on new physical and chemical changes appeared under the impetus to provide more sensitive detection and measurement of radioactive fallout.

J. F. Thomson gives an impressive account[2] of intensive tests of a large number of chemical compounds as potential radiation protectants, such as 2-aminoethylisothiouronium, known as AET. The prospect of a protective drug is generally discouraging, however, because of toxicity. This emphasizes more than ever before the vast superiority of avoidance of exposure by shielding over any kind of pre- or post-irradiation therapy. The U.S. Army is licensing architects specially trained in the design of efficient shielding structures.

G. L. CLARK,
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YACHTING. See SPORTS, GAMES, AND SHOWS.

YEMEN

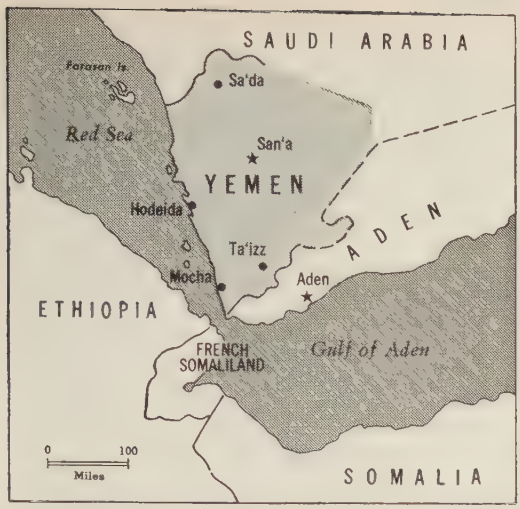
An independent state in southwestern Arabia, Yemen is bounded by Saudi Arabia, Aden Protectorate (parts of which have joined to form the Federation of South Arabia, a union which Yemen does not recognize), and the Red Sea. The eastern frontier, facing the Rub al-Khali (Empty Quarter) desert, has never been delineated, and Yemen lays claim to parts of Aden. The state has an estimated area of 75,000 square miles, and a population of from 4.5 million to 5 million. About 50% of the population belongs to the Zaydi sect of Islam, the leader of which has been the traditional ruler of the country for several centuries; the remainder comprises Ismailis (followers of the Aga Khan) and orthodox Shāfi'ite Muslims. Formal capital cities are San'a (est. pop., 60,000) and Ta'izz (16,000).

Government.—Until his death on Sept. 19, 1962, the ruler was Imam Saif al-Islam Ahmad (acceded in 1948). He was an absolute monarch and the spiritual head of the Zaydi sect of Muslims. He had several councils to advise and assist him, but their roles were largely nominal. Administratively, the country was divided into eight provinces, each with an appointed governor: San'a, Ta'izz, Hodeida, Hujjah, Huth, Ibb, Baida, and Sa'da. After the death of the imam, a revolution placed the country in a state of political uncertainty, with two governments contending for control—a revolutionary republican regime led by Brig. Abdullah al-Sallal, who was named president in October; and a royalist government led by the new imam and former crown prince, Saif al-Islam Muhammad al-Badr (see below, *Events, 1962*).

Finance.—The main currency is the Maria Theresa thaler (360 grains of fine silver), which is valued at about U.S.$0.70. There is a fractional currency called

[1] Clark, George L., ed., *Encyclopedia of X- and Gamma Rays* (Reinhold Publishing Corp., New York, publication scheduled for 1963).

[2] Thomson, John F., *Radiation Protection in Mammals* (Reinhold Publishing Corp., New York, 1962).



AMERICANA MAP BY DONALD T. PITCHER; LONDON DAILY EXPRESS

(*Map*) After ruling for eight days, Yemen's imam was deposed on September 27 at the capital, San'a, and Republican rule was quickly established at Ta'izz and Hodeida. In November, royalists claimed control of Sa'da and other territories in the North. (*Right*) Troops of the Yemeni Army, which carried out the revolution, parade in front of the royal palace, at San'a.

buqshas (40 buqshas equal 1 thaler). With the aid of the United Arab Republic (UAR), a national bank with a capital of 10 million UAR pounds is being established by the republican regime.

Economy.—Agriculture is the occupation of about 90% of the population. The principal crops are dhurra (a kind of sorghum), wheat, barley, corn, coffee (mocha), cotton, tobacco, fruits, alfalfa, indigo, and qat (*Catha edulis*). Coffee, cotton, hides, skins, and qat are the chief exports. Most trade passes through Aden; trade statistics are not available.

Little industry exists, and mineral resources remain largely unexploited. In 1961 a new port was constructed at Hodeida on the Red Sea with Soviet-bloc technical assistance. A 145-mile highway linking Hodeida with San'a was completed in 1962 with the help of Communist China. A road between San'a and Ta'izz was being built under the United States Point Four Program.

Events, 1962.—Imam Saif al-Islam Ahmad died at the age of 71 on Sept. 19, 1962, after a long illness. He was succeeded immediately by his son, who became Imam Saif al-Islam Muhammad al-Badr. As crown prince, the latter had ruled for his father on several occasions and was known to have modern and liberal ideas. On ascending the throne, the new imam announced his intention to carry out essential reforms and to modernize the country's feudal social system.

On September 27, however, the Soviet-trained Yemeni Army under the leadership of Col. (later promoted to a brigadier) Abdullah al-Sallal, who had just been appointed chief of staff by the new imam, besieged and bombarded the ruler's residence in San'a and claimed to have killed the young imam. Ten high-ranking government officials were subsequently executed by the revolutionaries. A ruling national defense council was formed and the establishment of a Republic of Yemen, with Colonel al-Sallal as acting head of state, was proclaimed.

Within a few days, however, reports began to circulate that Imam Muhammad al-Badr was alive and had escaped to an area near the Saudi Arabian frontier. The republican regime, nevertheless, was quickly recognized by the UAR, Syria, Algeria, Tunisia, and the Soviet Union and some other Communist countries. In early November the new government concluded a five-year military defense pact with Cairo.

On November 10 the imam reappeared publicly before a group of foreign correspondents at an undisclosed site in northeastern Yemen. He bitterly attacked President Gamal Abdel Nasser of the UAR for allegedly betraying him, and called on Yemeni tribesmen and faithful Zaydi Muslims to join him in repelling what he termed Egyptian aggression. With the imam back on the scene and apparently supported materially by Saudi Arabia and Jordan, the royalists cause took on new hope. Meanwhile, arms and troops from the UAR were flown and shipped in to support the republican forces. A full-fledged civil war soon developed between the two insurgents.

In late November, President Kennedy proposed

Central figures of the civil war in Yemen appear with their followers. (*Left*) After the eight-day rule of the new imam, power was seized by Premier Abdullah al-Sallal, shown here with Deputy Premier Abdul Rahman at his left, on October 9 at San'a. (*Right*) The deposed ruler, Imam Muhammad al-Badr (center), rallies his men in northwest Yemen on November 12.

WIDE WORLD; THE TIMES, LONDON

as a first step toward settlement of the conflict that UAR troops withdraw from the republican side and that Saudi Arabia and Jordan cease providing material support to the royalists. In mid-December the UAR reportedly agreed to withdraw its forces from Yemen. With the republican regime firmly established in San'a without the aid of foreign troops, the United States recognized it as the legitimate government of Yemen on December 19. Subsequently, the new government was given Yemen's seat at the United Nations.

(See also MIDDLE EAST.)

SYDNEY N. FISHER,
Professor of History,
The Ohio State University.

YOUNG, Owen D.

U.S. industrialist: b. Van Hornesville, N.Y., Oct. 27, 1874; d. St. Augustine, Fla., July 11, 1962.

The son of an upstate New York farmer, Owen D. Young became the head of two of America's largest corporations, and a negotiator on international economic problems. He began his career as a lawyer, having studied at St. Lawrence University (B.A., 1894) and the Boston University Law School (LL.B., 1896). Following graduation, he became an attorney in Boston, where he also taught for a number of years as a part-time instructor in law at his alma mater.

In 1913 he moved to New York as a general counsel for the General Electric Company. Shortly thereafter he was put in charge of the company's legal department, with the rank of vice president. In 1922 he was named chairman of the board, a post he held until 1939, and again in 1942–44.

In 1919 the United States government asked Young to organize a company to consolidate American patents in the field of radio. It was feared that these patents—if they remained in the hands of their various owners—might be sold to foreign firms, thus weakening the position of the United States in the area of electronic communication. The company which Young formed was the Radio Corporation of America (RCA), with himself as board chairman. He continued in this capacity until 1929, after which he served as chairman of RCA's executive committee until 1933.

Young's most distinguished public service was his role in the settlement of the German reparations problem after World War I. In 1923–24 he was a member of the Expert Commission on German Finances and Reparations, which drew up the Dawes plan for the payment of German indemnities. Later he served as conciliator at the London Conference of Premiers, where his influence is credited with securing Allied acceptance of the Dawes plan. In 1929, as a result of his outstanding work in this area, Young was asked by the European governments to preside at a second reparations conference. The resulting Young plan, which modified the Dawes plan, is regarded as a masterpiece of economic diplomacy. His public service also included the chairmanship of several boards and committees concerned with business and labor problems.

YUGOSLAVIA

Largest of the Balkan countries in southeastern Europe, the Federal People's Republic of Yugoslavia has an area of 98,766 square miles and a population (Jan. 1, 1962 est.) of 18,725,000. Yugoslavia is a federation of six republics: Serbia, 7,629,113; Croatia, 4,148,122; Slovenia, 1,584,368; Bosnia-Hercegovina, 3,274,866; Macedonia, 1,404,833; and Montenegro, 471,433 (1961 census, provisional). Of its population, over 16 million persons are South Slavs (Serbs, Croats, Slovenes, Macedonians, and Montenegrins); national minorities (principally Albanians, Magyars, and Turks) comprise about 12% of the population. Belgrade (Beograd), the capital, has a population (1961 census, provisional) of 587,899. Among the larger cities (1962 population est.) are Zagreb, 485,000; Ljubljana, 157,400; Sarajevo, 179,800; and Skopje, 180,900.

President Tito of Yugoslavia was born Josip Broz (or Brozović) to a peasant family on May 25, 1892, in Kumrovec, Croatia. Trained as a locksmith, he worked at his trade and in German and Austrian metalworks until conscripted for the Austro-Hungarian Army shortly before World War I. He was captured by the Russians in 1915. Released during the Revolution of 1917, he fought on the side of the Bolsheviks in the Civil War and, on his return home in 1920, joined the Yugoslav Communist Party. While working in various industries he was active in the trade union movement, becoming secretary of the Zagreb metalworkers union in 1927. The next year he was arrested for his illegal Communist activities and was imprisoned until 1934 when, under the pseudonym of Tito, he was named to the Yugoslav Politburo and went to Moscow. He returned to Yugoslavia clandestinely in 1936, became party secretary the next year, and reorganized the national Communist leadership. When the Germans overran his country in 1941, he formed the Partisan guerrillas, which the Western allies began to aid in 1943 although the Yugoslav government-in-exile recognized the rival Četniks of Gen. Draža Mihajlović. That year he received the title of marshal and in March 1945 he took office as premier of the Yugoslav provisional government in liberated Belgrade. He retained the post when Yugoslavia was proclaimed a Federal People's Republic (November 1945) and has been president of Yugoslavia since the replacement in 1953 of a cabinet by a Federal Executive Council. After his expulsion from the Cominform in 1948 for deviating from the Stalinist party line, Tito's Communist government adopted a neutral policy in the cold war, achieving first a rapprochement with the West (as evidenced by American military aid) and in 1962 (since the Sino-Soviet rift) an understanding with the USSR.

Government.—Yugoslavia is a Communist-led state, but with distinct variations from the Soviet pattern. The center of political power is the League of Communists of Yugoslavia, with a membership of 1 million. The amended constitution of 1953 provides for a bicameral Federal People's Assembly comprising a 371-member Federal Council, elected in part by universal suffrage and in part by the councils of the six republics; and a Council of Producers, made up of delegates representing various sectors of the economy. The Federal Executive Council, headed by the president of the republic (Marshal Josip Broz Tito, installed for his third term on April 19, 1958), is the main policymaking organ. In addition to the federal and republican bodies, 75 districts and 759 communes represent the lower administrative organs; the commune is designed as the basic social-economic cell of society. The largest of the Communist-dominated "mass organizations" is the Socialist Alliance of Working People of Yugoslavia, with a membership of 6.5 million.

Education and Religion.—School enrollment, 1961–62: 3,565,949 (about 59% of the school-age population). Number of schools (with enrollments), 1960–61: 14,527 elementary (2,764,000); 229 secondary (80,000); 91 teacher-training (28,000); and 1,107 technical (229,086 in 1959–60). There were in 1960–61, 6 universities and 106 higher schools of learning. According to the 1953 census, the principal religions are Serbian Orthodox, 41.4%; Roman Catholic, 31.8%; and Muslim, 12.3%. In addition, Protestants totaled 0.9%; other religions, 1.3%; and 12.3% of the population was reportedly without religious affiliation.

Finance.—In 1961 total budget expenditure for the federal and republic governments amounted to 864 billion dinars, an increase of 161 billion dinars over 1960. On Jan. 1, 1962, the value of the commercial and tourist dinar was lowered from 600 to 750 to the U.S. dollar; the statistical rate was set at 300 dinars to the dollar.

Transportation and Communications.—Transport networks (miles, 1961): railways, 7,369; concrete, asphalt, and cobblestone roads, 4,793. Maritime fleet: 793,000 gross registered tons. National airline: Jugoslovenski Aerotransport (JAT). Other communications data for 1961: passenger cars, 78,085; trucks, 37,226; telephones, 276,487; radio subscribers, 1,674,000; television sets in use, about 100,000 (1962).

Economic indicators.—Gross national product, 1961 (called social product in Yugoslavia): 3,379 billion dinars, up 4% from 1960. Total industrial output rose by 7% in 1961, as against 15% in 1960. The volume of agricultural production in 1961 was 6% lower than in 1960 and 15% under that of 1959. Cost-of-living index (1960 = 100): 110 in 1961; 121 in January 1962. Number of unemployed persons: 173,002 (October 1959–March 1960 average).

Manufactures and Minerals.—Chief industrial products (metric tons, 1961): crude steel, 1,532,000 (up 6.2% from 1960); rolled products, 1,009,000 (up 3.8%); pig iron, 997,000 (up 2.6%); crude petroleum, 1,340,749 (up 42.8%); coal, 24,073,000 (up 6%); electric power, 9,924 million kw.-hr. (up 11.2%).

Agriculture.—Agriculture accounts for about 24% of the gross national product, and engages 56.7% of the total active population. Chief crops (thousands of metric tons, 1961): wheat, 3,170 (3,570 in 1960); rye, 191 (233); corn, 4,550 (6,160); sugar beets, 1,760 (2,290); hemp, 255 (201); potatoes, 2,680 (3,270).

Foreign Trade.—Total exports, 1961 (in millions of U.S. dollars): $556.2 (1.8% less than in 1960); imports, $901.1 (up 9%). Main exports (millions): foodstuffs, $168.0; semifinished products, $127.6; machinery and transport equipment, $92.8; raw materials, $83.1. Main imports (millions): industrial goods, $322.5; manufactures, $182.8; raw materials, $126.9; foodstuffs, $117.6. Chief customers (millions): East Europe, $168.1; European Economic Community (EEC), $143.4; European Free Trade Association (EFTA), $89.1; North America, $42.0. Main suppliers (millions): EEC, $322.7; North America, $184.1; eastern Europe, $168.2; EFTA, $110.5. On Nov. 13, 1962, Yugoslavia was accepted as a provisional member of the General Agreement on Tariffs and Trade (GATT).

Events, 1962.—The slowdown in the economic growth of Yugoslavia that began in 1961 continued throughout 1962. In spite of the objective of the Social Plan for 1962 to recover the ground lost (expecting industrial production to increase by 13% and agricultural output by 23%, and the balance of payments deficit to decline by $70 million), nothing worked as planned. Production in the first eight months of 1962 rose only 5%; the wheat crop equaled that of the preceding year's 3,100,000 tons (Yugoslavia's annual consumption requirements are about 4,000,000 tons); exports rose during the first six months of 1962 by only 3.7% above the comparable 1961 period instead of the planned 18.2%; and foreign short-term debts soared by August 1962 to about $1 billion.

These developments, as well as steadily rising prices and growing unemployment compelled Yugoslav authorities to take measures to halt the inflationary trend in the economy, to correct structural disproportions between consumption and production, and to stimulate exports. The alarm was sounded in a report delivered to Parliament on April 7 by Mijalko Todorović, vice president for economic affairs of the Federal Executive Council. On April 18 the Council announced a series of deflationary and restrictive measures: cutbacks in government spending, establishment of commissions to verify the new rules governing the distribution of net income of enterprises, and methods for doubling the basic turnover tax rate. A week later, controls on retail and wholesale trade were imposed, and on May 27 the Federal Executive Council was reshuffled in order to bring about a stronger administrative regulation of economic relations.

President Tito, in a bitter speech at Split on May 6, analyzed Yugoslavia's economic shortcomings and announced tighter controls to cope with the economic crisis. On June 30 the Federal People's Assembly enacted a law on foreign trade, which was based on the principle of unified commodity exchange, and which abandoned the system of individual foreign trade groupings. The reorganization of foreign trade transactions was expected to be achieved by the end of 1962. On July 19, new regulations restricted the remaining tiny area of private business by eliminating, within a year, private taxis and private trucking and hauling, and by barring private craftsmen from engaging in general production. In the middle of August, wages were cut about 10%, and there were indications that the reduction would be restored when the planned level of output and productivity was reached.

UPI

Yugoslavia's President Tito and his wife are welcomed in Moscow by Soviet Premier Khrushchev (right), December 4.

The most active element advocating new economic measures and adjustments was the League of Communists. Two meetings of its Central Committee (March 14–16 and July 21–22) dealt especially with economic and intra-League affairs. The first session stressed the necessity to "sharpen responsibility and discipline of the leading Communists from the top down." The strengthening of Communist control was also the main theme of Tito's speech in Split. At the second plenum of the Central Committee, Aleksandar Ranković, a vice president of the Tito government, warned that ideological deviations and "liberalist conceptions" would no longer be tolerated within the League. Another significant decision of the meeting was the abandonment of the current five-year plan (due to end in 1965), and the introduction of a transitional one-year plan for 1963 and a seven-year plan for 1964–70.

On March 13 the Federal Assembly approved an amnesty affecting about 150,000 political refugees living outside Yugoslavia, and announced that it would free nearly 1,000 prisoners. On April 7, Milovan Djilas was rearrested and accused of breaking parole for allowing his new book, *Conversations with Stalin*, to be published in New York. Djilas on May 14 was sentenced to five years in prison for allegedly making available to unauthorized persons confidential information he had learned while serving in an official capacity. To this was added the three years and eight months he had still to serve from a previous sentence of seven years imposed for having published *The New Class* (1957).

After several delays, the draft of a new Yugoslav constitution was presented to Parliament on September 20 by Vice President Edvard Kardelj, chairman of the drafting commission. The proposed constitution changed the country's formal name to the Federal Socialist Republic of Yugoslavia, and affirmed the ruling role of the League of Communists. Its most important provision called for the introduction of a cabinet and a premier. The constitutional draft will be the subject of public debate and will be returned to the parliament for adoption and possible amendment.

The introduction of austerity economic measures and the tightening of Communist control coincided with a new phase of Yugoslav-Soviet rapprochement. Soviet Foreign Minister Andrei A. Gromyko arrived in Belgrade on April 16 for a five-day official visit. A few days later, at the May

Day parade in Belgrade, 20 new Soviet-made T-54 tanks were displayed; they were the first such weapons obtained by Yugoslavia since the Tito-Stalin break in 1948. On July 6 a protocol on exchange of goods for a three-year period (1963–65) between Yugoslavia and the USSR was signed in Moscow. It provided for a $720 million volume of trade between the two countries ($80 million was the amount of trade exchanges in 1961). Leonid I. Brezhnev, the Soviet Union's titular chief of state, arrived in Belgrade on September 24 for a ten-day official visit. The Yugoslav press emphasized the cordiality he displayed for Yugoslavia. A Soviet-Yugoslav statement endorsed the Belgrade declaration signed by Nikita S. Khrushchev and Tito on June 2, 1955, that acknowledged the right of "separate roads to socialism" for Communist-ruled countries. Following the overall review of international problems, the Soviet-Yugoslav communiqué of Oct. 3, 1962, stressed the "identity or proximity of views" of the two governments.

President Tito led a large Yugoslav delegation which paid an unofficial visit to the Soviet Union from December 3 to 21. During his stay he had several long and friendly conversations with Khrushchev. On December 13, in an address to the Supreme Soviet of the USSR, Tito declared that Yugoslavia and the USSR held "identical" or "similar" viewpoints on world affairs.

An immediate repercussion of the Soviet-Yugoslav rapprochement was the betterment in relations between Yugoslavia and the other Communist states. The conspicuous exceptions were China and Albania, which continued their bitter attacks against Yugoslav "revisionism."

Yugoslav contacts with African, Asian, and Latin American nations continued. Between February 4 and 21, President Tito paid unofficial visits to the United Arab Republic and the Republic of the Sudan. In March, Avdo Humo, a member of the Federal Executive Council, paid official visits to Mali, Morocco, Tunisia, and Libya. In May, Koča Popović, secretary of state for foreign affairs, toured Brazil, Chile, Bolivia, and Mexico. Yugoslavia also took part in the 36-nation conference on economic problems in Cairo on July 9–18.

Yugoslav relations with the West were troubled by the criticism by Yugoslav leaders of the European Economic Community as a discriminatory obstacle to world trade. At the same time, however, Yugoslav-Italian relations were very friendly. Aleksandar Ranković paid an official visit to Italy on June 13–15. On August 11 the two countries signed a financial agreement in Rome, under which Yugoslavia obtained $70 million in Italian credits in the next four years.

Finally, in their relations with the United States, Yugoslav officials and press commented with displeasure on the action on June 6 of the U.S. Senate in cutting all aid to Yugoslavia because it was a Communist-dominated country. The decision was modified the next day, and President Kennedy was given discretionary power to supply Yugoslavia under certain conditions with agricultural products. The vote of the House of Representatives on October 4 to withdraw most-favored-nation trade treatment for Yugoslavia was termed by an official of Belgrade's government as "political and economic discrimination." However, the fact that the United States administration and the majority of the Congress favored divergent policies toward Yugoslavia was viewed optimistically by Yugoslav official circles. During his visit with President Kennedy on May 29, Koča Popović pleaded the case of Yugoslav "independence" in foreign policy.

In spite of the tensions in United States–Yugoslav relations, United States economic aid to Yugoslavia in 1962 amounted to $115.8 million. On July 11 the World Bank made a loan equivalent to $30 million for the Bajina Bašta hydroelectric project on the Drina River.

Milorad M. Drachkovitch,
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YUKON TERRITORY

The Yukon Territory, located in the northwestern part of mainland Canada, is bounded on the north by the Arctic Ocean, on the east by the Northwest Territories, on the south by British Columbia, and on the west by Alaska. It has an area of 207,076 square miles and a population (1961 census) of 14,628. Whitehorse (pop., 5,031) is the capital.

Government.—The government of the Yukon Territory is administered by a commissioner (G. R. Cameron, appointed May 1, 1962). The legislature consists of an elected council of seven members with three-year terms, of whom three comprise an advisory committee on financial matters. The commissioner acts under instructions from the governor-in-council or from the federal minister of northern affairs and national resources. The territory is represented in the federal House of Commons by one member (Erik Nielsen, Conservative).

Finance.—Revenue for the fiscal year ending March 1962; $2,879,766; expenditures: $3,447,547.

Production.—Mining is the chief industry. Total mineral production in 1961 was valued at $12,987,000 (preliminary), including: silver, $6,672,022; gold, $2,401,946; lead, $1,792,197; zinc, $1,534,589; copper, $256,872; cadmium, $214,042; coal, $115,243. The tourist industry earned approximately $2 million during the 1962 season.

Education.—In the 1960–61 academic year, the territory's 17 public schools, 3 separate schools, and one residential school for Indian students had an enrollment of 2,393 students, with 105 teachers employed. A total of $768,798 was spent on education.

Transportation and Communications.—The main road artery in the territory is the all-weather Alaska Highway, running from Dawson Creek, B.C., to Fairbanks, Alaska. All-weather gravel highways connect Dawson City, Keno, Elsa, Carcross, and Mayo with the Alaska Highway, and there are also summer connections from Ross River, Dawson City, and Haines, Alaska. Whitehorse is connected to tidewater at Skagway, Alaska, by 110 miles of railroad. Connections are made at Skagway with the summer services of the Canadian Pacific and Canadian National steamships, and the year-round freight service of the White Pass & Yukon Route.

Canadian Pacific Airlines operates a daily service, except Sunday, from Vancouver and Edmonton to Whitehorse, and semiweekly mail and passenger services from Whitehorse to Mayo and Dawson City. Pan American World Airways operates a service into Whitehorse, with three stops per week during summer months, and one stop per week during winter months. Several independent air services offer charter flights out of Whitehorse, and there are companies providing the same service at Dawson, Mayo, and Watson Lake. Communities throughout the territory are connected by local telephone and telegraph services and by land line with the telephone systems in the provinces. The microwave system along the Alaska Highway went into operation in June 1961.

Events, 1962.—Two bridges over the Klondike River and one over the McQuesten River were completed. The Eagle Plain–Flat Creek Road was extended beyond Chapman Lake, and further work was carried out on the Watson Lake–Ross River road.

A huge iron discovery covering an area of over 146 square miles was staked in the Snake River area, northeast of Mayo. Preliminary figures suggest that this is one of the largest iron-ore bodies discovered anywhere in the world, with an estimated 20 billion tons.

With the advent of the Dawson City Gold Rush Festival, Dawson City was named a national historic site by the National Historic Sites Division of the Department of Northern Affairs and National Resources.

G. R. Cameron,
Commissioner, Yukon Territory.

ZANZIBAR

The British East African protectorate of Zanzibar consists of the islands of Zanzibar and Pemba, lying in the Indian Ocean off the east-central coast of Africa. Zanzibar (area, 640 square miles) is a coralline island situated 22.5 miles to the east of Tanganyika; Pemba (380 square miles) lies 25 miles northeast of Zanzibar. Mainland dominions of the sultan of Zanzibar form a protectorate of Kenya, and are leased by the sultan for a yearly rental of £10,000. The total population of Zanzibar Protectorate at the 1958 census was 299,111 (mid-1961 est., 315,000), including 228,815 Africans, 46,989 Arabs, 18,334 Asians, and 507 Europeans. The capital and chief seaport is Zanzibar (1958 pop., 57,923).

Government.—Sultan Seyyid Sir Abdulla bin Khalifa is the nominal ruler. The administration of the protectorate is conducted by the British resident, Sir George Mooring (appointed in 1959). He is assisted by an 8-member Executive Council and a 31-member Legislative Council, which includes 23 elected members. In the elections of June 1, 1961, the Nationalist Party and the Afro-Shirazi Party each won 10 elected seats, and the People's Party won 3 seats. A Nationalist-People's coalition cabinet was formed on June 5, 1961, with Muhammad Shamte Hamadi (People's Party) as chief minister.

Education.—Public school enrollment, 1961: 21,479 (about 20% of the school-age population). Number of public schools (with enrollments, 1961): 73 primary (21,479); 6 secondary (1,081). There were also 3 private primary and 4 private secondary schools, and several government teacher-training colleges. Higher education for students is provided at institutions in foreign countries.

Finance.—Actual revenue, fiscal year 1962: £2,732,217; expenditure, £3,386,535. In that year Zanzibar contributed £43,088 to services of the East African High Commission.

Transportation.—Roads on the island of Zanzibar aggregate 347 miles, of which 279 miles are bitumen-surfaced; roads on Pemba total 107 miles, of which 26 miles are bitumen-surfaced. There are no railways. Zanzibar is a port of call for many foreign steamship companies, and the government operates regular service to Pemba and the African mainland. Both islands have small airfields.

Production.—Zanzibar Protectorate provides about 80% of the world's annual clove supply and has the world's largest area under clove trees—some 80,000 acres containing more than 4 million trees. About five sixths of annual clove output is produced on Pemba. Clove exports, 1961: 8,402 metric tons (down 32% from 1960); exports of clove oil, 154 metric tons (up 1%). Exportable production of copra (metric tons, 1961): 7,391; coconuts, 3,660; coconut oil, 2,488; coir fiber, 4,697. Other crops include rice, cassava, sweet potatoes, chilies, tobacco, maize, and tropical fruits. Manufactures are chiefly coir fiber and rope, soap, jewelry, ivory and ebony ornaments, and metalware.

Foreign Trade.—Total exports, 1961: £4.40 million (down 22% from 1960); imports, 5.49 million (up 4%). About 95% of total export value was provided by cloves, clove oil, and coconut products. Imports consist chiefly of cotton goods, rice, grains, fuels, ivory, and foodstuffs. About 46% of the protectorate's total export value in 1961 went to the United Kingdom and Commonwealth countries; over half of the annual clove crop was shipped to Indonesia.

Events, 1962.—A constitutional conference, held in London from March 18 to April 7, failed to reach agreement on measures to implement internal self-government and eventual independence for Zanzibar. The conferees were unable to form an all-party government and to set a date for new elections. They agreed to introduce universal suffrage for all citizens 21 years of age and older, and to dispense with previous property and literacy qualifications for electors.

The failure of the conference was protested by all political groups in Zanzibar. The government on May 5 reported that it had uncovered a plot by the youth wing of the Nationalist Party to damage public property as a means of exerting pressure on the government. As a result, Resident Sir George Mooring ordered the arrest of Abdul Rahman Muhammad Babu, general secretary of the Nationalist Party, and nine other Nationalist leaders. Babu was sentenced on June 20 to 15 months' imprisonment on charges that he had published seditious material in his party's newspaper.

W. R. F.

ZINC

According to data compiled by the U.S. Bureau of Mines, world output of primary zinc totaled 3,550,000 short tons in 1961, compared with 3,280,000 tons in 1960. Of these totals, the United States supplied 24% in each case.

United States mine production of recoverable zinc in 1961 increased by 7%, or to 464,390 short tons, compared with 435,427 tons in 1960. The Western states (including Alaska) supplied 48% of the output; states east of the Mississippi River, 50%; and West-Central states, 2%. In 1961 the ranking of the states in recoverable zinc output was: Tennessee, New York, Idaho, Arizona, and Colorado. Output of primary metal increased to 846,795 tons in 1961 from 799,516 tons in 1960. Of the 1961 tonnage, 419,206 tons were of domestic origin and 427,589 tons were from imported ore. The grand total, including redistilled secondary zinc and production of zinc used directly in alloying operations, increased from 868,247 tons in 1960 to 902,032 tons in 1961. Consumption of 931,213 tons of slab zinc in 1961 represented a rise from the 877,844 tons consumed in 1960.

Imports of zinc in 1961 totaled 543,262 tons, a decline of 6% from 577,922 tons in 1960. Imports of ore (zinc content) totaled 415,700 tons, and of slab zinc, 127,562 tons. Mexico, Canada, Peru, and Guatemala supplied most of the zinc imported in ores and concentrates; and Canada, Belgium-Luxembourg, Republic of the Congo (Léopoldville), and Mexico supplied most of the metal imported. Exports of zinc metal decreased 33%, or from 75,144 tons in 1960 to 50,055 tons in 1961. The United Kingdom, India, Japan, and Brazil received most of the 1961 exports.

The International Lead and Zinc Study Group met in 1961, but no specific action was taken to curtail further increases in zinc stocks. A special group was established to study the causes and possible solution of the instability in lead-zinc markets. United States government stockpiles contained 1,580,000 tons of zinc. No additions or withdrawals were made during 1961.

In the first nine months of 1962, recoverable zinc output in the United States was 370,331 tons, compared with 352,215 tons in 1961.

(See MINERAL PRODUCTION for table showing output of major producing countries.)

ZOOLOGY

Progress in zoology during 1962 included investigations of water balance in amphibians, hearing in kangaroo rats, and new information concerning natural habits of the tuatara.

Water Balance in Amphibians.—The class Amphibia (frog-like and salamander-like vertebrates) is essentially a fresh-water group which shows varying degrees of terrestrial behavior. In general, it is believed that amphibians are unable to survive prolonged immersion in water containing more than 1% salt (coastal sea water usually contains more than 3% salt). However, it has been found that adults of the crab-eating frog of Southeast Asia, *Rana cancrivora*, can tolerate salinities from fresh water to water containing 2.8% salt.[1,2] Tadpoles of this species can survive salinities over

[1] Gordon, M. S., Schmidt-Nielsen, K., and Kelly, H., *The Journal of Experimental Biology*, 32:659–678, 1961.
[2] Schmidt-Nielsen, K., and Lee, P., *The Journal of Experimental Biology*, 39:167–177.

a range from fresh water to 3.9% salt (about 120% of the salinity of most coastal sea water).

The blood of *Rana cancrivora* is always more concentrated than, or hypertonic to, the medium in which it is immersed, regardless of the concentration. However, 60% of the increased blood concentration over fresh-water levels is due to the retention of urea. The remaining 40% is due to sodium chloride. Uremia in this frog is believed to be an important part of the mechanism which permits it to tolerate salinities three times higher than most other amphibians; high urea content in the blood precludes toxic levels of inorganic salt from being attained.

On the other hand, *Rana cancrivora* has had to become adapted to the high levels of urea in its blood, for such concentrations as those found in this species when it is immersed in 80% sea water (as high as 2.9% urea) would be highly toxic to other animals and is known among other things to destroy certain enzymes and affect the ability of hemoglobin to combine with oxygen. Yet this mechanism is not unique to *Rana cancrivora,* for it has long been known that the blood of elasmobranch fishes (sharks and rays) contains extremely high concentrations of urea, a phenomenon which is believed to have permitted this group to reinvade the sea from a fresh-water environment.

The Great Plains toad, *Bufo cognatus,* is an extremely terrestrial amphibian which inhabits the semiarid central and southwestern United States. Many of this species depend on intermittent summer rainstorms as their exclusive source of water. The ability to store large quantities of water obviously would assist their survival during periods of drought, and would allow them to hunt for food relatively great distances from their water sources. Such a supply of water has been demonstrated to be present in the urinary bladder,[3] in which up to 30% of body weight can be stored. When the toad is desiccated, the bladder water is resorbed and distributed to the vascular system. This permits the concentration of the blood and lymph to remain relatively constant. Toads dehydrated after their bladders have been emptied of water will demonstrate rapid increases in the blood and lymph concentrations.

Middle Ears of Kangaroo Rats.—The skulls of kangaroo rats are characterized by extremely large mastoid bullae, a pair of prominent swellings of thin bone on either side of the skull containing the largest part of the middle-ear cavities. The functional significance of these bullae has been unknown, but it has been postulated that they are associated with the rats' ricocheting locomotion. Some investigators, having noted extreme acuity of hearing among kangaroo rats, have suggested an auditory function for the enlarged middle-ear cavities.

Both possibilities have now been investigated in *Dipodomys merriami* and *Dipodomys spectabilis.*[4] It was demonstrated that reduction of the volume of the middle ear by the addition of clay, dental cement, or paraffin had no discernible effect on the animals' locomotion. However, such an operation does alter the electrical activity of the inner ear (cochlear microphonics). The electrical activity of the inner ear was recorded for frequencies of sound from 100 to 12,000 cycles per second. Thus, it was shown in both species that the sensitivity of the inner ear is greatest between the frequencies of 1,000 and 3,000, with extreme sensitivity at 1,400, 1,800–2,200, and 2,600 cycles per second. While reducing the volume of the middle-ear cavities does not change the frequency of the peaks of sensitivity, it does reduce the amplitude of the electrical activity and probably the acuity of hearing at those frequencies. Experiments carried out at night with owls and rattlesnakes indicated that normal kangaroo rats can avoid predation whereas operated animals with reduced middle-ear volumes cannot. Sounds produced during an owl's flight and during the strike of a rattlesnake contain frequencies to which normal kangaroo rats are most sensitive.

Habits of the Tuatara.—The tuatara, *Sphenodon punctatum,* is the sole living representative of the reptilian order Rhynchocephalia. While the tuatara superficially resembles modern lizards, it differs dramatically from them in the structure of the skull. Furthermore, *Sphenodon* differs from all modern reptiles by the absence of a copulatory organ in the male. The fossil record demonstrates that other members of the order Rhynchocephalia had a worldwide distribution during the Triassic period, or approximately 200 million years ago. Yet today's sole species is limited to about 20 islets around the coast of New Zealand. It is interesting that the modern tuatara shows little change in skeletal structure from fossil Triassic members of this order found in the Northern Hemisphere.

Only recently a detailed investigation has been directed to the tuatara's habits in nature.[5] Growth-rate studies in the field and on captive specimens indicate that probably 20 years or more are required before the breeding age is attained. Also, it is estimated that many large, wild animals are more than a century old. Tuataras feed on many organisms living in and on the ground, from earthworms to bird eggs and even young birds. Most of the tuatara islands have poor water supplies. Therefore, *Sphenodon* may survive for weeks on water found only in food or in dew. Tuataras are highly nocturnal and forage at times when the temperature is as low as 7°C., an unusually low ambient temperature for an active poikilotherm (cold-blooded organism).

The undisturbed areas of the tuatara islands are characterized by low coastal forest or scrub cover. Recently modified areas are grasslands. The ground under the forest cover or of the grassland is marked by burrows of one or more species of petrel. Other types of birds are common on the islands such as penguins, gulls, and terns. Although tuataras frequently inhabit or even share petrel burrows, they can and do construct burrows independently of birds. The modern *Sphenodon punctatus* has changed little from its Triassic ancestors in skeletal structure, yet those ancestors could not have lived in a coastal forest, marine-bird association as does today's form, for no birds and only a few modern flowering plants then existed.

(See also MARINE BIOLOGY.)

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[3] Ruibal, R., *Physiological Zoology,* 35:218–223, 1962.
[4] Webster, D. B., *Physiological Zoology,* 35:248–255, 1962.
[5] Dawbin, W. H., *Endeavour,* 21:16–24, 1962.

NECROLOGY . . . 1962

Prominent Persons Who Died During the Year

Following is a selected list of more than five hundred of the most prominent persons who died in 1962. Separate biographical articles on those individuals whose names are preceded by an asterisk (*) may be found under their own headings in this volume.

Adler, Elmer (77), U.S. authority on graphic arts; formerly curator of graphic arts, Princeton University; founded (1958) museum of fine books in San Juan, Puerto Rico: d. Santurce, Puerto Rico, Jan. 11.

Adler, Polly (62), U.S. businesswoman; published *A House Is Not a Home* (1953): d. Hollywood, Calif., June 9.

Ahmad, Saif al-Islam (71), imam of Yemen (from 1948): d. (announced) Sana, Yemen, Sept. 19.

Aitchison, Clyde B. (86), U.S. government official; member of Interstate Commerce Commission, 1917–52: d. Washington, D.C., Jan. 16.

Aldington, Richard (70), English author; wrote *The Death of a Hero* (1929) and other novels, and many biographies, including *Lawrence of Arabia* (1955): d. Léré, France, July 28.

Alldredge, J. Haden (75), U.S. government official; member (and twice chairman) of Interstate Commerce Commission, 1939–55: d. Montgomery, Ala., Dec. 5.

Allen, Vivian B. (age undisclosed), U.S. philanthropist; donated $3 million to build Vivian Beaumont Theater (to open in 1964) in Lincoln Center for the Performing Arts, New York: d. New York, N.Y., Oct. 10.

Amin, Sidi Mohammed al- (81), last bey of Tunis (1943–57); was deposed on July 25, 1957, when Tunisia became independent republic: d. Tunis, Tunisia, Oct. 1.

Andersen, Alsing (69), Danish public official; was defense minister (1935–40), held other cabinet posts, and was chairman of the UN Special Committee on Hungary (1957): d. Copenhagen, Denmark, Dec. 5.

Anderson, Victor E. (60), U.S. businessman and public official; Republican governor of Nebraska, 1955–59: d. Lincoln, Nebr., Aug. 15.

Antonov, Gen. Aleksei I. (65), Soviet army officer: b. Grodno, Russia, Sept. 15, 1896; d. Moscow, USSR, June 18, 1962. Commanded Soviet armies in the Caucasus and served as first deputy chief of the general staff during World War II. As chief of the general staff in 1945, acted as Stalin's military adviser at the Yalta and Potsdam conferences. Served as chief of staff of the Warsaw Pact armed forces since creation of the joint command in May 1955.

Arden, Victor (69), U.S. pianist and orchestra leader; appeared on popular radio programs in 1930's and 1940's: d. New York, N.Y., July 31.

Arias, Harmodio (76), Panamanian publisher and public official; was president of Panama in 1932–36: d. (aboard airliner bound for Panama) Dec. 23.

Ashurst, Henry Fountain (87), former U.S. senator: b. Winnemucca, Nev., Sept. 13, 1874; d. Washington, D.C., May 31, 1962. Admitted to the Arizona bar in 1897, he shortly became prominent in Democratic territorial politics and was elected to the U.S. Senate in 1912 when Arizona was admitted to the Union as the 48th state. He served in the upper house until 1941, following his defeat in the primary election of the preceding year. From 1941 to 1943, he was a member of the Department of Justice's Board of Immigration Appeals.

Athenagoras (78), archbishop and exarch of Greek Orthodox Church in western and central Europe, from 1950; bishop of Boston, 1938–50: d. London, England, Oct. 15.

Austin, Warren Robinson (85), former U.S. senator and ambassador to the United Nations: b. Highgate, Vt., Nov. 12, 1877; d. Burlington, Vt., Dec. 25, 1962. A graduate of the University of Vermont, he was admitted to the state bar in 1902 and served as state attorney for Franklin County (1904–06). Elected to the U.S. Senate in 1931 (re-elected 1934 and 1940), he served as member of the Judiciary, Foreign Relations, and District of Columbia committees. Appointed permanent representative to the United Nations in 1947, he played a leading role in the Security Council and became one of the most eloquent spokesmen for the West. In his famous exchanges with Soviet delegate Jacob Malik, he castigated the Soviets for their attacks against United Nations action in Korea. He retired to Vermont in 1953.

Axtell, Silas B. (77), U.S. admiralty lawyer who co-founded (1912) International Seafarers Union, the first seamen's union: d. Chevy Chase, Md., Apr. 29.

Ayatollah Kashani (86?), Iranian religious and political leader; an anti-British nationalist, he supported Premier Mossadegh in early 1950's: d. Teheran, Iran, Mar. 14.

Bach, Theodore F. (61), U.S. physician and authority on rheumatic conditions: d. Philadelphia, Pa., Jan. 18.

Bacon, Walter W. (83), U.S. public official: b. New Castle, Del., Jan. 20, 1879; d. Wilmington, Del., March 18, 1962. He was an official of the Buick Motor Company, Flint, Mich., until his retirement in 1930, after which he resided in Wilmington. Served as mayor of that city from 1935 until his election as governor of Delaware in 1940 (re-elected 1944).

Bannow, Rudolph F. (65), U.S. businessman; president of National Association of Manufacturers in 1960: d. Easton, Conn., June 23.

Barrett, Frank A. (69), former governor of Wyoming and U.S. senator: b. Omaha, Nebr., Nov. 10, 1892; d. Cheyenne, Wyo., May 30, 1962. Admitted to the Wyoming bar in 1919, following study at Creighton University (B.A., 1913; LL.B., 1916). A Republican, he served as state senator (1933–35), U.S. congressman (1943–50), governor of Wyoming (1950–52), and U.S. senator (1952–59).

Bartholomew, Harry G. (77), English journalist; as chairman of *The Daily Mirror* (to 1951), developed it into world's largest selling newspaper: d. Camberley, England, May 4.

Barton, Betsey A. (45), U.S. author; wrote *And Now to Live Again* (1944) and other books dealing with physical handicaps: d. (accidental drowning) Los Angeles, Calif., Dec. 12.

Barton, James E. (71), U.S. actor; appeared in *Tobacco Road* (1934–39) and other Broadway plays: d. Mineola, N.Y., Feb. 19.

Beach, Sylvia Woodbridge (75), U.S. author and publisher: b. Baltimore, Md., 1887; d. Paris, France, Oct. 4, 1962. She was a friend and counselor of James Joyce and many other famous writers who frequented her Paris bookstore, Shakespeare and Co. (1919–41). Under that imprint she published in 1922 the first complete text of Joyce's *Ulysses*, banned from the United States as obscene until 1933. Her autobiography, *Shakespeare and Company*, was published in 1959.

Beardslee, John W., Jr., U.S. theologian; president of New Brunswick Theological Seminary, 1935–47, and of General Synod of the Reformed Church in America, 1947–48: d. New Brunswick, N.J., May 10.

Beauchamp, Wilbur L. (70), U.S. educator; taught at University of Chicago, 1915–56; studied teaching methods and wrote science textbooks: d. Chicago, Ill., Feb. 26.

*Beebe, (Charles) William (84), U.S. naturalist, author, and explorer: d. near Arima, Trinidad, June 4.

Bell, Leslie (55), Canadian musical director; founded (1939) Leslie Bell Singers, well-known all-girl choir: d. Toronto, Ont., Jan. 19.

Bell, Rex (original name, George Beldam) (58), U.S. politician and former motion picture actor: b. Chicago, Ill., Oct. 16, 1903; d. Las Vegas, Nev., July 4, 1962. A popular Western film star and owner of a 600,000-acre ranch in Nevada, he was elected Republican lieutenant governor of Nevada in 1954 (re-elected, 1958) and was a candidate for governor at the time of his death. He was the husband of actress Clara Bow, to whom he was married in 1931.

Bellinger, Vice Adm. Patrick N. L. (76), U.S. naval officer and pioneer aviator; commanded Atlantic Fleet Air Force in World War II: d. Clifton Forge, Va., May 29.

Belmonte (y García), Juan (69), Spanish bullfighter: b. Seville, Spain, April 14, 1892; d. (suicide) Utrera, Spain, April 8, 1962. By working close to the bull, he revolutionized the art of bullfighting and was considered to be the greatest matador of his time, killing 1,650 bulls during his public career (1910–35). An autobiography, *Juan Belmonte, Killer of Bulls*, was published in English in 1937; also figured prominently in Ernest Hemingway's *Death in the Afternoon* (1932).

*Bemelmans, Ludwig (64), Austrian–U.S. painter and writer: d. New York, N.Y., Oct. 1.

Benét, Rosemary C. (65), U.S. poet and widow of Stephen Vincent Benét; d. New York, N.Y., Aug. 18.

Bennett, Lt. Gen. Henry G. (75), Australian army officer; commanded Australia's 8th Division in Malaya early in World War II: d. Sydney, Australia, Aug. 1.

Benoit, Pierre (75), French novelist; wrote *L'Atlantide* (1919) and other books: d. Ciboure, France, Mar. 3.

Bergler, Edmund (62), U.S. psychoanalyst who evolved theory that neurotic difficulties are caused by one basic neurosis; published *Conflict in Marriage* (1949) and many other books: d. New York, N.Y., Feb. 6.

Bestor, Paul (79), U.S. financier and government official; chairman of Federal Farm Loan Board, 1929–33: d. Montclair, N.J., June 25.

Birdwood, Lord Christopher B. (62), British army officer; wrote books on India: d. London, England, Jan. 5.

Birkett of Ulverston, 1st Baron (William Norman Birkett) (78), British lawyer: b. Ulverston, Lancashire, England, Sept. 6, 1883; d. London, England, Feb. 10, 1962. Attended Emmanuel College, Cambridge University, and was admitted to the bar, Inner Temple, in 1913 and appointed king's counsel in 1924. Became famous as a criminal court defense attorney (he lost only two verdicts in 20 famous murder trials) and as a civil advocate. Served as judge of the King's Bench Division of the High Court of Justice (1941–50), as lord justice of appeal (1950–57), and as a judge at the Nürnberg war crimes trials (1945–46). He also served as a member of Parliament (1923–24 and 1929–31); was knighted in 1941 and elevated to the peerage in 1958.

Bishop, Max (62), U.S. baseball player and coach; second baseman of Philadelphia Athletics' championship teams in 1929–31; coached U.S. Naval Academy baseball teams from 1938: d. Waynesboro, Pa., Feb. 25.

Blair, James T., Jr. (60), U.S. public official: b. Maysville, Mo., March 15, 1902; d. Jefferson City, Mo., July 12, 1962. Graduated with law degree from Cumberland University (1924) and entered Democratic politics, serving as city attorney (1925–29) and mayor (1947–49) of Jefferson City; member of the Missouri House of Representatives (1929–33); lieutenant governor of Missouri (1949–57); and governor (1957–61).

Blair, Col. William R. (87), U.S. Army officer who developed (1937) Army's first radar system: d. Fair Haven, N.J., Sept. 2.

Bliss, Robert W. (86), U.S. diplomat; ambassador to Argentina, 1927–33: d. Washington, D.C., Apr. 19.

°Bohr, Niels H. D. (77), Danish physicist: d. Copenhagen, Denmark, Nov. 18.

Bok, William Curtis (64), U.S. judge; was presiding judge of Court of Common Pleas No. 6 of Philadelphia County (1937–58) and justice of Pennsylvania Supreme Court (from 1958); wrote often-cited opinion defining obscenity in censorship case: d. Radnor, Pa., May 22.

Bond, Ford (57), U.S. radio and television announcer and producer; was well known for broadcasts of sports and special events: d. St. Croix, Virgin Islands, Aug. 15.

Borlenghi, Angel G. (58), Argentine political leader; was minister of interior (1946–55) and of justice (1954–55) in Perón regime: d. Rome, Italy, June 17.

Borzage, Frank (69), U.S. film director; won two Academy Awards (1927 and 1931) for directing *Seventh Heaven* and *Bad Girl:* d. Los Angeles, Calif., June 19.

Bowater, Sir Eric V. (67), English industrialist; headed (from 1929) Bowater Paper Corporation; was director-general of Ministry of Aircraft Production, 1939–45: d. West Horsley, Surrey, England, Aug. 30.

Bowman, John G. (85), U.S. educator; chancellor of University of Pittsburgh (1921–45); raised funds for 42-story Cathedral of Learning: d. Bedford, Pa., Dec. 2.

Bradley, John H. (63), U.S. geologist, geographer, and educator; discovered a fossil starfish (1931); published many textbooks: d. Escondido, Calif., Aug. 18.

Braithwaite, William S. B. (83), U.S. poet, literary critic, and educator; published many books of poetry and poetry anthologies: d. New York, N.Y., June 8.

Bramuglia, Juan Atilio (59), Argentine statesman: b. Chascomús, Argentina, Jan. 1, 1903; d. Buenos Aires, Argentina, Sept. 4, 1962. A specialist in labor law and a former union counsel, he served the Perón regime in various capacities, most importantly as foreign minister from 1946 to 1949. In 1948, when president of the U.N. Security Council, he won international prestige for his attempts to mediate the Berlin blockade dispute. He broke with Perón in 1949 but later founded the neo-Peronist Popular Union Party.

Branham, Sara E. (74), U.S. bacteriologist; formerly head of bacterial toxins section of Public Health Service; helped to develop cure for meningitis: d. Washington, D.C., Nov. 16.

Breckinridge, Aida de Acosta (80), U.S. philanthropist; founded (1945) and directed Eye-Bank for Sight Restoration. d. Bedford, N.Y., May 27.

Brennecke, Henry (69), U.S. educator and authority on German language; headed German department, New York University, 1937–58: d. Tuckahoe, N.Y., Apr. 29.

Britton, Edgar C. (70), U.S. chemist; synthesized nearly 300 new organic chemicals, including eight essential amino acids: d. Midland, Mich., July 31.

Britton, Jack (William J. Breslin) (74), U.S. boxer; held welterweight championship title in 1916–22: d. Miami, Fla., Mar. 27.

Brochado da Rocha, Francisco (52), Brazilian public official; served as temporary premier from July to September 1962: d. Pôrto Alegre, Brazil, Sept. 26.

Broniewski, Władysław (64), Polish Communist poet: d. Warsaw, Poland, Feb. 10.

Brown, Ernest (80), British member of Parliament (1923–24; 1927–45); minister of labor (1935–40) and of health (1941–43): d. London, England, Feb. 16.

Bruvic, Olav (49), Norwegian labor leader and public official; minister for social welfare (from 1961): d. Oslo, Norway, Dec. 30.

Buck, Solon J. (78), U.S. archivist and historian; as archivist of U.S. (1941–48), supervised microfilming of national records: d. Washington, D.C., May 25.

Budd, Ralph (82), U.S. railroad executive; president, Great Northern Railway, 1919–32, and Chicago, Burlington and Quincy Rail Road, 1932–49; introduced (1934) first diesel-powered streamliner in U.S.: d. Santa Barbara, Calif., Feb. 2.

Bunting, Russell W. (81), U.S. dentist; did research on tooth decay; dean of University of Michigan School of Dentistry, 1937–50: d. Ann Arbor, Mich., Nov. 22.

Burgess, Perry (75), U.S. authority on leprosy; president, Leonard Wood Memorial for the Eradication of Leprosy, 1930–58: d. Unionville, Ohio, Sept. 15.

Burke, Joseph A. (76), U.S. Roman Catholic prelate; bishop of Diocese of Buffalo, from 1952: d. Rome, Italy, Oct. 16.

Busbee, Juliana R. (85), U.S. artist; revived pottery industry in Jugtown, N.C.: d. there, Mar. 2.

Busoni, Rafaello (62), U.S. painter, illustrator, and author: d. New York, N.Y., March 17.

Byers, Mortimer W. (84), U.S. jurist; served on U.S. District Court for Eastern District of New York, 1929–60: d. New York, N.Y., Mar. 5.

Cabot, Godfrey Lowell (101), U.S. chemical manufacturer and philanthropist: b. Boston, Mass., Feb. 26, 1861; d. Boston, Nov. 2, 1962. A descendant of both the Cabots and the Lowells and a Harvard graduate (1882), he developed carbon-black applications and built this business into an international chemical manufacturing enterprise. An early aviation enthusiast and inveterate traveler, he benefited education and research with his endowments.

Caliver, Ambrose (67), U.S. educator; was first Negro to serve as dean of Fisk University (1917–30), and was chief of Adult Education Section, U.S. Office of Education (from 1955): d. Washington, D.C., Jan. 29.

Calkins, Dick (67), U.S. cartoonist; introduced science fiction into newspaper comics by creating "Buck Rogers" comic strip (1929): d. Tucson, Ariz., May 12.

Calvin, William A. (63), U.S. labor leader; president, International Brotherhood of Boilermakers, from 1954: d. Mission, Kans., Jan. 27.

Cannon, Cavendish W. (67), U.S. diplomat; served from 1947 to 1958 as ambassador to Yugoslavia, Portugal, Greece, and Morocco: d. Morón, Spain, Oct. 7.

Cantor, Ida T. (70), wife of U.S. comedian Eddie Cantor (from 1914): d. Beverly Hills, Calif., Aug. 8.

Carreno, Alberto M. (87), Mexican historian; president, Mexican Academy of History: d. Mexico City, Sept. 5.

Case, Francis (Higbee) (65), U.S. senator: b. Everly, Iowa, Dec. 9, 1896; d. Bethesda, Md., June 22, 1962. Moved to South Dakota with his family in 1909. Studied at Dakota Wesleyan University (B.A., 1918) and Northwestern University (M.A., 1920), and served in the U.S. Marine Corps during World War I. Career as a journalist included the post of editor-publisher of the Custer (S. Dak.) *Chronicle* (1931–46). After serving as South Dakota's regent of education from 1931 to 1933, was elected in 1936 as a Republican representative to the U.S. Congress, where he remained until his election to the Senate in 1948 (re-elected, 1954 and 1960). He was a member of the Senate Public Works and Armed Services committees.

Casey, Robert J. (72), U.S. journalist; was reporter and noted war correspondent for Chicago *Daily News,* 1920–47; wrote many books based on his personal experiences: d. Evanston, Ill., Dec. 4.

Castle, William E. (94), U.S. geneticist; professor of zoology, Harvard University, 1908–37; formerly president of American Society of Naturalists and American Society of Zoologists: d. Berkeley, Calif., June 3.

Chavez, Dennis (74), U.S. senator from New Mexico: b. Los Chavez, N. Mex., Apr. 8, 1888; d. Washington, D.C., Nov. 18, 1962. He served as a clerk in the U.S. Senate in 1918–19, and after receiving a law degree from Georgetown University, practiced law in Albuquerque and was elected to the state legislature. He was elected Democratic U.S. congressman in 1930 (reelected 1932), and appointed U.S. senator in 1935 (elected 1936 and reelected four successive times). Of Spanish ancestry, he worked to improve relations between the United States and Latin America. After World War II he became a key figure in defense matters as chairman of the Appropriations Committee's subcommittee for defense.

Christie, John (80), English opera impresario: b. June 1882; d. Glyndebourne, near Lewes, Sussex, England, July 4, 1962. In 1934, founded with his wife, the former Audrey Mildmay (1900–53), the Glyndebourne Festival, which in summer presents operas, mostly by Mozart, in a small theater on his estate in Sussex.

Cicognani, Gaetano (80), Italian cardinal: b. Brisighella, Italy, Nov. 26, 1881; d. Rome, Italy, Feb. 5, 1962. Was ordained a priest in 1904. Following membership in the

Sacred Roman Rota, he studied (beginning in 1912) at the Pontificia Accademia dei Nobili Ecclesiastici in Rome for a career with the papal Secretariat of State. Appointed titular archbishop of Ancira (Ancyra) in 1925 and served as papal nuncio to Bolivia (1925–28), Peru (1928–36), Austria (1936–38), and Spain (1938–53). Was elevated to cardinal priest in 1953, and to cardinal bishop (as bishop of Frascati) in 1959. He was the brother of Amleto Cardinal Cicognani, the present papal secretary of state.

Clark, Rose F. (80), U.S. comedienne; she and her husband, Harry Langdon, formed well-known vaudeville act in early 1900's: d. Los Angeles, Calif., Jan. 27.

Coblentz, William W. (88), U.S. physicist; founded and headed radiometry section of National Bureau of Standards, 1905–45; pioneered in heat and light measurements: d. Washington, D.C., Sept. 15.

Cochrane, Mickey (Gordon Stanley) (59), U.S. baseball player and manager: b. Bridgewater, Mass., April 6, 1903; d. Lake Forest, Ill., June 28, 1962. One of major league baseball's greatest catchers, he played for Philadelphia and Detroit American League teams from 1925 to 1937. Compiled lifetime batting average of .320, and was a star of Philadelphia's championship teams of 1929, 1930, and 1931. As playing manager, led Detroit to league championship in 1934 and to pennant and World Series' victory over Chicago in 1935. Retired as active player in 1937, but continued to manage Detroit until August 1939. Twice was named American League's most valuable player (1928 and 1934); was elected to Baseball Hall of Fame (1947).

*Compton, Arthur H. (69), U.S. physicist and educator: d. Berkeley, Calif., Mar. 15.

Connell, Arthur J. (65), U.S. businessman and national commander of American Legion (1953–54): d. Middletown, Conn., Dec. 18.

Conolly, Adm. Richard L. (69), U.S. naval officer and educator; president Naval War College (1950–53) and Long Island University (from 1953): d. (in airplane crash) New York, N.Y., Mar. 1.

Cook, Walter W. S. (74), U.S. educator and authority on Spanish medieval art; director, New York University Institute of Fine Arts, 1932–51: d. aboard ship in Atlantic en route to New York, Sept. 20.

Corea, Sir Claude (67), Ceylonese diplomat; ambassador to U.S., 1948–54; high commissioner to Britain, 1954–1957; chief of Ceylon's delegation to United Nations, 1958–61: d. Munich, Germany, Sept. 3.

Coty, René Jules Gustave (80), French statesman: b. Le Havre, France, March 20, 1882; d. Le Havre, Nov. 22, 1962. Educated at the University of Caen, he was elected to the French Chamber of Deputies as a "Left" Republican in 1923, and to the Senate in 1935. In 1940, after voting with a majority of Parliament for the enabling act that brought Marshal Henri Pétain to power, he retired from politics for the duration of World War II. Returning to Parliament in 1945 as an "Independent" Republican, he was minister of reconstruction and urbanism in 1947–48. He won election to the Senate and to the Council of the Republic in 1948 and again in 1952. Coty served as last president of the Fourth Republic (1954–59). In May 1958, after an army officers' revolt in Algeria made civil war imminent, he called on Parliament to accept Gen. Charles de Gaulle as premier.

Coussa, Gabriele A. (64), Syrian cardinal; member of Roman Catholic Curia and secretary of Congregation for Eastern Church (from March 1962): d. Rome, Italy, July 29.

Coyle, William R. (83), U.S. congressman (Republican) from Pennsylvania, 1925–27 and 1929–33: d. Bethlehem, Pa., Jan. 30.

Crawford, Jesse (61), U.S. organist; played Paramount (New York) and other theaters; was radio and recording artist: d. Sherman Oaks, Calif., May 28.

Cromwell, Dean B. (82), U.S. track and field coach, at University of Southern California (1909–48); built 12 national championship teams: d. Los Angeles, Calif., Aug. 3.

*Cummings, E. E. (67), U.S. poet: d. North Conway, N.H., Sept. 3.

Cunningham, Sir John (79), British naval officer; was commander of Allied forces in Mediterranean in World War II: d. London, England, Dec. 13.

Curtice, Harlow Herbert (69), U.S. business executive: b. near Eaton Rapids, Mich., Aug. 15, 1893; d. Flint, Mich., Nov. 3, 1962. After two years' business training at Ferris Institute, he started a 44-year career with General Motors Corporation in 1914 in the AC Spark Plug Division, rising to assistant general manager (1923) and president (1929). Following his success as president and general manager of the Buick Motor Division (1933–48), he was made executive vice president of General Motors Corporation (1948) with control over all staff activities. He became acting president of the corporation in 1952, and served as president from 1953 until he retired in 1958.

Curtiz, Michael (72), Hungarian–U.S. film director; won Academy Award in 1943 for his direction of *Casablanca:* d. Hollywood, Calif., Apr. 11.

Cutten, George B. (88), U.S. educator; president of Colgate University, 1922–42: d. Northampton, Mass., Nov. 2.

Dahl, George (81), U.S. theologian and Congregational minister; professor of Hebrew language and literature, Yale University, 1925–49: d. Laconia, N.H., July 31.

Dale, Chester (79), U.S. businessman and art collector; acquired paintings (valued at $10 million) which he donated to many museums; was president of National Gallery of Art: d. New York, N.Y., Dec. 16.

Dallin, David J. (72), Russian–U.S. expert on Soviet affairs; published ten books on Soviet Union: d. New York, N.Y., Feb. 21.

Dalton, (Edward) Hugh (John Neale) (Baron Dalton) (74), British public official: b. Neath, Wales, 1887; d. London, England, Feb. 13, 1962. Studied at Eton, Cambridge University, and the London School of Economics, and was called to the bar, Middle Temple, in 1914. After serving in the army during World War I, he became active in the Labour Party. First elected to Parliament in 1924, and from 1929 to 1931 was a member of Ramsay MacDonald's Labour government as undersecretary for foreign affairs. He was defeated in the general election of 1931, but regained his seat in 1935. During World War II, he served in the Churchill cabinet as minister of economic warfare (1940–42) and president of the Board of Trade (1942–45); in the postwar Labour government, was chancellor of the exchequer (1945–47). Retired from active politics in 1957, and was created a life peer in 1960.

Dantas, Júlio (86), Portuguese author and public official; wrote many poems, novels, and plays; was foreign minister in 1921 and 1923: d. Lisbon, Portugal, May 25.

Danton, George H. (81), U.S. educator and author; chairman of department of modern languages, Union College, Schenectady, N.Y., 1935–47; published historical studies of China: d. Berkeley, Calif., Mar. 11.

Darling, Jay N. (Ding) (85), U.S. cartoonist; as editorial cartoonist for Des Moines *Register* (1906–11; 1913–49), won Pulitzer Prizes in 1923 and 1942; was a leading conservationist: d. Des Moines, Iowa, Feb. 12.

Darwin, Sir Charles G. (75), English physicist; grandson of the naturalist Charles R. Darwin (1809–82): d. Cambridge, England, Dec. 31.

Davies, Clement (78), British public official; was member of Parliament (from 1929) and leader of Liberal Party (1945–56): d. London, England, Mar. 23.

Davis, Arthur Vining (95), U.S. industrialist: b. Sharon, Mass., May 30, 1867; d. Miami, Fla., Nov. 17, 1962. An Amherst College graduate (1888), he started work at $14 a week for the Pittsburgh Reduction Company, renamed the Aluminum Company of America (Alcoa) in 1908. He became president of Alcoa in 1910 and was board chairman from 1928 until his retirement in 1957. A director of many other enterprises, he amassed a great fortune (once estimated at more than $350 million). After 1948 he made vast investments in Florida real estate.

Davis, Clyde B. (68), U.S. novelist; wrote *The Anointed* (1937) and other novels: d. Salisbury, Conn., July 19.

Davis, Taube C. (70), U.S. fashion consultant (known as Tobé); founded merchandising consultant firm (1927) and fashion school (1937); greatly influenced women's fashions in U.S.: d. New York, N.Y., Dec. 25.

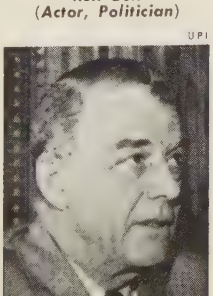
Dearborn, Ned H. (69), U.S. educator and authority on highway safety; president of National Safety Council, 1944–58: d. Titusville, Pa., Aug. 1.

de Florez, Rear Adm. Luis (73), U.S. naval officer and mechanical engineer; invented first accurate antiair-

Warren R. Austin (*Public Official*)

UPI

Rex Bell (*Actor, Politician*)

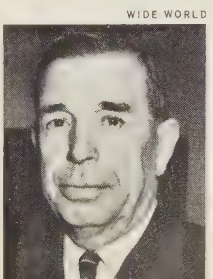


UPI

Francis H. Case (*U.S. Senator*)

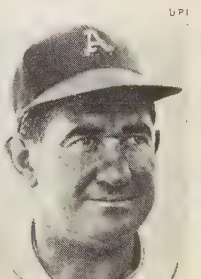
WIDE WORLD

Dennis Chavez (*U.S. Senator*)



WIDE WORLD

Mickey Cochrane (*Baseball Player*)



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craft gunsight and aeronautical devices: d. New London, Conn., Dec. 5.

de Ghelderode, Michel (63), Belgian playwright; wrote *Barabbas* (1931) and other avant-garde dramas: d. Brussels, Belgium, Apr. 1.

de Gouveia, Teodosio Clemente (72), Portuguese cardinal: b. São Jorge, Madeira Island, May 13, 1889; d. Lourenço Marques, Mozambique, Feb. 6, 1962. He was ordained a priest in 1919 and later served on Madeira and in Rome, where he was rector of the Portuguese College. In 1936, was named titular bishop of Leuce and prelate of Mozambique and, in 1941, archbishop of Lourenço Marques. He was elevated to the College of Cardinals in 1946.

de Gramont, Duke Armand (82), French physicist and authority on aerodynamics; developed electronic microscope and gastroscope: d. near Paris, France, Aug. 2.

del Rio, Angel (62), Spanish–U.S. literary critic and educator; published critical studies of Spanish authors: d. New York, N.Y., Mar. 25.

De Witt, Gen. John L. (82), U.S. Army officer; quartermaster general of Army, 1930–34; commanded Western Defense Area, 1939–43: d. Washington, D.C., June 20.

Dinesen, Isak (pen name of Baroness Karen Dinesen Blixen-Finecke) (77), Danish author: b. near Rungsted, Denmark, April 17, 1885; d. near Rungsted, Sept. 7, 1962. By 1914 she had published a few short stories. In that year she was married to her cousin, Baron Bror Blixen-Finecke, and went with him to Kenya, where they owned a coffee plantation. After their divorce in 1921, she managed the plantation until its failure in 1931, when she returned to Rundstedlund, her estate in Denmark. During the rainy seasons in Kenya she began to write her characteristic tales, eerie fantasies of great narrative power, evocative of unreal or bygone worlds. The first of her four books of stories, *Seven Gothic Tales* (1934), was published originally in the United States. Later collections (with American publication dates) were *Winter's Tales* (1943), *Last Tales* (1957), and *Anecdotes of Destiny* (1958). Under the pseudonym Pierre Andrézel she wrote *The Angelic Avengers* (1947), a novel published in Denmark in 1944 and said to symbolize that country's Nazi occupation. *Out of Africa* (1938), a reminiscence of her life in Kenya, is often considered her best work; its sequel is *Shadows on the Grass* (1960).

Dixon, Edgar H. (57), U.S. electric utility executive; as president (from 1949) of Middle South Utilities, was a key figure in controversial Dixon-Yates public power dispute in 1954–55: d. Washington, D.C., Aug. 2.

Domergue, Jean-Gabriel (73), French painter noted for charming portraits of Parisian women: d. Paris, France, Nov. 16.

Dorr, John V. N. (90), U.S. metallurgist; invented Dorr thickener and classifier for use in ore processing; founded equipment manufacturing companies: d. Wallingford, Conn., June 30.

Douglass, Andrew Ellicott (94), U.S. astronomer and dendrochronologist: b. Windsor, Vt., July 5, 1867; d. Tucson, Ariz., March 20, 1962. He was educated at Trinity College (B.A., 1889) and served as an assistant at the Harvard College Observatory (1889–94), as first assistant astronomer at the Lowell Observatory (1894–1901), and, at the University of Arizona, as professor of physics and astronomy (1906–18) and director of the Steward Observatory (1918–38). As an astronomer, was an authority on the planet Mars and a pioneer in photographing zodiacal light, but was better known as the originator of dendrochronology, the study of tree growth rings.

Doxey, Wall, Sr. (69), U.S. Democratic senator (1941–43) and congressman (1929–41) from Mississippi: d. Memphis, Tenn., Mar. 2.

Duffy, Edmund (63), U.S. editorial cartoonist; won three Pulitzer Prizes (1931, 1934, 1940) while with Baltimore *Sun* (1924–48): d. New York, N.Y., Sept. 13.

Dunn, Frederick S. (68), U.S. educator and authority on international law; director, Center of International Studies at Princeton University, 1951–61: d. Philadelphia, Pa., Mar. 17.

du Pont, Francis V. (67), U.S. engineer; was commissioner of U.S. Bureau of Public Roads, 1953–56: d. Baltimore, Md., May 20.

Durstine, Roy S. (75), U.S. advertising executive; was a founder (1918) of Batten, Barton, Durstine, and Osborn advertising agency; headed his own agency since 1939: d. New York, N.Y., Nov. 28.

Dutcher, R. Adams (76), U.S. educator and authority on nutrition; head of department of agricultural and biological chemistry, Pennsylvania State University, 1921–51: d. Fort Meyers, Fla., Apr. 20.

Dworshak, Henry Clarence (67), U.S. senator: b. Duluth, Minn., Aug. 29, 1894; d. Washington, D.C., July 23, 1962. Publisher of the Burley (Idaho) *Bulletin* from 1924 to 1944, and a conservative Republican, he served in the U.S. House of Representatives from 1939 to 1946, when he was elected to the Senate to fill the unexpired term of John Thomas. Defeated for re-election in 1948 by Bert H. Miller, he was appointed in 1949 to fill Miller's unexpired term, serving thereafter in the upper house until his death.

Dye, Garnett J. (70), U.S. inventor who held over 100 patents, including radio-controlled aerial torpedo: d. Shreveport, La., Jan. 29.

Eddy, Lt. Gen. Manton S. (69), U.S. Army officer; commanded Army divisions in North Africa and Europe in World War II; commander in chief, U.S. Army, Europe, 1952–53: d. Fort Benning, Ga., Apr. 10.

Eddy, Col. William A. (66), U.S. Marine Corps officer, educator, and diplomat; president, Hobart and William Smith Colleges, 1936–42; minister to Saudi Arabia, 1944–46: d. Beirut, Lebanon, May 4.

Egan, Leo (55), U.S. journalist; as a political reporter for New York *Times* (from 1937), reported city and state public affairs: d. Massapequa, N.Y., Nov. 23.

Eisler, Hanns (64), German composer; wrote operas, film scores, and music of East Germany's national anthem; left U.S. in 1948 after being investigated for alleged Communist activities: d. Berlin, East Germany, Sept. 6.

Eklund, Carl R. (53), U.S. explorer; charted Antarctic coast in 1939–41; was chief of polar and Arctic research for U.S. Army: d. Philadelphia, Pa., Nov. 4.

el-Khouri. See Khouri.

Ellard, Roscoe B. (68), U.S. journalist and educator; professor of journalism, Columbia University, 1941–59: d. Alamogordo, N. Mex., Aug. 14.

Elvehjem, Conrad A. (61), U.S. biochemist and educator; identified (1937) the vitamin niacin; taught (from 1923) at and was president (from 1958) of University of Wisconsin: d. Madison, Wis., July 27.

Emerson, Sir Herbert W. (80), British government official; was League of Nations high commissioner for refugees, 1939–46, and director of Intergovernmental Committee for Refugees, 1943–47: d. London, Apr. 12.

Emerson, Kendall, Sr. (86), U.S. physician; director, National Tuberculosis Association, 1928–47: d. Brookline, Mass., Feb. 5.

Enriquez, Gen. Alberto (66), Ecuadoran army officer and president of Ecuador (1937–38): d. Quito, Ecuador, July 13.

Evans, Austin P. (78), U.S. historian; taught at Columbia University, 1915–52; edited *Records of Civilization* (47 vols., 1924–52): d. Barnard, Vt., Sept. 21.

Fairless (original name, Williams), Benjamin Franklin (71), U.S. steel executive: b. Pigeon Run, near Massillon, Ohio, May 3, 1890; d. Ligonier, Pa., Jan. 1, 1962. As a child, was legally adopted by his uncle, Jacob Fairless. Attended the Ohio Northern University, graduating in 1913 with a civil engineering degree. He was employed by the Central Steel Corporation in 1914, rising by 1921 to the post of vice president in charge of operations. In 1926, with the merger of Central Steel and the United Alloy Steel Corporation, was named vice president and general manager of the latter (president and general manager, 1928–30), and in 1930, following the merger of United Alloy Steel with other companies to form the Republic Steel Corporation, became Republic's executive vice president. Joined the United States Steel Corporation in 1935 as president of its subsidiary, the Carnegie-Illinois Steel Corporation, and later, until his retirement in 1955, served the parent organization as president (1938–52), president and chairman (1952–53), and chairman (1953–55).

Farrar, Lilian K. P. (90), U.S. physician and educator; was first woman governor of American College of Surgeons, serving five three-year terms between 1925 and 1947; taught at Cornell University Medical School, 1918–35: d. Lake Placid, N.Y., June 22.

°Faulkner, William H. (64), U.S. author: d. Oxford, Miss., July 6.

Faymonville, Brig. Gen. Philip R. (73), U.S. Army officer and authority on Soviet Union; headed U.S. military mission in USSR during World War II: d. San Francisco, Calif., Mar. 29.

Ferriss, Hugh (72), U.S. architect; pioneered in modern architectural design; wrote *Metropolis of Tomorrow* (1929): d. New York, N.Y., Jan. 29.

Filkins, Grace (97), U.S. actress who starred on New York stage in 1890's: d. New York, N.Y., Sept. 17.

Fine, Irving (47), U.S. composer of chorals, instrumental music, and symphonies; professor of music, Brandeis University, from 1950: d. Boston, Mass., Aug. 23.

Fischer, Anton O. (80), U.S. magazine and book illustrator noted for marine subjects: d. Woodstock, N.Y., Mar. 25.

Fitzgerald, Roy G. (87), U.S. congressman (Republican) from Ohio, 1921–31: d. Dayton, Ohio, Nov. 16.

Fjellbu, Arne (71), Norwegian clergyman; Evangelical Lutheran bishop of Trondheim, 1945–61; was exiled by Nazis in World War II: d. Trondheim, Norway, Oct. 7.

°Flagstad, Kirsten (67), Norwegian operatic soprano: d. Oslo, Norway, Dec. 7.

Ford, Guy S. (89), U.S. educator; taught at University of Minnesota (from 1913) and was its president (1939–41): d. Washington, D.C., Dec. 29.

France, Royal W. (78), U.S. lawyer and educator; defended Dr. Willard Uphaus (in 1959) and others in noted civil liberties cases; professor of economics, Rollins College, 1929–52: d. New York, N.Y., July 10.

Frankl, Paul (83), U.S. art historian; published *The Gothic . . .* (1959) and other books: d. Princeton, N.J., Jan. 30.

Frazier, E. Franklin (67), U.S. sociologist; chairman of sociology department, Howard University, 1934–59; published *Black Bourgeoisie* (1957), a study of Negro middle class in U.S.: d. Washington, D.C., May 17.

Fretwell, Elbert K. (83), U.S. educator and head of Boy Scouts of America, 1943–48: d. Weston, Conn., Aug. 22.

Gabrielsson, Assar (70), Swedish industrialist; founded (late 1920's) Volvo Motor Company, Sweden's foremost automobile manufacturer: d. Stockholm, Sweden, May 28.

Gamoran, Emanuel (66), U.S. educator; was educational director for Jewish organizations; helped to modernize Jewish religious education: d. New York, Nov. 14.

Gardiner, James Garfield (78), Canadian public official: b. Farquhar, Ont., Nov. 30, 1883; d. Regina, Sask., Jan. 12, 1962. He was a Liberal member of the Saskatchewan Legislative Assembly from 1914 to 1935 and served as provincial minister of highways (1922–26) and premier (1926–29; 1934–35). As a member of the House of Commons from 1936 to 1958, he held the federal cabinet posts of minister of agriculture (1935–57) and minister of national war services (1940–41).

Garis, Howard R. (89), U.S. author of children's books; created "Uncle Wiggily," a rabbit whose antics were recorded in 75 books: d. Northampton, Mass., Nov. 5.

Gates, Reginald R. (80), English botanist and geneticist; discovered nondisjunction of chromosomes in plants; professor of botany, University of London, 1921–42; wrote *Human Genetics* (2 vols., 1947) and other books: d. London, England, Aug. 12.

Gavin, Francis J. (81), U.S. railroad executive; was president (1939–51) and board chairman (1951–59) of Great Northern Railway: d. St. Paul, Minn., Apr. 7.

Ghosh, Ajoy K. (53), Indian Communist leader; general secretary of Indian Communist Party from 1951: d. New Delhi, India, Jan. 13.

Gibbons, Irene (54), U.S. fashion designer (known as "Irene"); designed clothes for movie stars; owner of Irene, Inc.: d. (suicide) Hollywood, Calif., Nov. 15.

Gibbs, Sir Philip (84), English author noted for newspaper articles and books about World War I: d. London, England, Mar. 10.

Gibson, Edmund Richard (Hoot) (70), U.S. Western film star: b. Tekamah, Nebr., Aug. 6, 1892; d. Woodland Hills, Calif., Aug. 23, 1962. Entering the infant motion picture industry as a stunt man, he had his first starring role in a five-reel Western in 1920. He was seen in some 200 silent films and about 75 "talkies," and became, along with such actors as Tom Mix and William S. Hart, one of the most popular "horse opera" heroes. His last appearance, in a minor role, was in *The Horse Soldiers* (1959).

Giesler, Jerry (75), U.S. lawyer who defended many motion picture celebrities: d. Beverly Hills, Calif., Jan. 1.

Gilroy, William E. (86), U.S. clergyman and editor of *The Congregationalist* (later, *Advance*) from 1922 to 1943: d. Newton Centre, Mass., May 30.

Goetz, Lawrence J. (Larry) (67), U.S. baseball umpire; served in the National League from 1936 to 1947: d. Cincinnati, Ohio, Oct. 31.

Goldblatt, Maurice H. (77), U.S. art historian; director of art galleries, University of Notre Dame; wrote *Leonardo da Vinci* (1961): d. Chicago, Ill., Mar. 2.

Goldenson, Samuel H. (84), U.S. rabbi; was rabbi at Temple Emanu-El, New York, 1934–47; president, Central Conference of American Rabbis, 1933–35: d. Stamford, Conn., Aug. 31.

Golovko, Adm. Arseni G. (55), Soviet naval officer; was first deputy commander of Soviet Navy (from 1956); commanded Northern Fleet against German Navy in World War II: d. USSR, (announced) May 18.

Goodman, Jules E. (85), U.S. playwright; wrote many Broadway dramas, including *The Man Who Played God* (1914): d. Peekskill, N.Y., July 10.

Goodrich, Herbert F. (72), U.S. judge and educator; served on U.S. Third Circuit Court of Appeals from 1940; dean of University of Pennsylvania Law School, 1929–40: d. Philadelphia, Pa., June 25.

Goodspeed, Edgar J. (90), U.S. Biblical scholar and author; chairman of New Testament department, University of Chicago, 1923–37; noted for translations of Bible: d. Los Angeles, Calif., Jan. 13.

Goosens, Eugene (69), English conductor and composer: b. London, England, May 26, 1893; d. Hillingdon, Middlesex, England, June 13, 1962. The son and grandson of symphony orchestra conductors, he studied at the Bruges Conservatory (1902–03), the Liverpool College of Music (1905–06), and the Royal College of Music, London (1907–12). Served as a violinist with the Queen's Hall Orchestra (1911–15) before becoming assistant to Sir Thomas Beecham in 1915. Founded his own orchestra in 1921 and was conductor of the orchestras of the Diaghilev Ballet (1919–23) and the Russian Ballet (1922) and guest conductor of leading English musical organizations. In 1923, went to the United States, where he conducted the Rochester Philharmonic (1923–31) and the Cincinnati Symphony (1931–47). Later, directed the Sydney Symphony (1947–55). His many compositions include two operas (*Judith*, 1925; *Don Juan de Mañara*, 1934), an oratorio (*Apocalypse*, 1951), and two symphonies (1940 and 1942–44). He was knighted in 1955.

Grant, Gordon (Hope) (86), U.S. artist: b. San Francisco, Calif., June 7, 1875; d. New York, N.Y., May 7, 1962. After studying art in London, he was a staff artist on newspapers in San Francisco (1895) and New York (1896–99), and with *Harper's Weekly*, for which he covered the Boer War from 1899 to 1901, and *Puck* (1901–09). Served as an officer on the General Staff in Washington, D.C., during World War I. Thereafter, devoted himself to painting, lithography, and etching, and became well known for his seascapes and paintings of sailors and sailing ships, notably *Old Ironsides* (1927). He also wrote and illustrated books about the sea.

Green, Walter L. (67), U.S. shipping executive; headed American Bureau of Shipping from 1950 to 1959: d. Stamford, Conn., Mar. 26.

Griffin, Gerald (70), U.S. actor and songwriter; president, Songwriters Guild of America, 1936–41; wrote many popular songs: d. Rhinebeck, N.Y., Jan. 11.

Grodinsky, Julius (65), U.S authority on finance; wrote books on railroads and business investment; was professor of finance, University of Pennsylvania, from 1953: d. Philadelphia, Pa., July 9.

Gulick, Charles B. (93), U.S. philologist; professor of Greek literature, Harvard University, 1909–37; wrote many works on Greek history: d. White Plains, N.Y., May 23.

Gunn, Herbert (57), English journalist; edited London *Evening Standard* (1945–50) and other newspapers: d. London, England, Mar. 3.

Gwinn, Ralph W. (77), U.S. congressman (Republican) from New York, 1945–59: d. Boynton Beach, Fla., Feb. 27.

Hackett, Francis (79), Irish author; wrote *I Chose Denmark* (1940), biographies, and other books: d. Copenhagen, Denmark, Apr. 24.

Haig, John T. (84), Canadian public official; Progressive Conservative leader in Senate, 1945–57; minister without portfolio, 1957–58: d. Winnipeg, Man., Oct. 23.

Hall, Walter P. (77), U.S. historian; taught at Princeton University, from 1913; named Dodge professor of history in 1933: d. Austin, Texas, May 3.

Hall, William G. (75), British member of Parliament, from 1929; financial secretary to Treasury in Labour government, 1945–50: d. London, England, Oct. 14.

Hamilton, Eric K. C. (71), English clergyman; was dean of Windsor and domestic chaplain to Queen Elizabeth II: d. London, England, May 21.

Hamilton, Patrick (58), English author; wrote many novels and melodramas, including *Rope* (1929) and *Angel Street* (1942): d. Sheringham, England, Sept. 23.

Hammell, Alfred L. (72), U.S. transport executive; president, Railway Express Agency, 1949–59: d. Indianapolis, Ind., Feb. 8.

Handley Page, Sir Frederick (76), English aviation pioneer; founded (1908) Handley Page, Ltd., first British airplane manufacturer, and produced (1915) Britain's first bombers: d. London, England, Apr. 21.

Hargrave, Thomas J. (70), U.S. business executive; headed Eastman Kodak Company, from 1941: d. Rochester, N.Y., Feb. 21.

Harlow, Dick (72), U.S. football coach; coached at Harvard University (1935–48); member of Football Hall of Fame: d. Bethesda, Md., Feb. 19.

Haseltine, Herbert (84), U.S. sculptor noted for statues of horses, including Man o' War (in Lexington, Ky.), and other animals: d. Paris, France, Jan. 8.

Hatfield, Henry D. (87), U.S. Republican senator from West Virginia, 1929–35; governor of West Virginia, 1913–17: d. Huntington, W.Va., Oct. 23.

Hayes, Mary H. S. (80), U.S. sociologist and former chair-

René Coty (*President of France*)

FRENCH EMBASSY

Harlow H. Curtice (*Industrialist*)

GENERAL MOTORS CORP

Isak Dinesen (*Author*)

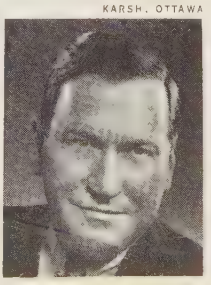
DANISH INF. OFFICE

Henry C. Dworshak (*U.S. Senator*)

WIDE WORLD

Benjamin F. Fairless (*Industrialist*)

KARSH, OTTAWA



man of Girl Scouts Executive Committee (elected 1947): d. New York, N.Y., Apr. 9.

Heineman, Dannie N. (89), U.S. industrialist; headed SOFINA, leading international industrial corporation, 1905–55; founded Heineman Foundation for scientific research: d. New York, N.Y., Jan. 31.

Helfrich, Adm. Conrad E. L. (75), Dutch admiral; commanded Allied naval forces during Battle of the Java Sea (1942); commander in chief, Netherlands Navy, 1945–48: d. The Hague, Netherlands, Sept. 20.

Helm, Edith B. (88), U.S. government official; was White House social secretary (1915–20 and 1933–53): d. Washington, D.C., Aug. 6.

Henry, Robert A. C. (77), Canadian engineer and government official; from 1952 to 1954, headed engineering board of St. Lawrence Seaway project: d. St. Petersburg, Fla., Jan. 1.

Hepburn, Thomas N. (82), U.S. urologist; formerly headed staff of Hartford (Conn.) Hospital; father of actress Katharine Hepburn: d. West Hartford, Conn., Nov. 20.

Hesse, Hermann (85), German-Swiss author: b. Calw, Germany, July 2, 1877; d. Montagnola, near Lugano, Switzerland, Aug. 9, 1962. His first novel, *Peter Camenzind*, was published in 1904 (Eng. tr. 1961); other important novels include: *Demian* (1919; tr. 1923); *Der Steppenwolf* (1927; tr. 1929); *Narziss und Goldmund* (1930; tr. as *Death and the Lover*, 1932); and *Das Glasperlenspiel* (1943; tr. as *Magister Ludi*, 1949). Also a poet, short story writer, and essayist, he received the Nobel Prize in literature for 1946. He moved to Switzerland in 1912 and became a citizen in 1923. His abhorrence of militarism and the abrasive influences of modern civilization prompted him to seek solitude on his mountain estate in the Swiss Alps. Major themes in his fiction concern the duality of human nature and experience, and "the difficulties which in the world today confront the individual and his building of a harmonious personality."

Hession, John W. (84), U.S. rifle champion who held many marksmanship titles: d. Clearwater, Fla., Feb. 1.

Hillman, William (66), U.S. news reporter and radio commentator; author of *Mr. President* (1952), on Truman administration: d. New York, N.Y., May 31.

Hoagland, John H. (61), U.S. publishing executive; executive head of Christian Science Publishing Society from 1944: d. Brookline, Mass., Jan. 12.

Hobbes, Halliwell (84), British–U.S. actor; appeared on London and New York stages, and in many films: d. Santa Monica, Calif., Feb. 20.

Hoblitzell, John D., Jr. (49), U.S. senator (Republican) from West Virginia, 1957–59: d. Clarksburg, W. Va., Jan. 6.

Hodes, Henry Irving (62), U.S. Army officer: b. Washington, D.C., March 19, 1899; d. San Antonio, Texas, Feb. 14, 1962. He was graduated from the U.S. Military Academy in 1920, and later attended the Cavalry School, the Command and General Staff School, and the Army War College. Advanced through grades to the rank of general (1956; retired, 1959). In World War II, served in Washington with the General Staff (1940–43), and in Europe as an infantry commander (1944). After a further assignment with the General Staff (1944–45), was named assistant deputy chief of staff (1945–47) and chief of staff of the Fourth Army (1947–49). In 1949, was transferred to Japan as assistant commander of the 1st Cavalry Division; and from 1950 to 1951, as assistant commander of the 7th Infantry Division, participated in the Korean War. In 1951, was appointed a United Nations delegate to the Korean armistice negotiations, and later acted as chief delegate. Subsequently commanded the 24th Infantry Division (1951–53), the Seventh Army in Europe (1954–56), and the U.S. Army in Europe (1956–59).

Hodgson, Ralph (91), English poet noted for lyrical poems celebrating nature; wrote *The Skylark and Other Poems* (1960), and many other volumes of poetry: d. Minerva, Ohio, Nov. 3.

Hoejer, Torvald (55), Swedish educator and historian; published biography of King Charles XIV John and diplomatic histories: d. Djursholm, Sweden, Jan. 6.

Hogue, Mary J. (78), U.S. anatomist noted for research on human nerve cells; taught at University of Pennsylvania School of Medicine, 1924–52: d. Philadelphia, Pa., Sept. 11.

Holenstein, Thomas (66), Swiss public official; minister of economic affairs, 1955–59, and president of Swiss Confederation, 1958: d. Locarno, Switzerland, Oct. 31.

Holland, Henry F. (49), U.S. lawyer and government official; assistant secretary of state for inter-American affairs, 1954–56: d. Greenwich, Conn., July 18.

Holman, Eugene (67), U.S. industrialist; headed Standard Oil Company (New Jersey) from 1944 to 1960: d. New York, N.Y., Aug. 12.

Holmes, John (58), U.S. poet and educator; professor of English, Tufts University, from 1939; published many volumes of poetry: d. Medford, Mass., June 22.

Hopkinson, Charles (93), U.S. painter who portrayed eminent persons: d. Manchester, Mass., Oct. 15.

Houdry, Eugene J. (70), French-born U.S. chemist; invented catalytic cracking process important in manufacture of gasoline: d. Philadelphia, Pa., July 18.

Houghteling, James L. (78), U.S. government official; commissioner of immigration and naturalization, 1937–40: d. Washington, D.C., Apr. 28.

Hu Tsung-Nan (62), Chinese general who commanded Nationalist forces against Japanese and against Chinese Communists: d. Taipei, Taiwan, Feb. 14.

Hubbard, Bernard (73), U.S. Roman Catholic clergyman, Arctic explorer, author, and lecturer: d. Santa Clara, Calif., May 28.

Hu Shih (70), Chinese scholar and diplomat: b. Shanghai, China, Dec. 17, 1891; d. Taipei, Taiwan, Feb. 24, 1962. He was educated in the United States at Cornell University (B.A., 1914) and Columbia University (Ph.D., 1917). Returning to China, he taught at various universities, including Peking National University (1917–37) and the National China Institute (1928–30). Appointed ambassador to the United States in 1938, he served until 1942, when he was recalled to act as an adviser to Chiang Kai-shek. From 1945 until the Chinese Communist mainland victory in 1949, he was chancellor of Peking National University, and after 1958 was president of the Academia Sinica on Taiwan. His greatest achievement was in leading a cultural movement in China which succeeded in discarding the classical Chinese language and substituting for it the contemporary Chinese vernacular. This brought the literature of the past and present to the masses of people who were unfamiliar with the classical Chinese language.

Husing, Ted (60), U.S. sports announcer; broadcast radio descriptions of major sports events from 1924 to 1954: d. Los Angeles, Calif., Aug. 10.

Hutton, Edward Francis (86), U.S. financier and industrialist: b. New York, N.Y., Sept. 7, 1875; d. Old Westbury, N.Y., July 11, 1962. Founded (1904) the Wall Street brokerage firm of E. F. Hutton & Co., of which he was managing partner until 1921 and limited partner thereafter. From 1923 to 1935, was chairman of the Postum Cereal Co. (now General Foods). Established (1949) the Freedoms Foundation, dedicated to maintaining the "indivisible political and economic freedoms inherent in" the Constitution and the Bill of Rights.

Ibert, Jacques (71), French composer: b. Paris, France, Aug. 15, 1890; d. Paris, Feb. 5, 1962. Attended the Paris Conservatory, studying under Gedalge, Fauré, and Vidal. Served in the French Navy during World War I. Won the Prix de Rome (1919) for his cantata *Le Poète et la Fée*, and while living in Rome, composed his most popular work, *Escales* (*Ports of Call*, 1922). Served as director of the French Academy in Rome (1937–55) and administrator of the Paris Opéra and Opéra-Comique (1955–56). His music, closely allied to the impressionism of Ravel, included scores for operas, ballets, and films, as well as orchestral works and compositions for solo instruments.

Ide, John J. (69), U.S. aviation expert; European representative, National Advisory Committee for Aeronautics, 1921–44: d. New York, N.Y., Jan. 12.

Ireland, John (82), English composer; professor of composition, Royal College of Music, 1923–39; composed many orchestral and chamber works, piano solos, and songs: d. Washington, England, June 12.

Irene. See Gibbons, Irene.

Isaacs, Stanley M. (79), U.S. public official; Republican minority leader, New York City Council (first elected to council in 1941); president, Borough of Manhattan, 1938–41: d. New York, N.Y., July 12.

Isom, Edward W. (76), U.S. industrialist; president of Sinclair Rubber, Inc., 1942–52, and board chairman of Sinclair Chemical, Inc., 1952–55; held petroleum processing patents: d. St. Johnsbury, Vt., Jan. 19.

Ives, Irving McNeil (66), U.S. public official: b. Bainbridge, N.Y., Jan. 24, 1896; d. Norwich, N.Y., Feb. 24, 1962. Following service in the Army during World War I, he was graduated from Hamilton College in 1920. Worked for banking firms in New York City (1920–23) and upstate New York (1923–30). Later, beginning in 1933, headed an insurance company in Norwich. Entered Republican politics in 1930, and that year was elected state assemblyman from Chenango County. Served in the Assembly as minority leader (1935), speaker (1936), and majority leader (1937–46), and was coauthor of New York State's pioneering Fair Employment Practices Act (1945). Elected to the U.S. Senate in 1946 (re-elected 1952) and held memberships in the Appropriations and Labor and Public Welfare committees; was also vice chairman of the Senate Select Committee on Improper Activities in the Labor and Management Field (1957). Defeated by W. Averell Harriman for governorship of New York in 1954.

James, James A. (97), U.S. educator; dean, Northwestern University Graduate School, 1913–31; was influential Methodist layman: d. Evanston, Ill., Feb. 12.

*Jeffers, (John) Robinson (75), U.S. poet and playwright: d. Carmel, Calif., Jan. 20.

Johnson, Chic (70), U.S. comedian; appeared on Broadway stage, in films, and on television programs with Ole Olsen as Olsen and Johnson comedy team: d. Las Vegas, Nev., Feb. 26.

Jones, Marguerite E. (73), U.S. educator; chairman of speech and dramatics department, Hunter College, 1944–53: d. New York, N.Y., Jan. 22.

Jones, Mary G. (90), U.S. philanthropist; with her hus-

band, Jesse H. Jones, she founded (1938) Houston Endowment to aid educational, religious, and charitable institutions: d. Houston, Texas, Aug. 20.

Jones, Sir Roderick (84), British journalist; headed Reuters news agency, 1915–41: d. London, England, Jan. 23.

Jones, W. Alton (70), U.S. industrialist; headed Cities Service Company, petroleum producers, from 1939 to 1959: d. (in airplane crash) New York, N.Y., Mar. 1.

Joslin, Elliott P. (92), U.S. physician and authority on diabetes; clinical professor of medicine, Harvard Medical School, 1922–37: d. Brookline, Mass., Jan. 28.

Kahn, Roger W. (54), U.S. songwriter, orchestra leader, and test pilot; wrote scores for musical comedies and popular songs: d. New York, N.Y., July 12.

Kalomiris, Manolis (78), Greek composer; founded (1926) and directed National Conservatory of Athens; created traditional musical works: d. Athens, Greece, Apr. 3.

Kazakevich, Emmanuil G. (49), Soviet novelist; won two Stalin prizes for war novels, *The Star* (1947) and *Spring on the Oder* (1949): d. USSR, Sept. 22.

Kent, Harry A. (81), Canadian theologian and educator; was a founder of United Church of Canada: d. Kingston, Ont., Jan. 4.

Khalidi, Hussein Fakhri al- (66), Jordanian public official; was prime minister (1957) and foreign minister (1953–54; 1956): d. Amman, Jordan, Feb. 6.

Khouri, Faris el-, Syrian statesman: b. Kfeir, near Hasbaya, Syria (now in Lebanon), 1879(?); d. Damascus, Syria, Jan. 2, 1962. He was educated at the American University of Beirut (B.A., 1897), and later (1908) became a lawyer in Damascus and was a professor of law at the Syrian University (1919–40). In a political career that spanned more than 40 years, beginning as a deputy to the Ottoman Parliament from 1914 to 1918, he held a variety of public posts, including those of president of the Syrian Parliament (1936–39, 1943–44, and 1945–49), minister of foreign affairs (1941), and premier (1944–45 and 1954–55). He was also, at various times, chief Syrian delegate to the United Nations, and served as president of the Security Council in 1948.

Kindelberger, James H. (67), U.S. aircraft manufacturer; headed (from 1935) North American Aviation, Inc., which produced 14% of U.S. military aircraft in World War II: d. Pacific Palisades, Calif., July 27.

Klimov, Gen. Vladimir Y. (70), Soviet engineer who developed fighter-plane jet engines: d. Moscow, USSR, Sept. 9.

Kline, Franz Josef (51), U.S. artist: b. Wilkes-Barre, Pa., May 23, 1910; d. New York, N.Y., May 13, 1962. Studied art at Boston University and Heatherly's Art School, London (1937). Began as a realistic painter, but turned to abstract expressionism about 1950 and became a leader of that school. His paintings, usually broad black strokes applied with a house painter's brush to white canvas, have attracted considerable critical controversy and have been widely represented in exhibitions and museums in the United States and abroad.

Kornfeld, Albert (61), U.S. writer and editor; wrote books on home decoration; editor, *House and Garden*, 1946–50: d. Freudenstadt, Germany, Aug. 16.

Koskenniemi, Veikko A. (77), Finnish author and educator; published many poems and essays; formerly dean of Turku University: d. Helsinki, Finland, Aug. 4.

Kotler, Aaron (71), Polish-born U.S. rabbi; was an authority on the Torah; founded (1943) school for higher rabbinical study in Lakewood, N.J.: d. New York, N.Y., Nov. 29.

Kovacs, Ernie (42), U.S. comedian: b. Trenton, N.J., Jan. 23, 1919; d. (auto accident) Los Angeles, Calif., Jan. 13, 1962. Attended the New York School of the Theatre (1935–37), acted for several years in stock companies, and, from 1945 to 1950, was a newspaper columnist and radio broadcaster in Trenton. Began his TV career in 1950 with a local Philadelphia station, and, from 1951, appeared on national networks, both in his own shows and as a guest star. He was noted for his improvisation and offbeat humor, particularly the use of zany camera and sound effects and the creation of such characterizations as the Nairobi Trio and Percy Dovetonsils. Also starred successfully in motion pictures, including *Operation Mad Ball* (1957), *Our Man in Havana* (1960), *Strangers When We Meet* (1960), and *Sail a Crooked Ship* (1962), and was the author of *Zoomar* (1957), *How to Talk at Gin* (1962), and *Please Excusa da Pencil* (1962). He was married to actress Edie Adams, his second wife, in 1954.

°Kreisler, Fritz (86), U.S. violinist and composer: d. New York, N.Y., Jan. 29.

Kristensen, Knud (81), Danish public official; premier, 1945–47: d. Copenhagen, Denmark, Sept. 29.

Kump, Herman G. (84), U.S. public official; Democratic governor of West Virginia, 1933–37: d. Elkins, W. Va., Feb. 14.

Lamb, Harold A. (69), U.S. historian and novelist; published biographies of historical figures, including *Genghis Khan* (1927): d. Rochester, Minn., Apr. 9.

Lamote de Grignon, Ricard (62), Spanish composer and conductor; composed opera, *The Dragon's Head* (1960), and other works: d. Barcelona, Spain, Feb. 5.

Landis, Carney (65), U.S. psychologist; professor of psychology, Columbia University, 1943–59; wrote many books on mental illness: d. New York, N.Y., Mar. 5.

Lang, Lucy R. (78?), U.S. labor leader; pioneered in organizing unions; wrote autobiography, *Tomorrow Is Beautiful* (1948): d. Los Angeles, Calif., Jan. 25.

Langner, Lawrence (72), British–U.S. lawyer, theatrical producer, and playwright: b. Swansea, Wales, May 30, 1890; d. New York, N.Y., Dec. 26, 1962. A U.S. resident since 1911 and citizen since 1917, he became a prominent patent attorney. In 1919 he founded the Theatre Guild, which produced such notable plays as Shaw's *Back to Methuselah* (1921), O'Neill's *Strange Interlude* (1928), and the Rodgers-Hammerstein *Oklahoma!* (1944). In 1950 he founded the Shakespeare Festival Theatre at Stratford, Conn. Langner himself was the author of more than 20 plays, as well as legal works.

Larsen, Lt. Gen. Henry L. (71), U.S. Marine Corps officer; military governor of Guam in World War II: d. Denver, Colo., Oct. 2.

°Laughton, Charles (63), English–U.S. actor: d. Hollywood, Calif., Dec. 15.

Lawson, Edward B. (67), U.S. diplomat; ambassador to Israel, 1954–59: d. Washington, D.C., Nov. 19.

Levitt, Abraham (82), U.S. building contractor; his firm mass-produced over 60,000 houses after World War II, and built three suburban communities (each named Levittown) in eastern U.S.: d. Manhasset, N.Y., Aug. 20.

LeWald, Leon T. (88), U.S. roentgenologist and educator; was credited with introducing mass X-ray examinations in U.S.: d. New York, N.Y., June 16.

Lewis, A(lma) D(ennie) (72), U.S. labor leader and government official; president, United Mine Workers District 50, from 1946; assistant director general, U.S. Employment Service, 1930–34; d. Washington, D.C., Jan. 24.

Lhote, André (76), French cubist painter and art critic: d. Paris, France, Jan. 24.

Llewellyn, Karl N. (68), U.S. legal authority; taught at law schools of Columbia University and University of Chicago; published *The Common Law Tradition: Deciding Appeals* (1960): d. Chicago, Ill., Feb. 13.

Longstreet, Helen D. (99), U.S. journalist and civic leader; was widow of Confederate Gen. James Longstreet: d. Milledgeville, Ga., May 3.

Lord, F. Townely (68), English clergyman; president, Baptist World Alliance, 1950–55; edited *The Baptist Times* magazine, 1941–56: d. Greenville, S.C., Feb. 9.

Love, J(ames) Spencer (65), U.S. textile manufacturer; founded (1923) and headed Burlington Mills Company: d. Palm Beach, Fla., Jan. 20.

Lovejoy, Arthur Oncken (89), U.S. philosopher and teacher: b. Berlin, Germany, Oct. 10, 1873; d. Baltimore, Md., Dec. 30, 1962. Professor of philosophy at Johns Hopkins University, he was best known as a leader in the History-of-Ideas Movement and in the theory of knowledge. The best known of his many books is *The Great Chain of Being* (1936).

Lovejoy, Frank (50?), stage, screen, and television actor: b. New York, N.Y., Mar. 28, 1912(?); d. Paramus, N.J., Oct. 2, 1962. The ruggedly handsome actor, who specialized in Army and police roles in movies and television, made his Broadway debut in 1934 in Elmer Rice's *Judgment Day*. After a short radio career in Cincinnati, he returned to New York and appeared in over 4,000 television programs, including *The Caine Mutiny Court-Martial* and the mystery-adventure series *Meet McGraw*. In motion pictures, he played leading roles in *Home of the Brave* (1949), *Breakthrough* (1950), *Force of Arms* (1951), *The Hitch-Hiker* (1953), and *Strategic Air Command* (1955), among others. Back on Broadway, he won wide acclaim in 1960–61 for his portrayal as the bigoted politician in *The Best Man*. He was married to actress Joan Banks.

Lowry, John (79), U.S. building contractor; his firm built Radio City Music Hall and other prominent New York City buildings: d. Mt. Vernon, N.Y., Nov. 3.

Luciano, Charles (Lucky) (65), Italian-born U.S. criminal and vice overlord: d. Naples, Italy, Jan. 26.

Luhan, Mabel Dodge (83), U.S. patron of the arts; sponsored D. H. Lawrence and other artists; published *Lorenzo in Taos* (1932): d. Taos, N. Mex., Aug. 13.

Luther, Hans (83), German public official; was chancellor (1925–26) and German ambassador to U.S. (1933–37): d. Düsseldorf, Germany, May 11.

Lynch, Maj. Gen. George A. (82), U.S. Army officer; chief of infantry, 1937–41: d. Orlando, Fla., Aug. 10.

McAtee, Waldo L. (78), U.S. biologist and ornithologist; pioneered in studying the feeding habits of American birds: d. Chapel Hill, N.C., Jan. 7.

McBride, Henry (94), U.S. art critic; wrote many magazine articles and books on established and modern artists: d. New York, N.Y., Mar. 31.

McCann, Harrison (82), U.S. advertising executive; cofounded McCann-Erickson agency: d. (with wife in automobile accident) Old Westbury, N.Y., Dec. 21.

McCarthy, Clem (Charles L.) (79), U.S. sports announcer: b. East Bloomfield, N.Y., Sept. 9, 1882; d. New York, N.Y., June 4, 1962. He was a newspaper reporter, cartoonist, and race-track announcer before entering radio broadcasting field in 1928. Broadcast descriptions of every Kentucky Derby from 1928 to 1950, as well as championship prizefights and other major sports events.

McComas, Carroll (76), U.S. actress; appeared on Broad-

way stage (1907–40 and 1945–59) and in films: d. New York, N.Y., Nov. 9.

McCormick, Myron (55), U.S. actor: b. Albany, Ind., Feb. 8, 1907; d. New York, N.Y., July 30, 1962. After attending Princeton University (B.S., 1931) and acting with the University Players, a professional college-age group, he made his Broadway debut in 1932 in *Carry Nation*. Subsequently was seen in *Yellow Jack* (1934), *Winterset* (1936), *The Wingless Victory* (1936), *Thunder Rock* (1939), *State of the Union* (1945), and, most notably, as Luther Billis in *South Pacific* (1949) and Sergeant King in *No Time for Sergeants* (1955). Also appeared in motion pictures and on radio and television.

MacDonald, Christie (87), U.S. actress who appeared in Victor Herbert's *Sweethearts* (1913) and other musical comedies: d. Fairfield, Conn., July 25.

McGehee, Dan R. (78), U.S. congressman (Democrat) from Mississippi, 1935–47: d. Meadville, Miss., Feb. 9.

McGowan, Raymond A. (70), U.S. Roman Catholic clergyman; directed Social Action Department of National Catholic Welfare Conference (to 1954); wrote extensively on social legislation: d. Kansas City, Mo., Nov. 13.

McGranery, James P. (67), U.S. attorney general (1952–53); Democratic congressman from Pennsylvania (1937–43); d. Palm Beach, Fla., Dec. 23.

MacKenna, Kenneth (Leo Mielziner, Jr.) (62), U.S. actor and film editorial director; appeared in many Broadway plays and in films: d. Santa Monica, Calif., Jan. 15.

Mackenzie, Dewitt (78), U.S. journalist; wrote daily news column for Associated Press which appeared in some 800 newspapers: d. Glendale, Calif., Aug. 16.

McLeaish, Robert B., Sr. (62), U.S. government official; administrator of Farmers Home Administration, 1953–56: d. McAllen, Texas, Jan. 7.

MacLeod, Grace (84), U.S. nutritionist; taught at Columbia University, 1918–44; did research on energy metabolism of children: d. Knoxville, Tenn., Nov. 16.

McLevy, Jasper (84), U.S. public official; was a Socialist Party leader, and mayor of Bridgeport, 1933–57: d. Bridgeport, Conn., Nov. 19.

McMaster, Ross H. (81), Canadian industrialist; headed Steel Company of Canada from 1926 to 1957: d. Montreal, Que., Jan. 3.

McMaster, William H. (87), U.S. Methodist clergyman and educator; president, Mount Union College, 1908–38; professor of religious education, University of Miami, 1938–53: d. Coral Gables, Fla., Nov. 14.

McMath, Robert R. (70), U.S. astronomer and industrialist; directed McMath-Hulbert Observatory, University of Michigan, 1939–61: d. Bloomfield Hills, Mich., Jan. 2.

Maison, René (66), Belgian operatic tenor; sang leading roles with Metropolitan Opera Company, 1936–43, and with other groups: d. Mont-Dore, France, July 16.

Mann, Frank C. (75), U.S. medical researcher; director, Mayo Foundation's Institute of Experimental Medicine, 1914–48: d. Rochester, Minn., Sept. 30.

March, Juan (81), Spanish financier and public official; was leading financial supporter of Franco regime: d. Madrid, Spain, Mar. 10.

Marchese della Torretta, Pietro Tomasi (89), Italian diplomat and public official; was foreign minister (1921–22) and served as president of Italian Senate after World War II: d. Rome, Italy, Dec. 4.

Marie, Princess of Greece (81), widow of Prince George of Greece; translated works of Sigmund Freud and wrote other books: d. Saint-Tropez, France, Sept. 21.

Marlowe, Anthony (52), U.S. tenor; sang with operatic companies in Philadelphia, New York, Cincinnati, and other cities: d. Detroit, Mich., June 29.

Martin, William H. (71), U.S. plant pathologist and educator; dean of Rutgers College of Agriculture, 1939–60: d. New Brunswick, N.J., Jan. 3.

Martinez Barrio, Diego (78), Spanish public official; was president of Spanish Republic in Exile since 1939: d. Paris, France, Jan. 1.

Mathews, Clifton (82), U.S. jurist; senior member of Ninth Circuit Court of Appeals, San Francisco, 1935–53: d. San Francisco, Calif., Sept. 7.

°Mattei, Enrico (56), Italian industrialist: d. (airplane crash) near Milan, Italy, Oct. 27.

Mattingly, Garrett (62), U.S. historian: b. Washington, D.C., May 6, 1900; d. Oxford, England, Dec. 19, 1962. A graduate of Harvard (A.B., 1923), he taught at Northwestern University before joining the faculty at Long Island University (1928–42). In 1946 he became professor of history at Cooper Union, moving to Columbia University in 1948. Author of *Catherine of Aragon* (1942) and *Renaissance Diplomacy* (1955), he won a Pulitzer Prize Special Citation in 1960 for his best seller, *The Armada* (1959). He was serving as George Eastman visiting professor at Oxford at the time of his death.

Matulionis, Teofilo (89), Lithuanian bishop; served in Russia and was imprisoned by the Communists for 17 years (after 1922): d. Lithuania, Aug. 20.

Mayer, Rudolph L. (67), German-born microbiologist; discovered pyribenzamine, anti-hay fever drug: d. Washington, D.C., June 23.

Mei Yi-chi (73), Chinese educator; president, National Tsing Hua University, 1929–31; minister of education in Chinese Nationalist government, 1958–61: d. Taipei, Taiwan, May 19.

Merriman, Lord Sir Frank B. (81), British jurist; was solicitor general, 1928–29 and 1932–33: d. London, England, Jan. 18.

Meserve, Frederick H. (96), U.S. collector of Lincoln and Civil War photographs; published rare photograph collections: d. New York, N.Y., June 25.

Meštrović, Ivan (78), U.S. sculptor: b. Vrpolje, Croatia, Aug. 1, 1883; d. South Bend, Ind., Jan. 16, 1962. Called by Rodin "the greatest phenomenon among the sculptors," his genius and astonishing productivity won him early and lasting worldwide fame, especially for his modern religious sculptures. He was rector of the Academy of Fine Arts at Zagreb, Croatia in 1923–42, and became professor of fine arts at Syracuse University in 1947. From 1955 until his death, he served as resident sculptor at Notre Dame University.

Milburn, Lt. Gen. Frank W. (70), U.S. Army officer; commanded 5th Army in Korea, 1950–52: d. Missoula, Mont., Oct. 25.

Miller, Clem (45), U.S. congressman (Democratic) from California, from 1959; published *Member of the House: Letters of a Congressman* (1962): d. (airplane crash) near Eureka, Calif., Oct. 7.

Mills, C. Wright (46), U.S. sociologist, author, and educator; wrote *The Power Elite* (1956) and other sociological studies: d. Nyack, N.Y., Mar. 20.

Minciotti, Esther (74), Italian–U.S. actress; appeared in character roles on New York stage and in *Marty* (1955) and other films: d. New York, N.Y., Apr. 15.

Mitchell, Thomas (70), U.S. actor: b. Elizabeth, N.J., July 11, 1892; d. Beverly Hills, Calif., Dec. 17, 1962. He entered show business as a writer and made his debut as an actor in Shakespearean roles, touring in 1913–15 with Charles Coburn's troupe. Thereafter he appeared regularly on the stage until he made his first film, *Cloudy With Showers* (1934), which he also wrote. Mitchell was one of very few Hollywood actors to achieve stardom as a character actor. His many films included *Lost Horizon* (1936), his first major film; *Stagecoach* (1938), for which he won an Academy Award; and *Pocketful of Miracles* (1961), his last film. On the stage, he won an Antoinette Perry Award and a Donaldson Award in 1953 for his performance in the musical *Hazel Flagg*. In the previous year he won a television Emmy Award.

Mollison, Irvin C. (63), U.S. jurist; served on U.S. Customs Court from 1945; was first Negro appointed to federal bench in U.S.: d. Chicago, Ill., May 5.

Mondor, Henri (76), French poet, critic, and physician; published more than 40 books on medicine and literature: d. Neuilly-sur-Seine, France, Apr. 7.

°Monroe, Marilyn (36), U.S. film star: d. (suicide) Los Angeles, Calif., Aug. 5.

Moore, Victor (Frederick) (86), U.S. comedian: b. Hammonton, N.J., Feb. 24, 1876; d. East Islip, N.Y., July 23, 1962. The comedy symbol of the timid soul—the meek and unassuming little man who is victimized by unscrupulous, hardheaded bullies—he appeared first in vaudeville and then on the legitimate stage, especially in musical comedy. His most famous portrayal was as Vice President Throttlebottom in *Of Thee I Sing* (1931). He was also seen in *Oh, Kay!* (1926), *Funny Face* (1927), *Let 'Em Eat Cake* (1933), *Anything Goes* (1934), *Louisiana Purchase* (1940), a revival of *On Borrowed Time* (1953), and, finally, a revival of *Carousel* (1957). He also played in motion pictures and on radio and television.

Morgan-Powell, Samuel (95), English-Canadian journalist; served consecutively as news editor, drama critic, and editor in chief of the Montreal *Star* from 1908 to 1945; d. Montreal, Que., June 4.

Mortensen, Jess (54), U.S. track and field coach; his University of Southern California teams won seven national championships (after 1951): d. Los Angeles, Calif., Feb. 19.

Moulton, Arthur W. (89), U.S. clergyman; Protestant Episcopal bishop of Utah, 1920–46: d. Salt Lake City, Utah, Aug. 18.

°Muench, Aloisius Joseph (73), U.S. cardinal: d. Rome, Italy, Feb. 15.

Mulki, Fawzi el- (52), Jordanian premier (1953–54) and chief delegate to United Nations (from 1961): d. New York, N.Y., Jan. 10.

Murdoch, James Y. (71), Canadian industrialist; founded Noranda Mines, Ltd., and directed other industrial enterprises: d. Toronto, Ont., Apr. 18.

Murphy, Arthur E. (60), U.S. philosopher and educator; headed philosophy departments of four universities (Illinois, Cornell, Washington, and Texas); published *The Uses of Reason* (1943): d. Austin, Texas, May 12.

Murphy, Howard A. (65), U.S. musicologist; chairman of Department of Theory, Manhattan School of Music, from 1950; wrote books on musical techniques: d. New York, N.Y., Feb. 24.

Murphy, James J. (64), U.S. Democratic congressman from New York, 1949–53: d. New York, N.Y., Oct. 19.

Murphy, John W. (59), U.S. representative (Democrat) from Pennsylvania (1943–46) and federal district court judge (from 1946): d. Scranton, Pa., Mar. 28.

Nelson, Charles P. (54), U.S. congressman (Republican) from Maine, 1949–57: d. Augusta, Me., June 8.

Neumann, Therese (64), German ascetic who bore a religious stigmata (from 1926) and was a figure of much

religious and scientific discussion: d. Konnersreuth, Germany, Sept. 18.

Newberry, Edgar A. (75), U.S. retail merchant; headed J. J. Newberry Company, variety-department store chain, from 1939: d. New York, N.Y., Jan. 25.

Newsom, Bobo (Louis Norman) (55), U.S. baseball pitcher for nine major league clubs, 1929–53; noted as a colorful personality: d. Orlando, Fla., Dec. 7.

Neyland, Brig. Gen. Robert R. (70), U.S. football coach and former Army officer; coached football teams of University of Tennessee (1926–53) to national prominence: d. New Orleans, La., Mar. 28.

Nichols, Hobart (93), U.S. painter whose landscapes are in many museums; president of National Academy of Design, 1939–49: d. New York, N.Y., Aug. 14.

Niebuhr, H(elmut) Richard (67), U.S. theologian: b. Wright City, Mo., Sept. 3, 1894; d. Greenfield, Mass., July 5, 1962. After study at Eden Theological Seminary, Webster Groves, Mo., was ordained (1916) a minister in the Evangelical and Reformed Church. Later attended Yale University (B.D., 1923; Ph.D., 1924). Served as president of Elmhurst (Ill.) College (1924–27), and from 1931 was on the faculty of Yale University Divinity School, where he held the post of Sterling professor of theology and Christian ethics (from 1954).

Noyce, Wilfrid (43), English mountain climber who was member of British expedition which scaled Mt. Everest in 1953: d. (mountain-climbing accident) Mt. Garmo, USSR, July 24.

Nutter, Donald G. (46), U.S. public official; governor (Republican) of Montana from 1961: d. in airplane crash near Wolf Creek, Mont., Jan. 25.

O'Brien, William D. (83), U.S. Roman Catholic archbishop; auxiliary archbishop of Chicago (from 1953); president, Catholic Church Extension Society of U.S. (from 1925): d. San Pierre, Ind., Feb. 19.

Ogburn, Charlton (79), U.S. lawyer; was counsel for American Federation of Labor, 1933–38, and Reconstruction Finance Corporation, 1940–43; author of several books: d. New York, N.Y., Feb. 23.

Olinsky, Ivan G. (84), U.S. artist noted for portraits of prominent persons: d. New York, N.Y., Feb. 11.

Olson, Culbert L. (85), U.S. public official; Democratic governor of California, 1939–43: d. Los Angeles, Calif., Apr. 13.

O'Mahoney, Joseph Christopher (78), former U.S. senator from Wyoming: b. Chelsea, Mass., Nov. 5, 1884; d. Bethesda, Md., Dec. 1, 1962. Educated at Columbia University, he worked for newspapers in Boulder, Colo., and Cheyenne, Wyo., and then was graduated from Georgetown University Law School (1920). He moved up in the Democratic Party and was vice chairman for the 1932 and 1936 national campaigns. Appointed (1933) to fill out the term of Sen. John B. Kendrick, he was elected to the first of three successive Senate terms in 1934, was defeated in 1952, but won election again in 1954. A sponsor and advocate of liberal legislation, he became known as a stanch foe of "big business"—a reputation which he enhanced as chairman of several Senate inquiries into the activities of giant corporations.

O'Neill, Steve (69), U.S. baseball player and manager; led Detroit to World Series victory in 1945, and managed three other clubs: d. Cleveland, Ohio, Jan. 26.

Orchard, John E. (68), U.S. educator and Far Eastern specialist; professor of economic geography, Columbia University, 1938–61: d. Charlottesville, Va., Jan. 28.

Page, Sir Frederick Handley (76), British aircraft manufacturer: b. Nov. 15, 1885; d. London, England, April 21, 1962. In 1909, founded Handley Page, Ltd., one of Britain's leading aircraft companies, and was its chairman and managing director. Invented (1921) the slotted wing, which enables aircraft to retain lift when flying below normal speeds. Built Britain's first large-scale commercial plane, the 40-seat Handley Page Hannibal, and manufactured bombers, including 60,000 Halifax bombers during World War II and the contemporary Victor bombers. He was knighted in 1942.

Panico, Giovanni (67), Italian cardinal: b. Tricase, near Otranto, Italy, April 12, 1895; d. Tricase, July 7, 1962. He was ordained a priest in 1919, and four years later became a member of the Vatican diplomatic corps. Named archbishop in 1935, he subsequently served as chief papal representative to Australia (1935–48), Peru (1948–53), Canada (1953–59), and Portugal (1959–62). Elevated to cardinal on March 19, 1962.

Papanicolaou, George N. (78), U.S. medical researcher; discovered Pap smear test for diagnosing uterine cancer: d. Miami, Fla., Feb. 19.

Parker, Cola G. (72), U.S. business executive; president of Kimberly-Clark Corporation (1942–53), and of National Association of Manufacturers (1956): d. Menasha, Wis., June 27.

Parsons, Alice Beal (75), U.S. author; published eight novels, including *The Mountain* (1944): d. Nyack, N.Y., Apr. 14.

Patterson, Charles L. (56), U.S. railroad executive and chairman of New York City Transit Authority (from 1955): d. New York, N.Y., Oct. 13.

Patterson, Morehead (64), U.S. industrialist: b. Durham, N.C., Oct. 9, 1897; d. Washington, D.C., Aug. 5, 1962. Under his chairmanship (since 1943), American Machine and Foundry Co. expanded its sales from $15 million to $500 million. His development of the Automatic Pinspotter for bowling alleys was largely responsible for this gain and for the greatly increased popularity of bowling since the 1950's. In 1954 he represented the United States at the U.N. Committee on Disarmament, and in 1954–55 (with the rank of ambassador) at the International Atomic Energy Agency negotiations in London.

Paul, Josephine Bay (61), U.S. business executive and sportswoman; was president of A. M. Kidder and Co. brokerage firm (from 1956), and chairman of American Export Lines (1955–60): d. New York, N.Y., Aug. 6.

Payne, Kenneth W. (72), U.S. journalist; executive editor, *The Reader's Digest*, 1940–61: d. Pound Ridge, N.Y., Oct. 19.

Peacock, Sir Edward R. (91), Canadian-born British financier; formerly financial adviser to royal family, and a director of Bank of England: d. London, England, Nov. 19.

Pepper, O. H. Perry (77), U.S. physician; formerly professor of medicine, head of medical department (1937–47), University of Pennsylvania: d. Philadelphia, Pa., Jan. 28.

Percival, Milton F. (79), U.S. radiologist; founder and director (1912–52) of department of radiology, Methodist Hospital, Philadelphia; co-discoverer of first radium detector: d. Philadelphia, Pa., Jan. 17.

Pérez de Ayala, Rámon (81), Spanish novelist and diplomat; helped to found Spanish republic in 1931; ambassador to England, 1931–36: d. Madrid, Spain, Aug. 5.

Perrin, Porter G. (66), U.S. philologist; professor of English, University of Washington, from 1947; wrote textbooks on English usage: d. Seattle, Wash., Sept. 9.

Petri, Egon (81), German pianist who made many concert appearances in Europe and U.S.; formerly taught at University of California: d. Berkeley, Calif., May 27.

Pevsner, Antoine (76), Russian-French sculptor who founded Constructivist school (with his brother, Naum Gabo): d. Paris, France, Apr. 12.

°Piccard, Auguste (78), Swiss explorer: d. Lausanne, Switzerland, Mar. 24.

Pogodin, Nikolai F. (61), Soviet playwright; won Stalin and Lenin prizes for trilogy about Lenin (1937–58): d. Moscow, USSR, Sept. 19.

Pollard, Snub (Harry) (72), U.S. comedian who appeared in about 500 silent films: d. Burbank, Calif., Jan. 19.

Portinari, Cândido (58), Brazilian painter: b. Brodowski, Brazil, Dec. 29, 1903; d. Rio de Janeiro, Brazil, Feb. 6, 1962. Brazil's best-known contemporary painter, he most often portrayed the life of the common people of his native state, São Paulo. His paintings are exhibited in major museums of the U.S., Latin America, and western Europe. He studied at the National School of Fine Arts, Rio de Janeiro, and after 1930 became a fashionable portrait painter. In 1939 he executed murals for the Brazilian Pavilion at the New York World's Fair; other murals are in the Library of Congress and in the UN General Assembly Hall. A well-known Communist, he was active in São Paulo politics.

Potter, Charles F. (76), U.S. Unitarian minister; founded (1929) First Humanist Society of New York; wrote many books on religion: d. New York, N.Y., Oct. 4.

Prescott, Samuel C. (89), U.S. biologist and educator; was first dean of School of Science, Massachusetts Institute of Technology (1932–42); pioneered in industrial biology: d. Boston, Mass., Mar. 19.

Putnam, Nina W. (77), U.S. author of 12 popular novels and many short stories: d. Cuernavaca, Mexico, Mar. 8.

Sir Eugene Goossens (*Conductor*)

UPI

Hermann Hesse (*Novelist, Poet*)

GERMAN INF. CENTER

Henry I. Hodes (*Army Commander*)

WIDE WORLD

Irving M. Ives (*U.S. Senator*)

WIDE WORLD

Ernie Kovacs (*Comedian*)

NBC

Ramirez, Gen. Pedro P. (78), Argentine army officer; headed military coup and served as president of Argentina, 1943–44: d. Buenos Aires, Argentina, June 11.

Randall, Edwin J. (92), U.S. clergyman; suffragan bishop, Protestant Episcopal Diocese of Chicago, 1939–47: d. Evanston, Ill., June 13.

Ranger, Richard H. (72), U.S. engineer; invented first long-range wireless picture transmitter (1924) and other electronic devices: d. Newark, N.J., Jan. 10.

Raymond, Air Vice Marshal Adelard (72), Canadian Air Force officer; helped to organize training depots in World War II: d. Montreal, Que., Feb. 23.

Read, Granville M. (68), U.S. engineer; chief engineer of E. I. du Pont de Nemours and Co., 1946–59; directed construction of war plants, including atomic energy installations: d. Wilmington, Del., Dec. 1.

Resor, Stanley B. (83), U.S. advertising executive; president (1916–55) and board chairman (1955–61) of J. Walter Thompson Company: d. New York, N.Y., Oct. 29.

Rieke, Marcus C. (52), U.S. clergyman and educator; president, Texas Lutheran College, from 1959: d. Seguin, Texas, May 19.

Riley, John J. (66), U.S. congressman (Democrat) from South Carolina, 1945–49 and from 1951: d. Myrtle Beach, S.C., Jan. 2.

Rinfret, Thibeaudeau (83), Canadian jurist: b. Montreal, Que., June 22, 1879; d. Montreal, July 25, 1962. He was chief justice of Canada from 1944 to 1954, and in 1947 was appointed by George VI to the Imperial Privy Council. He received his law degree from McGill University in 1900, was a king's counsel at the age of 33, and served as judge on the Quebec Superior Court from 1922 to 1924, when he was named to the Canadian Supreme Court. After his retirement in 1954 he was in charge of the revision of Quebec's civil code.

Rittenberg, Louis (70), U.S. editor and author; supervised revision of *Universal Jewish Encyclopedia*, from 1957: d. New York, N.Y., July 7.

Rivers, Thomas M. (73), U.S. medical researcher; headed program that helped to develop Salk and Sabin vaccines against poliomyelitis: d. New York, N.Y., May 12.

Robb, Arthur T. (69), U.S. journalist; was editor of *Editor and Publisher*, 1938–44; published *The South and Its Newspapers* (1954): d. New York, N.Y., Nov. 22.

Roberts, Maj. Gen. John H. (70), Canadian military officer; commanded Canadian forces during Allied raid at Dieppe, France, in 1942: d. St. Helier, England, Dec. 17.

Rock, Joseph F. C. (79), U.S. botanist; led several botanical expeditions to western China; wrote books on botany of Hawaii: d. Honolulu, Hawaii, Dec. 5.

Rombauer, Irma S. (86), U.S. culinary writer; author of *The Joy of Cooking* (1936) and other cookbooks: d. St. Louis, Mo., Oct. 14.

Rooney, Pat(rick) (82), U.S. dancer and songwriter: b. New York, N.Y., July 4, 1880; d. New York, Sept. 9, 1962. The son of singer and dancer Patrick James Rooney, he was identified with a soft-shoe clog that he originated and danced to his song *The Daughter of Rosie O'Grady*. He was in his 72d year of show business when he died. Rooney's first musical comedy role was *In Atlantic City* (1897); thereafter he became famous for his vaudeville appearances at Tony Pastor's and the Palace theaters in New York. With his first wife, Marion Bent, he formed a dance team that performed for 27 years until her retirement in 1932. He was last seen on Broadway as Arvide Abernathy in *Guys and Dolls* (1950).

Roosevelt, André (83), U.S. explorer and photographer; filmed Bali in late 1920's and South American volcanoes in 1930's: d. Port-au-Prince, Haiti, (reported) July 30.

°Roosevelt, (Anna) Eleanor (78), U.S. humanitarian, writer, and widow of President Franklin D. Roosevelt: d. New York, N.Y., Nov. 7.

Rosenthal, Adolph H. (56), U.S. physicist; invented electronic devices for television and microwave communications, including the dark trace cathode ray tube: d. New York, N.Y., July 21.

Rowley, George (69), U.S. art critic; taught at Princeton University from 1925 to 1960; wrote books on Chinese painting: d. Princeton, N.J., Jan. 4.

Roy, Sharat J. (64), U.S. geologist; chief curator of Chicago Natural History Museum from 1947; was authority on volcanoes and meteorites: d. Chicago, Ill., Apr. 17.

Rusk, Ralph L. (73), U.S. literary critic; professor of English, Columbia University, 1935–54; wrote *Life of Ralph Waldo Emerson* (1949) and other works: d. New York, N.Y., June 30.

Russell, Doris A. (59), U.S. educator; chairman of English department, Vassar College, from 1960: d. Bronxville, N.Y., Apr. 24.

Sackville-West, Victoria Mary (70), English novelist and poet; b. Knole, near Sevenoaks, Kent, England, March 9, 1892; d. Sissinghurst Castle, near Tunbridge Wells, Kent, England, June 2, 1962. She is best known for her novels *The Edwardians* (1930) and *All Passion Spent* (1922), and for her poems *The Land* (1926) and *The Garden* (1946), for which she won the Hawthorndon Prize and the Heinemann Prize, respectively. Her other books include *Heritage* (1919), *Knole and the Sackvilles* (1922), and *No Sign Posts in the Sea* (1960). She was the wife of Sir Harold Nicholson, to whom she was married in 1913.

Sahle Selassie (31), prince of Ethiopia: d. Addis Ababa, Ethiopia, Apr. 23.

Salem, Maj. Salah (42), Egyptian army officer and cabinet minister (1952–55); was a leader of coup that overthrew monarchy: d. Cairo, United Arab Republic, Feb. 18.

Salisbury, Frank O. (87), English painter noted for portraits of Winston Churchill and other famous persons: d. London, England, Aug. 31.

Sandström, (Alfred) Emil (Fredrik) (75), Swedish jurist: b. Nykoping, Sweden, Oct. 11, 1886; d. Stockholm, Sweden, July 6, 1962. A member of the Swedish Supreme Court (1931–33 and 1935–43), including service as chief justice, he was judge of the Mixed Court in Egypt (1918–26), president of the Third Division of the Anglo-German Mixed Arbitration Tribunal (1926–29), chairman of the U.N. Special Committee on Palestine (1947), a member of the U.N. International Law Commission (1948), and, at various times, Swedish representative on the International Court of Arbitration. From 1950 to 1959 he was chairman of the board of governors of the International League of Red Cross Societies.

Sargent, George (79), U.S. golf champion; won U.S. Open in 1909 and Canadian Open in 1912: d. Atlanta, Ga., June 18.

Sarraut, Albert (90), French politician: b. Bordeaux, France, July 28, 1872; d. Paris, Nov. 26, 1962. First elected to the Chamber of Deputies in 1902, he served for the next half-century as governor general of Indochina (1911–14 and 1916–19), ambassador to Turkey (1925), senator (1926), cabinet minister in several governments, premier (1933 and 1936), and, after World War II, president of the French Union (1958). He was also a newspaperman and author.

Scavenius, Erik (85), Danish public official; premier during German occupation (1942–45), and foreign minister (1909–10; 1913–20; 1940–42): d. Copenhagen, Denmark, Nov. 29.

Schafer, John C. (69), U.S. congressman (Republican) from Wisconsin, 1923–33 and 1939–41: d. Pewaukee, Wis., June 9.

Schnee, Charles (46), U.S. film scriptwriter; won 1952 Academy Award for screenplay of *The Bad and the Beautiful*: d. Hollywood, Calif., Nov. 29.

Schoeppel, Andrew Frank (67), U.S. senator and former governor of Kansas: b. near Claflin, Kans., Nov. 23, 1894; d. Bethesda, Md., Jan. 21, 1962. Following law studies at the University of Nebraska, he was admitted to the Kansas bar in 1923. Elected Republican governor of Kansas in 1942 (re-elected 1944) and U.S. senator in 1948 (re-elected 1954 and 1960). Served as a member of the Senate Interstate, Foreign Commerce, and Appropriations committees, and chairman of the Republican Committee on Committees.

Schrader, Franz (71), U.S. zoologist; professor (1930–59) and chairman (1937–40; 1946–49) of zoology department, Columbia University; wrote *The Sex Chromosomes* (1927) and other works: d. Durham, N.C., Mar. 22.

See, Thomas J. J. (96), U.S. astronomer, educator, and author; discovered about 600 stellar systems; wrote books on astronomy, physics, and mathematics: d. Oakland, Calif., July 4.

Selekman, Benjamin M. (69), U.S. educator and authority on labor relations; taught at Harvard University from 1935 to 1961: d. Boston, Mass., Apr. 7.

Seligmann, Kurt (61), Swiss–U.S. surrealist painter: d. (shooting accident) Sugar Loaf, N.Y., Jan. 2.

Sellery, George C. (90), U.S. educator; professor of history (1909–42) and dean (1919–42), University of Wisconsin College of Letters and Sciences: d. Madison, Wis., Jan. 21.

Sessions, James M. (80), U.S. painter noted for seascapes and paintings of naval battles: d. Chicago, Ill., Nov. 14.

Sharpe, Merrell Q. (74), U.S. public official; Republican governor of South Dakota, 1943–47: d. Kennebec, S. Dak., Jan. 21.

Sheehan, Robert J. (62), U.S. Roman Catholic clergyman; head of biology department, University of Notre Dame, 1945–55; was authority on histology and medical ethics: d. South Bend, Ind., Feb. 28.

Shepley, Henry R. (75), U.S. architect; designed college and hospital buildings in U.S., and World War II American Cemetery and Memorial Chapel in the Netherlands: d. Boston, Mass., Nov. 24.

Shepperson, Archibald B. (65), U.S. literary critic and educator; professor of English, University of Virginia, from 1946; former editor of *The Virginia Quarterly Review*: d. Charlottesville, Va., July 24.

Sherburn, George W. (78), U.S. literary critic; taught English literature at Harvard University, 1939–52; wrote books on Milton and Pope: d. Bradenton, Fla., Nov. 28.

Shields, Paul V. (73), U.S. financier; senior partner in Wall Street firm of Shields & Co.; financial adviser to Franklin D. Roosevelt: d. New York, N.Y., Dec. 24.

Shotton, Burt(on) (77), U.S. baseball player and manager; directed Brooklyn Dodgers to National League pennants in 1947 and 1949: d. near Lake Wales, Fla., July 30.

Shubert, John J. (53), U.S. theater owner and play producer; was general manager of the Shubert chain of 24 theaters since late 1950's: d. (aboard train en route to Clearwater, Fla.) Nov. 17.

Sillitoe, Sir Percy J. (73), British government official;

headed military counterespionage service from 1946 to 1953: d. Eastbourne, England, Apr. 5.

Simovic, Gen. Dusan (80), Yugoslav army officer and premier in 1941 during Nazi invasion: d. Belgrade, Yugoslavia, Aug. 27.

Skidmore, Louis (65), U.S. architect: b. Lawrenceburg, Ind., April 8, 1897; d. Winter Haven, Fla., Sept. 27, 1962. He was a founding partner (1936) of Skidmore, Owings & Merrill, designers of such notable structures as Lever House (New York 1952), the Inland Steel Building (Chicago 1958), the Chase Manhattan Building (New York 1961), and the Air Force Academy (Colorado Springs 1960). A graduate of Bradley Polytechnic Institute, Peoria, Ill. (1917), he did postgraduate work at Massachusetts Institute of Technology, and completed his studies in Rome and Paris. From 1929 to 1935 he was director of design for Chicago's Century of Progress Exposition. He retired in 1955, and in 1957 was awarded the Gold Medal of the American Institute of Architects.

Slawoj-Skladkowski, Gen. Felicien (77), Polish army officer and premier (1936–39): d. London, England, Aug. 31.

Sloane, Isabel Dodge (65?), U.S. socialite; owner of Brookmeade horse racing stable: d. West Palm Beach, Fla., Mar. 9.

Smith, Forrest (76), U.S. public official; Democratic governor of Missouri, 1949–53: d. Gulfport, Miss., Mar. 8.

Smith, G. Morris (70), U.S. Lutheran clergyman and educator; president of Susquehanna University, 1928–59: d. Philadelphia, Pa., Jan. 18.

Smith, Jose L., Sr. (82), U.S. congressman (Democratic) from West Virginia, 1929–45: d. Beckley, W. Va., Aug. 23.

Smith, Robert L. (71), U.S. manufacturer; board chairman, Smith Brothers, Inc., cough drop manufacturers, from 1955: d. Poughkeepsie, N.Y., Jan. 7.

Snyder, Hartland S. (49), U.S. physicist; co-discoverer of alternating gradient focusing principle that led to construction of world's most powerful nuclear accelerator at Brookhaven National Laboratory: d. Berkeley, Calif., May 22.

Soblen, Robert A. (61), Lithuanian–U.S. Communist spy was convicted (1961) by U.S. for wartime espionage and fled abroad (1962) to escape imprisonment: d. (suicide) London, England, Sept. 11. (See also ISRAEL.)

Sokoloff, Valdimir (72), Russian actor who played character roles in many German, French, and American films: d. Hollywood, Calif., Feb. 14.

Sokolsky, George E. (69), U.S. newspaper columnist: b. Utica, N.Y., Sept. 5, 1893; d. New York, N.Y., Dec. 12, 1962. He left Columbia University's School of Journalism to observe the Russian Revolution firsthand. Expelled by the Soviets, he went to China where he spent 14 years as a newspaper correspondent. Back in the United States (1934), he authored a number of books, wrote for the New York *Herald Tribune* (1935–40), and began in 1940 his well-known syndicated column. A contributor to *The Encyclopedia Americana*, he also served until his death as editorial writer for the New York *Mirror* (from 1946) and radio commentator (from 1948). An outspoken right-wing conservative, he was noted for his anti-Communist views and his militant defense of the free enterprise system.

Spalding, Samuel C. (83), U.S. Unitarian clergyman and author of over 100 Nick Carter detective novels: d. Monterey, Mass., Feb. 9.

Spalding, Walter R. (96), U.S. musicologist; professor of harmony and chairman of music department, Harvard University, 1906–32: d. Cambridge, Mass., Feb. 11.

Speicher, Eugene (79), U.S. artist; noted for portraits and landscapes in conservative style: d. Woodstock, N.Y., May 11.

Spink, J. G. Taylor (74), U.S. publisher and prominent baseball figure; published *The Sporting News*, from 1914: d. Clayton, Mo., Dec. 7.

Stalin, Vasily J. (40?), Soviet air force officer and son of the late Premier Joseph V. Stalin: d. Kazan, USSR, (reported) Apr. 18.

Stanbury, William S. (57), Canadian physician; was national commissioner of Canadian Red Cross Society from 1949: d. San Juan, Puerto Rico, Nov. 6.

Starnes, Joe (66), U.S. congressman (Democratic) from Alabama, 1935–45: d. Washington, D.C., Jan. 9.

Steacie, Edgar W. R. (61), Canadian chemist and educator; specialized in photochemistry and gas reaction; president, Canadian National Research Council, from 1952: d. Ottawa, Ont., Aug. 28.

°Stefansson, Vilhjalmur (82), Canadian-born Icelandic explorer and author: d. Hanover, N.H., Aug. 26.

Stelle, John (70), U.S. public official; Democratic governor of Illinois, 1940–41; national commander of American Legion, 1945–46: d. St. Louis, Mo., July 6.

Stevenson, Burton E(gbert) (89), U.S. author and anthologist; b. Chillicothe, Ohio, Nov. 9, 1872; d. Chillicothe, May 13, 1962. Educated at Princeton University, he became a journalist and for 58 years (to 1957) was librarian of the Chillicothe Public Library. Although he wrote about 40 novels, travel books, and mystery and children's stories, he is best known as the compiler and editor of several anthologies, including *The Home Book of Verse* (1912), *The Home Book of Quotations* (1934), and *The Home Book of Proverbs, Maxims and Familiar Phrases* (1948).

Storck, Herman I. (84), U.S. Roman Catholic clergyman and educator; founded (1928) National Layman's Retreat Movement: d. Baltimore, Md., Feb. 6.

Stranahan, Robert A., Sr. (75), U.S. manufacturer; founded (1908) and directed Champion Spark Plug Company, and headed other firms: d. Toledo, Ohio, Feb. 9.

Striker, Fran (58), U.S. radio scriptwriter who created *The Lone Ranger* program: d. (automobile accident) near Buffalo, N.Y., Sept. 4.

Strong, William D. (62), U.S. anthropologist; authority on South American Indian civilization; professor of anthropology, Columbia University, from 1937: d. Kent Cliffs, N.Y., Jan. 29.

Stuart, J. Leighton (86), U.S. educator and diplomat; president, Yenching University (Peking, China), 1919–46; ambassador to China, 1946–49: d. Washington, D.C., Sept. 19.

Sturges, Wesley A. (69), U.S. lawyer and educator; dean, Yale Law School (1945–54) and University of Miami Law School (from 1961): d. Miami, Fla., Nov. 9.

Sumners, Hatton W. (87), U.S. congressman (Democratic) from Texas, 1913–47: d. Dallas, Texas, Apr. 19.

Swann, William F. G. (77), U.S. physicist and authority on cosmic radiation; director, Bartol Research Foundation, 1927–59: d. Swarthmore, Pa., Jan. 29.

Tani, Masayuki (73), Japanese diplomat; foreign minister, 1942–43; ambassador to U.S., 1956–57: d. Tokyo, Japan, Oct. 26.

Tawney, Richard Henry (81), British economic historian: b. Calcutta, India, 1880; d. London, England, Jan. 16, 1962. Educated at Rugby and Oxford, he was professor of economic history at the University of London (1931–49). The best known of his many books is *Religion and the Rise of Capitalism* (1926), a standard text in its field. His other books include *The Aquisitive Society* (1926), *Equality* (1931), and *Business and Politics under James I* (1958).

Tcheyshvili, Alexander N. (59), Soviet author; won Stalin Prize in 1950 for his novel, *Lelo;* defected to West in 1958: d. Alsfeld, West Germany, Sept. 6.

Teagle, Walter C. (83), U.S. industrialist; headed Standard Oil Company (New Jersey) from 1917 to 1942: d. Byram, Conn., Jan. 9.

Telva, Marion (64), U.S. operatic singer; was a leading mezzo-soprano with Metropolitan Opera Company from 1920 to 1931: d. Norwalk, Conn., Oct. 23.

Templeton, Dink (Robert L.) (65), U.S. track and field coach, at Stanford University, 1921–39: d. Palo Alto, Calif., Aug. 7.

Thach, Vice Adm. James H., Jr. (61), U.S. naval officer; chief of staff, NATO Atlantic Fleet, 1955–57: d. Old Lyme, Conn., July 4.

Thaike, Sao Shwe (66?), Burmese ruler and politician: b. 1896(?); d. Rangoon, Burma, Nov. 21, 1962. He served with the Burma Rifles in World War I and in the Burma Army in World War II. Sawbwa (chieftain) of Yawnghwe in the Shan State since 1929, he was elected first provisional president of independent Burma in 1948. He was serving as speaker of the Chamber of Nationalities when arrested by the Burmese Revolutionary Government in 1960, and he died in custody.

Theoklitos or Theoclitos (secular name, Panayitis Panayitopoulos) (71), Greek prelate: b. Demetsana, Greece, 1891; d. Athens, Greece, Jan. 8, 1962. Following studies

Thomas Mitchell (*Actor*)

WIDE WORLD

Victor Moore (*Actor*)

WIDE WORLD

Joseph C. O'Mahoney (*U.S. Senator*)

WIDE WORLD

George E. Sokolsky (*Columnist*)

WIDE WORLD

Grover A. Whalen (*Public Official*)

WIDE WORLD

at the University of Athens, he was ordained a priest in the Greek Orthodox Church in 1923. Served as secretary in chief of the Holy Synod (1923–24), assistant bishop of Stavroupolis (1923–31), metropolitan of Kalavryta and Aegilia (1931–44), and metropolitan of Patras (1944–57), and was chosen archbishop of Athens and primate of all Greece in 1957.

Thomas, Sir Shenton (82), British high commissioner for the Malay States and governor of the Straits Settlements, 1934–42: d. London, England, Jan. 16.

Tobé. See Davis, Taube C.

Topchiev, Alexander V. (55), Soviet organic chemist: b. 1907; d. Moscow, USSR, Dec. 27, 1962. He taught (1932–1940) at the Moscow Chemical Technology Institute, from which he was graduated, and the Technological Institute of Food Industry, and became a professor and then director of the Moscow Petroleum Institute (1940–47). A member of the Soviet Academy of Sciences and its chief scientific secretary (1949–58), he headed its Department of Chemistry and Petroleum Technology, becoming a vice president in 1958. A specialist in hydrocarbons, it is reported that he helped develop booster rocket fuels for the Soviet space effort.

Trevelyan, George Macaulay (86), English historian: b. Welcombe, near Stratford-on-Avon, England, Feb. 16, 1876; d. Cambridge, England, July 21, 1962. The youngest son of the statesman and historian, Sir George Otto Trevelyan (1838–1928), he studied at Harrow and at Trinity College, Cambridge University, where he later served as regius professor of modern history (1927–40) and master of Trinity (1940–51). He was also chancellor of Durham University from 1949 to 1957. His many books include *Garibaldi's Defense of the Roman Republic* (1907), *Garibaldi and the Thousand* (1909), *Garibaldi and the Making of Italy* (1911), *British History in the Nineteenth Century* (1922; 2d ed., 1938), *History of England* (1926; 3d ed., reissued with corrections, 1952), *England Under Queen Anne: Blenheim* (1930); *Ramelies and the Union with Scotland*, 1932; *The Peace and the Protestant Succession* (1934), *The English Revolution, 1688–1689* (1938; new ed., 1946), *English Social History: A Survey of Six Centuries* (1942; English ed., 1944), *An Autobiography and Other Essays* (1949), *A Layman's Love of Letters* (1954), and *A Shortened History of England* (1959). He was awarded the Order of Merit in 1930.

Trotsky, Natalia I. S. (79), Russian Communist revolutionary; widow of Leon Trotsky, former Soviet leader: d. Corbeil, France, Jan. 23.

Tschumi, Jean (57), Swiss architect; designed headquarters of UN World Health Organization in Geneva, Switzerland, and other notable buildings: d. on train en route to Lausanne, Switzerland, Jan. 25.

Van Pelt, John V. (88), U.S. architect and educator; taught at Cornell and Columbia universities; designed many churches: d. Patchogue, N.Y., May 30.

Viereck, George S. (77), German-born U.S. writer and magazine editor; was pro-German propagandist in World Wars I and II: d. Holyoke, Mass., Mar. 18.

Vincent, Jesse G. (82), U.S. inventor and automobile executive; held some 400 patents, including first V-12 automotive engine: d. Detroit, Mich., Apr. 20.

Volgin, Vyacheslav P. (83), Soviet historian and educator; as president of Moscow University (1921–25), was instrumental in establishing Soviet system of higher education: d. Moscow, USSR, July 3.

Wald, Jerry (Jerome Irving) (49), U.S. motion picture producer: b. New York, N.Y., Sept. 16, 1912; d. Hollywood, Calif., July 13, 1962. Wrote a radio column for the New York *Evening Graphic* and produced motion picture short subjects before going to Hollywood in 1933 as a screen writer. Became an associate producer at Warner Brothers in 1941 and, in 1942, producer. With Norman Krasna, established (1950) Wald-Krasna Productions. Later, was vice president and executive producer of Columbia Pictures (1953–56) and head (from 1956) of Jerry Wald Productions, an independent company. His films include *Objective, Burma!* (1945), *Mildred Pierce* (1945), *Johnny Belinda* (1948), *From Here to Eternity* (1953), *Picnic* (1956), and *Sons and Lovers* (1960).

Walker, Stanley (64), U.S. journalist; published books about newspapers, politics, and notable personalities; city editor of New York *Herald Tribune*, 1929–35: d. (suicide) Lampasas, Texas, Nov. 25.

°Walter, Bruno (85), German–U.S. orchestra conductor: d. Beverly Hills, Calif., Feb. 17.

Washburn, Henry B. (92), U.S. theologian and educator; dean of Episcopal Theological School, 1920–40: d. Cambridge, Mass., Apr. 25.

Watson, Lucile (83), U.S. actress: b. Quebec, Quebec, May 27, 1879; d. New York, N.Y., June 24, 1962. Made her stage debut in Ottawa in 1900 and, after study at the American Academy of Dramatic Arts, was first seen in New York in 1902 in *The Wisdom of the Wise*. During a career that included some 50 Broadway appearances, she became famous for her portrayal of sophisticated society women and, later, of wise, sometimes acerb dowagers. Best known for her performances in *No More Ladies* (1934), *Yes, My Darling Daughter* (1937), *Watch on the Rhine* (1941), and *Ring Around the Moon* (1950). She also appeared in many motion pictures and on television.

Watts, Lyle F. (72), U.S. government official; chief of U.S. Forest Service, 1943–52: d. Portland, Oreg., June 15.

Wechsler, Israel S. (76), U.S. neurologist; professor of neurology, Columbia University, from 1931; president, American Neurological Association, 1957: d. New York, N.Y., Dec. 6.

Welsh, Sir William L. (70), British air force marshal; commanded Royal Air Force in North Africa, 1942–43: d. Farmington, Conn., Jan. 2.

Wenley, Archibald G. (63), U.S. authority on Oriental art and culture; director of Freer Gallery of Art, from 1943: d. Washington, D.C., Feb. 17.

Werle, Edward C. (56), U.S. financier; board chairman of New York Curb (later, American) Exchange, 1944–47, and of New York Stock Exchange, 1958–61: d. Bay Shore, N.Y., Jan. 7.

Weve, Henricus J. M. (73), Dutch ophthalmologist; noted for surgical treatment of eye retina and tumors: d. Utrecht, the Netherlands, Jan. 3.

Whalen, Grover A. (in full, Grover Michael Aloysius Augustine Whalen) (75), U.S. public official and businessman: b. New York, N.Y., June 2, 1886; d. New York, April 20, 1962. He was an early supporter of the New York mayoralty candidacy of John F. Hylan, and, after Hylan's election in 1917, served as his secretary. Later was New York City's commissioner of plant and structures (1919–24), chairman of the Board of Purchases (1919–23), and police commissioner (1928–30), as well as a member of the New York and New Jersey Bridge and Tunnel Commission (1919–23). In business, held the posts of general manager of New York's John Wanamaker department store (1924–34) and chairman of Schenley Products Company (1934–37). Best known as New York's unpaid official greeter (chairman of the Mayor's Committee for the Reception of Distinguished Guests), holding this office until 1953, he is credited with originating the famous ticker-tape parades up lower Broadway. Served as president of the 1939–40 New York World's Fair.

Whittington, William M. (84), U.S. congressman (Democratic) from Mississippi, 1935–51: d. Greenwood, Miss., Aug. 20.

°Wilhelmina (82), queen of the Netherlands from 1898 to 1948: d. Apeldoorn, Netherlands, Nov. 28.

Williams, Guinn (63), U.S. film actor who played many cowboy roles since 1920's: d. Van Nuys, Calif., June 6.

Willoughby, Harold R. (71), U.S. Biblical scholar; professor of early Christian origins, University of Chicago Divinity School, 1943–55; published many Biblical studies: d. Chicago, Ill., Feb. 2.

Wills, Royal B. (65), U.S. architect; designed over 2,500 houses: d. Winchester, Mass., Jan. 10.

Wilson, Carey (73), U.S. film producer; produced *Andy Hardy* and *Dr. Kildare* films: d. Los Angeles, Calif., Feb. 1.

Wirjopranoto, Sukardjo (59), Indonesian diplomat; was Indonesia's chief delegate to United Nations, from 1960: d. New York, N.Y., Oct. 23.

Wiseman, Sir William (77), British financier and diplomat; headed British intelligence service in U.S. during World War I: d. New York, N.Y., June 17.

Wolfson, Erwin S. (60), U.S. building contractor; his firm constructed Pan American Building and other New York City skyscrapers: d. Purchase, N.Y., June 26.

Wolzero (Waizeur) Menen (71), empress of Ethiopia and wife of Haile Selassie I; was noted for philanthropic acts and for helping to ban child marriages and harems: d. Addis Ababa, Ethiopia, Feb. 15.

Woods, William S. (90), U.S. editor; was editor of *The Literary Digest* magazine (1905–33): d. Old Lyme, Conn., Dec. 3.

Woodworth, Robert Sessions (92), U.S. psychologist: b. Belchertown, Mass., Oct. 17, 1869; d. New York, N.Y., July 4, 1962. Attended Amherst College (B.A., 1891), Harvard University (B.A., 1896; M.A., 1897), where he studied under William James, and Columbia University (Ph.D., 1899). Was a member of the psychology faculty of Columbia University (1903–42; professor, 1909–42). Wrote several basic texts in his field, including *Psychology* (1921; 5th edition with D. G. Marquis, 1947) and *Experimental Psychology* (1938; revised 1954).

Wordie, Sir James (72), English explorer, geologist, and geographer; was chairman of British National Committee for the International Geophysical Year, 1957–58: d. Cambridge, England, Jan. 16.

Yavlinsky, Nathan A. (50), Soviet physicist; winner of Stalin and Lenin prizes (1949 and 1958) for thermonuclear research: d. USSR, July 28.

°Young, Owen D. (87), U.S. industrialist and monetary expert: d. St. Augustine, Fla., July 11.

Yturralde y Orbegoso, Mariano de (57), Spanish ambassador to U.S. (from 1960) and Canada (1953–55): d. Washington, D.C., Mar. 5.

Zink, Harold (61), U.S. political scientist; professor of political history at DePauw University (1930–48) and Ohio State University (from 1948); published many books on government: d. Columbus, Ohio, June 19.

LIST OF ILLUSTRATIONS

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CUMULATIVE INDEX TO THE AMERICANA ANNUAL, 1959-1963 · INDEX

This Index covers editions of THE AMERICANA ANNUAL from 1959 to the present volume (1963), inclusive. Cumulative indexes to all editions of THE ANNUAL, 1923 to 1932, inclusive, will be found in the 1933 ANNUAL; for the years 1933 to 1941, inclusive, in the 1942 ANNUAL, and for the years 1942 to 1945, inclusive, in the 1946 ANNUAL. Beginning with the 1950 ANNUAL, indexes are cumulative for five years, covering the current and preceding four editions.

Main article headings appear in this Index as bold-faced capitals; subjects within articles appear as lower-case entries. Article page numbers and general references appear at the beginning of each entry; the subentries which follow them direct the reader to related topics appearing elsewhere. Both the general references and the subentries should be consulted for maximum usefulness of this Index. Maps, charts, etc. are indexed herein; halftone illustrations in this edition are indexed on pages 767–770. Figures in bold-faced type indicate the year of the volume; page numbers are in light type. Cross references, unless otherwise noted, are to entries in this Index.

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